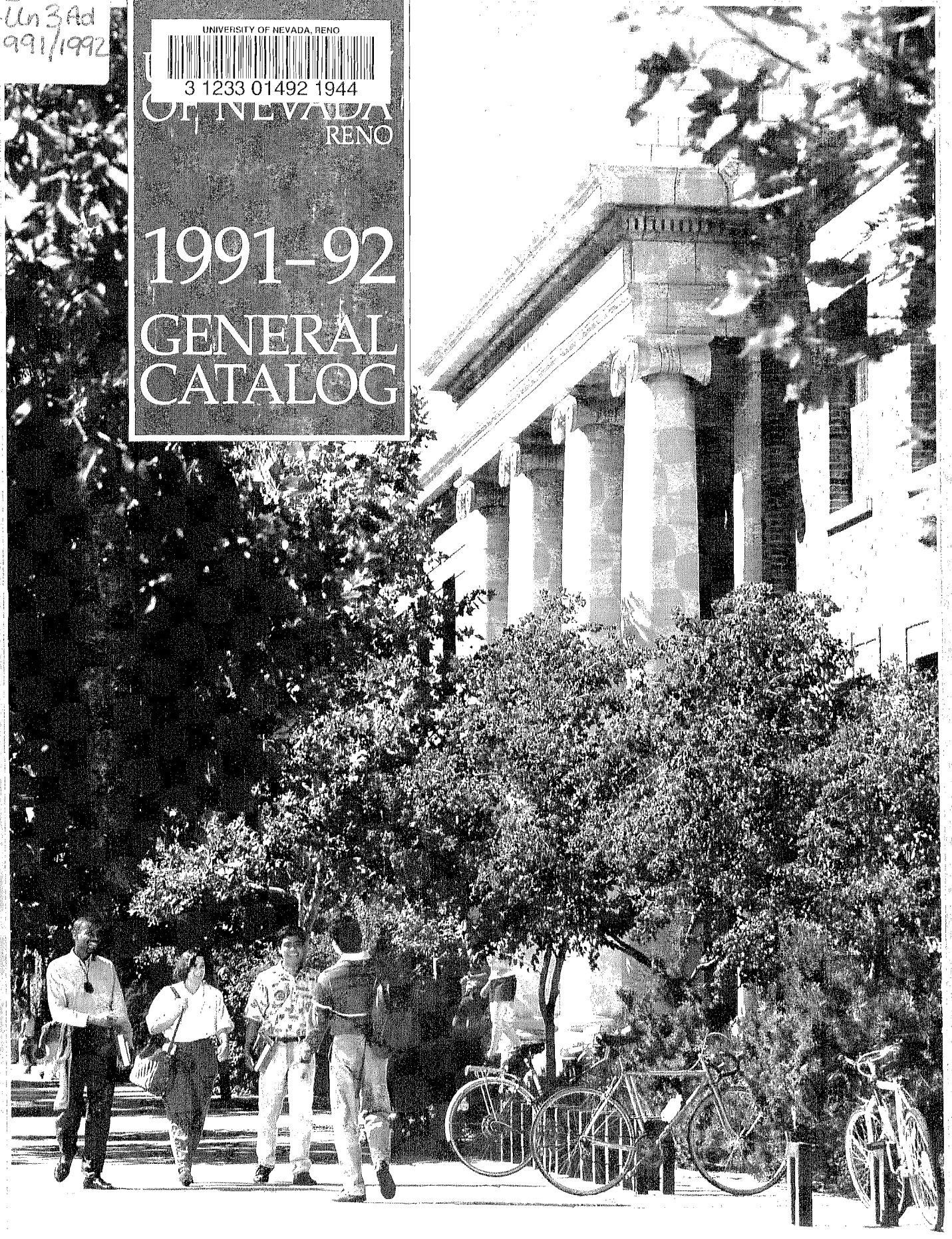
UNIVERSITY OF NEVADA
RENO

# 1991-92 GENERAL CATALOG



# UNIVERSITY OF NEVADA
RENO

# 1991-92 CATALOG

Agriculture

Arts and Science

Business

Education

Engineering

Human and Community Sciences

Journalism

Medicine

Mining

Nursing

Graduate Studies

**On the cover:**
Students often meet in the courtyard outside Thompson Student Services Center in the heart of the campus. Shown, from left, are: Gary Gilliam-Beale, Lorraine Solaegui, Paul Miramontes, and Cary Yamamoto. All four are members of the university's Student Ambassadors. Gary is a psychology major, Lorraine is majoring in international affairs, Paul is majoring in business, and Cary is a mechanical engineering major.

**Photo credit:**
Jeff Ross Photography,
Reno, Nevada

# Contents

# General Information

## Where to write:

(name)
(department)
University of Nevada, Reno
Reno, NV 89557

## Where to Call: (area code 702)

| | |
|---|---|
| **General Information** | **784-INFO** |
| **Directory Assistance** | **784-1110** |
| Academic Advisement Center | 784-1537 |
| Admissions and Records | 784-6865 |
| FAX number | 784-4283 |
| Affirmative Action Office | 784-4300 |
| ASUN Office | 784-6589 |
| Bookstore | 784-6666 |
| Campus Tours | 784-4865 |
| Career Development | 784-4678 |
| CARS Information | 784-6865 |
| Cashier | 784-6915 |
| Continuing Education | 784-4851 |
| Counseling Center | 784-4648 |
| Financial Aid | 784-4666 |
| Health Service | 784-6598 |
| Housing | 784-6107 |
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| Library Information | 784-6508 |
| Mediation Center | 784-4177 |
| Minority Student Affairs | 784-4936 |
| New Student Programs | 784-6116 |
| Orientation Information | 784-6116 |
| Parking | 784-4654 |
| Registration Information | 784-6865 |
| Scholarships and Awards | 784-4666 |
| Schools and Colleges (dean's offices) | |
| Agriculture | 784-6611 |
| Arts and Science | 784-6155 |
| Business Administration | 784-4912 |
| Continuing Education | 784-4851 |
| Education | 784-6905 |
| Engineering | 784-6925 |
| Graduate School | 784-6869 |
| Human and Community Sciences | 784-6975 |
| Journalism | 784-6531 |
| Medicine | 784-6001 |
| Mines | 784-6987 |
| Nursing | 784-6841 |
| Sierra Nevada Job Corps Center | 677-3500 |
| Special Programs and Academic Skills Center | 784-6801 |
| Student Employment | 784-4666 |
| Summer Session | 784-4046 |
| Testing Services | 784-4638 |
| Veterans Assistance | 784-4664 |

**Nevada residents outside the Reno/Sparks area can reach the University of Nevada, Reno toll-free by calling 1-800-622-4UNR.**

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# Organization of the University

## Board of Regents

| | |
|---|---|
| Dorothy S. Gallagher (Chairman) | Elko |
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| Shelley Berkley | Las Vegas |
| Jill Derby | Gardnerville |
| June F. Whitley | North Las Vegas |
| V. James Eardley | Sparks |
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| Lonnie Hammargren | Las Vegas |
| Daniel J. Klaich | Reno |

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**Vice Chancellor for Finance,** Ronald W. Sparks
**Vice Chancellor for Academic Affairs,** Warren H. Fox
**Executive Director of Computing Services,** Donald Zitter
**Director of University Press,** Thomas F. Klasic
**General Counsel,** Donald F. Klasic
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# University of Nevada, Reno

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**Vice President for Academic Affairs,** Robert A. Hoover, Ph.D.
**Vice President for Development,** Paul Page, Ph.D.
**Vice President for Finance and Administration,** Ashok K. Dhingra, M.B.A.
**Vice President for Student Services,** Patricia K. Miltenberger, Ed.D.
**Affirmative Action Officer,** David A. Torres, M.S.S.
**Director of Intercollegiate Athletics and Head Football Coach,** Christopher T. Ault, M.A.
**University Marshal,** Rollan Doyle Melton, B.S.

## Vice President for Academic Affairs, Robert A. Hoover, Ph.D.

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**Associate Vice President for Research and Dean of Graduate School,** Kenneth W. Hunter Jr., Ph.D.
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**Dean of Agriculture,** Bernard M. Jones, Ph.D.
*Associate Dean,* Donald R. Hanks, D.V.M. (Interim)
*Agricultural Economics,* Rangesan Narayanan, Ph.D.
*Agricultural Education and Communication,* George C. Hill, Ph.D.
*Animal Science,* Duane L. Garner, Ph.D.
*Biochemistry,* Jeffrey Seemann, Ph.D. (Acting)
*Plant Science,* Jeffrey Seemann, Ph.D.
*Range, Wildlife and Forestry,* Gerald F. Gifford, Ph.D.
*Veterinary Medicine,* Donald R. Hanks, D.V.M.

**Dean of Arts and Science,** Ann Ronald, Ph.D.
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*Anthropology,* Donald D. Fowler, Ph.D.
*Art,* Jim C. McCormick, M.A.
*Biology,* Peter Brussard, Ph.D.
*Chemistry,* Lawrence Scott, Ph.D.
*Criminal Justice,* Kenneth J. Peak, Ph.D.
*English,* Robert Merrill, Ph.D.
*Foreign Languages and Literatures,* Jorge N. Rojas, Ph.D.
*Geography,* Christopher Exline, Ph.D.
*History,* Jerome Edwards, Ph.D.
*Mathematics,* Vacant
*Military Science,* Norbert Czech, Lt. Col.
*Music,* Michael E. Cleveland, D.B.A.
*Oral History,* Robert T. King, Ph.D. (Head)
*Philosophy,* Thomas J. Nickles, Ph.D.
*Physics,* E. Neal Moore, Ph.D.
*Political Science,* Richard L. Siegel, Ph.D.
*Program for Adult Continuing Education* (PACE), *Director,* Mary Stewart, Ph.D.
*Psychology,* Gerald P. Ginsburg, Ph.D.
*Sociology,* Lyle G. Warner, Ph.D.
*Speech and Theatre,* David R. Seibert, Ph.D.

**Dean of Business Administration,** Laurie G. Larwood, Ph.D.
*Associate Dean,* Donald W. Winne, LL.B., J.D.
*Accounting and Computer Information Systems,* Robert E. Blatz Jr., J.D.
*Economics,* H. Michael Reed, Ph.D.
*Managerial Sciences,* Harold S. Sekiguchi, Ph.D.

**Dean of Continuing Education,** Neal A. Ferguson, Ph.D.
*Director of Continuing Education,* Patricia S. Andrew, M.S.
*Director of International Programs and Services,* Helen Lee Thomas, Ph.D.
*Project Director of Sierra Nevada Job Corps Center,* H. Randall Frost, Ph.D.

**Dean of Education,** Frank D. Meyers, Ed.D.
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*Curriculum and Instruction,* Cleborne Maddux, Ph.D.
*Center for Learning and Literacy,* W. Shane Templeton, Ph.D.
*Educational Leadership,* George Foldesy, Ed.D.
*Learning and Resource Center,* Thomas Sawyer, M.Ed.
*Research and Educational Planning Center,* Stephen L. Rock, Ph.D.

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*Civil Engineering,* Mehdi Saiidi, Ph.D.
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*Assistant Dean,* Andrea L. Miller, Ph.D.
*Community Health Sciences,* Rosalie Marinelli, Ph.D.
*Human Development and Family Studies,* Geoffrey K. Leigh, Ph.D.
*Nutrition,* Stanley T. O'Mage, Ph.D.
*Recreation, Physical Education and Dance,* Olena K. Plummer, Ph.D.
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*Internal Medicine,* Stanley R. Shane, M. D .
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*Obstetrics-Gynecology,* Jeffrey Wrightson, M.D.
*Pathology and Laboratory Medicine,* Anton P. Sohn, M.D.
*Pediatrics,* Jack Lazerson, M.D.
*Pharmacology,* David P. Westfall, Ph.D.
*Physiology,* Kenton M. Sanders, Ph.D.
*Psychiatry and Behavioral Sciences,* Ira Pauly, M.D.
*Rural Health,* Caroline Ford
*Savitt Medical Library,* Joan S. Zenan, M.L.S.
*Speech Pathology and Audiology,* Stephen C. McFarlane, Ph.D.
*Student Health Services,* Owen C. Peck, M.D., Director
*Surgery,* Alex G. Little, M.D.

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*Geological Sciences,* Robert J. Watters, Ph.D.
*Mining Engineering,* Jaak J. Daemen, Ph.D.

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*Assistant University Librarian for Bibliographic Control*, Yoshiko T. Hendricks, M.L.S.
*Assistant University Librarian for Collection Development*, Milton T. Wolf, A.M.L.S.
*Assistant University Librarian for Public Services*, Steven D. Zink, M.L.S.
*Head of Special Collections*, Robert Blesse, M.A.
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*Life and Health Sciences Librarian*, Susan L. Stewart, M.A.
*Mines and Map Librarian*, Linda P. Newman, M.L.S.
*Physical Sciences Librarian*, Ann M. Eagan, M.L.S.

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**Director of Finance for Development,** Jenny C. Frayer, M.B.A

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**Director of Personnel Services,** (University of Nevada, Reno), Susan A. Carkeek, M.B.A.
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**Manager,** The College Inn, Vacant

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*Associate Director of Admissions and Records*, Charles V. Records, M.Ed.
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*Director, Outreach Services*, Vacant
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*Director of Student Union and Food Services*, Fred L. Perriera, Ed.D.
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**ASUN Manager,** Rita Laden, M.A.

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*Associate Director*, John A. Kleppe, Ph.D.
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*Associate Dean for Instruction and Associate Director, Cooperative Extension Service*, Elwood L. Miller, Ph.D.
*Associate Director of Experiment Station*, Ronald S. Pardini, Ph.D.
*Assistant Director for Cooperative Extension*, Kenneth S. Sakurada, M.S.
**Director, Cellular and Molecular Biology,** Stuart T. Nichol, Ph.D. (Acting)
**Director of Mackay Mineral Resources Research Institute,** James L. Hendrix, Ph.D.
**Director of Nevada Bureau of Mines and Geology,** Jonathan G. Price, Ph.D.
**Director, Center for Strategic Materials Research and Policy Study,** Vacant
**Director, Center for Neotectonics,** Steven G. Wesnousky, Ph.D.
**Director of Research and Educational Planning Center,** Stephen L. Rock, Ph.D.
**Director of Seismological Laboratory,** James Brune, Ph.D.
**Director of Small Business Development Center,** Samuel Males III, M.B.A.
**Director, Center for Precious Metals,** Maurice C. Fuerstenau, Ph.D.

### Affiliated Units

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**Executive Director of the National Council of Juvenile and Family Court Judges, and Dean, National Council of Juvenile Justice,** Louis W. McHardy, M.S.W.

# University Calendar

## Fall Semester 1991

| | |
|---|---|
| Student Orientation, Advisement and Registration Programs (SOAR) | |
| Transfer, adult and graduate students | Thursday, April 25 |
| Recent high school graduates | Saturday, April 27 |
| NOTE: Students who attend SOAR April 27 will receive priority registration. | |
| Recent high school graduates | Saturday, June 8 |
| Recent high school graduates | Friday, July 19 |
| Transfer, adult and graduate students | Saturday, July 20 |
| Transfer, adult and graduate students | Friday, August 23 |
| Recent high school graduates | Saturday, August 24 |
| NOTE: English and mathematics testing will be administered on the above dates. | |
| Independence Day[1] | Thursday, July 4 |
| Final date for filing: application for admission; application for readmission following suspension returning student application for registration materials; application for resident fees (if applicable) | Thursday, August 1 |
| Semester begins[3] | Monday, August 19 |
| Residence halls open | Friday, August 23 |
| New Student Convocation | Monday, August 26 |
| Instruction begins | Monday, August 26 |
| Fall graduation applications filed with department | Monday, August 26 |
| Labor Day[1] | Monday, September 2 |
| Final date for late registration and addition of courses | Wednesday, September 4 |
| Applications for graduation filed with Office of Admissions and Records | Monday, September 9 |
| Homecoming | Saturday, October 12 |
| Final date for filing late application for graduation | Tuesday, October 15 |
| Final date for dropping classes | Monday, October 21 |
| Nevada Day[1] | Thursday, October 31 |
| Veterans Day[1] | Monday, November 11 |
| Final date for filing graduate final oral examination reports | Wednesday, November 20 |
| Final date for filing approved thesis or dissertation with Graduate School Office | Wednesday, November 27 |
| Thanksgiving Day[1] | Thursday, November 28 |
| Family Day[1] | Friday, November 29 |
| Preparation for final week[2] | Wednesday, December 11 |
| Final week schedule begins | Thursday, December 12 |
| Instruction ends | Wednesday, December 18 |
| Final grades filed with Office of Admissions and Records by 9:00 a.m. Semester ends[3] | Friday, December 20 |
| Christmas Day/Holiday[1] | Wednesday, December 25 |

## Spring Semester 1992

| | |
|---|---|
| Final date for filing: application for readmission following suspension; returning student application for registration materials; application for resident fees (if applicable) | Monday, December 2 |
| New Year's Day Holiday[1] | Wednesday, January 1 |
| Martin Luther King Jr.'s Day[1] | Monday, January 20 |
| Semester begins | Tuesday, January 21 |
| Student Orientation, Advisement and Registration Programs (SOAR) | To Be Announced |
| Residence halls open | Sunday, January 26 |
| Spring graduation applications filed with departments | Monday, January 27 |
| Instruction begins | Monday, January 27 |
| Final date for late registration and addition of courses | Tuesday, February 4 |
| Applications for graduation filed with Office of Admissions and Records | Friday, February 7 |
| Final date for filing late application for graduation | Tuesday, February 18 |
| President's Day[1] | Monday, February 17 |
| Final date for dropping classes | Monday, March 23 |
| Spring break[2] | Saturday-Sunday, March 28-April 5 |
| Final date for filing graduate final oral examination reports | Monday, April 27 |
| Mackay Week | Monday-Saturday, April 27-May 2 |
| Final date for filing approved thesis or dissertation with Graduate School Office | Monday, May 4 |
| Honors Convocation | Thursday, May 7 |
| Preparation for final week[2] | Wednesday, May 13 |
| Final week schedule begins | Thursday, May 14 |
| Instruction ends | Wednesday, May 20 |
| Final grades filed with Office of Admissions and Records by 9:00 a.m. Semester ends[3] | Friday, May 22 |
| Commencement | Saturday, May 23 |
| Memorial Day[1] | Monday, May 25 |
| Indepencence Day[1] | Friday-Saturday, July 3-4 |

[1]A legal holiday. Offices are closed. No classes.
[2]Offices are open. No classes.
[3]The academic year for employment purposes consists of two semesters—each commencing the date the "semester begins" and ending the date the "semester ends."

## 1992 Summer Session

Registration for mini-term in Office of Admissions and Records—8:00 a.m.-5:00 p.m. ..... Monday, May 11
**Mini-term** instruction begins; last day to receive a full refund ..... Monday, May 18
Registration for mini-term closes. Last day to add classes or change from audit to credit; letter grade to S/U, or S/U to letter grade—5:00 p.m. ..... Tuesday, May 19
Last day to drop mini-term classes and receive a 50% refund ..... Wednesday, May 20
Last day to drop mini-term classes, change from credit to audit, or withdraw from the university without a grade being recorded ..... Friday, May 22
Memorial Day[1] ..... Monday, May 25
Application for August graduation due in Admissions and Records. Late fee applies after this date ..... Friday, May 29
Mini-term instruction ends. Registration for first- and second-terms in Lombardi Recreation Building ..... Friday, June 5
**First-term** instruction begins; last day to receive a refund ..... Monday, June 8
Final grades for mini-term due in Office of Admissions and Records—5:00 p.m. ..... Monday, June 8
Late registration for first-term closes. Last day to add classes or change from audit to credit, letter grade to S/U, or S/U to letter grade—5:00 p.m. ..... Wednesday, June 10
Last day to drop first-term classes and receive a 50% refund ..... Friday, June 12
Final date for filing late application for August graduation ..... Monday, June 15
Last day to drop first-term classes, change from credit to audit, or withdraw from the university without a grade being recorded ..... Friday, June 19
Independence Day recess[1] ..... Friday, July 3
First-term instruction ends ..... Friday, July 10
**Second-term** instruction begins; last day to receive a full refund ..... Monday, July 13
Final grades for first-term due in Office of Admissions and Records—5:00 p.m. ..... Monday, July 13
Late registration for second-term closes. Last day to add classes or change from audit to credit, letter grade to S/U, or S/U to letter grade—5:00 p.m. ..... Wednesday, July 15
Last day to drop second-term classes and receive a 50% refund ..... Friday, July 17
Final date for filing graduate final oral examination reports ..... Friday, July 24
Last day to drop second-term classes, change from credit to audit, or withdraw from the university without a grade being recorded ..... Friday, July 24
Final date for filing approved thesis or dissertation with Graduate School Office ..... Friday, August 7
Second-term instruction ends ..... Thursday, August 13
Final grades for second-term due in Office of Admissions and Records—5:00 p.m.; Summer Session ends ..... Friday, August 14

**Note:** Consult Summer Session Class Schedule for registration information.

[1]A legal holiday. No classes. Offices closed.

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## Legal Notice

The University of Nevada, Reno General Catalog describes anticipated programs, courses, and requirements, but these are subject to modification at any time to accommodate changes in university resources or educational plans. The catalog does not constitute a contractual commitment that the university will offer all the courses or programs described. The university reserves the right to eliminate, cancel, reduce or phase-out courses, programs and requirements for financial, curricular or programmatic reasons, to limit enrollments in specific programs and courses, to change fees during the student's period of study, and to require a student to withdraw from the institution for cause at any time.

## Affirmative Action/Equal Opportunity

The University of Nevada, Reno is an Equal Opportunity Employer and does not discriminate based on race, creed, color, sex, age, national origin, handicaps, or veteran status in any program or activity it operates, in compliance with federal, state, and local non-discrimination laws and regulations. The affirmative action officer is responsible for coordinating all compliance efforts, for investigating complaints, and for receiving grievances from students in matters dealing with discrimination. Anyone with questions or concerns may call the affirmative action officer, Clark Administration, Room 209, telephone 784-1547 or 784-4300.

## International Student Visas

The university is authorized under federal law to enroll nonimmigrant alien students.

# 1991

### JAN

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# University Terminology

ASUN—Associated Students of the University of Nevada.
**Academic Status**—Determined by regulations governing honor roll, good standing, probation, suspension and disqualification.
**Admission**—Formal application and acceptance as a regular student in a degree program.
**Adviser, advisee**—The adviser is the faculty member assigned by the university to assist each student in planning the proper academic program. The student is called the adviser's "advisee."
**Audit**—To take a course without credit and grade.
**Corequisite**—A course required to be taken simultaneously with another.
**Course**—A particular subject being studied—thus, a course in English.
**Credit**—The numerical reward received for completing a course. It is described in semester credit hours, and is defined as 3 hours of work per week for one semester. Usually this work is made up of one period in class plus 2 hours of preparation for lecture-seminar classes, or 3 hours of laboratory classes.
**Curriculum**—The total group of courses required for a degree.
**Department**—A part of a college which offers instruction in a specific area of knowledge.
**Disqualification**—The involuntary separation of a student from the university for unsatisfactory academic performance following second academic suspension.
**Extracurricular**—Those activities which are part of student life but are not part of the regular course of study, such as debate, dramatics, and athletics.
**Fee**—A charge which the university requires for services provided, such as a music fee paid for private lessons.
**Freshman on Probation**—A regular, undergraduate, Nevada resident who does not satisfy the freshman admission requirements.
GPA—Grade point average.
GSA—Graduate Students Association.
**Good Standing**—A student who is not on probation, suspension or disqualification.
**Grade Points**—Grades are evaluated in terms of quality points. For each credit of A completed, four grade points are earned; for each credit of B three grade points; for each credit of C, two grade points; for each credit of D, one grade point; and for each credit attempted of F, zero grade points. In order to be graduated, a student must have an average of two grade points for each credit attempted for regular letter grades, including all courses which are failed or repeated.
**Graduate Special**—A regular post-baccalaureate nondegree student not admitted to advanced degree study.
**Graduate Standing**—A regular advanced degree seeking student officially admitted to graduate study.
**Graduate Study**—Work beyond the bachelor's degree, usually toward a master's or doctors degree.
**Honor Roll**—Awarded each semester to undergraduate students who achieve a 3.5 GPA or above on 15 credits or more completed with letter grades.
**I.D. Card**—Identification card.
**Incomplete**—The I is not a grade. It is a mark which is given when a student has been performing satisfactory work, but for a reason beyond the student's control has been unable to complete the required work for the course.
**International Student**—An individual who is attending on a student visa.
**Load**—The total credits for which a student is registered in any registration period. The normal undergraduate load is 16 or 17 credits, also called a program of study.
**Major**—The subject or field of study in which a student plans to specialize. A plan to specialize in mathematics would be to major in that field. To specialize in two such subjects is called a double major. In some curricula the major with related areas of study is called a field of concentration.
**Nondegree Student**—An individual who is not officially admitted to the university. Registration is limited.
**Prerequisite**—The preliminary requirement which must be met before a certain course may be taken.
**Probation**—A warning status resulting from unsatisfactory academic achievement or conduct.
**Registration**—The act of enrolling in classes, usually at the beginning of a semester. This involves choosing classes with the help of the adviser, completing all registration forms, paying all fees, and filing the forms with the registrar.
**Regular Student**—A degree-seeking student who is officially admitted to the university.
**Required Subjects**—Those subjects which are prescribed for the completion of a particular program. The student has some choice in the elective subjects; the required subjects are determined by the college.
**Resident Alien**—A student attending as a permanent immigrant who has not attained U.S. citizenship.
**Schedule, Class**—The list of courses and sections offered, together with the names of the teachers, the days, hours, and locations of classes.
**Schedule, Student**—A listing of the courses which the student takes each semester. It is also called a program of study.
**Semester**—Fifteen weeks of instruction including final examinations.
**Suspension**—The involuntary separation of a student from the university for unsatisfactory academic achievement or conduct.
**Transcript**—A certified copy of the student's permanent academic record on file in the Office of Admissions and Records listing each course and the final grade received.
**Tuition**—An additional charge for regular instruction and is required only of nonresident students.
**Undergraduate**—A student who has not yet obtained the bachelor's degree.
**Withdrawal**—The act of officially leaving the university. Students may also drop individual courses without withdrawing from the university.

# University of Nevada, Reno

The University of Nevada, Reno, one of seven institutions within the University of Nevada System, is located in the city of Reno in northwestern Nevada.

The University of Nevada, Las Vegas (UNLV) is near the metropolitan center of Las Vegas in southern Nevada.

The four community colleges consist of Community College of Southern Nevada in North Las Vegas, Northern Nevada Community College in Elko, Truckee Meadows Community College in Reno-Sparks and Western Nevada Community College in Carson City.

The Desert Research Institute (DRI) is located at its north Reno site and at the Stead facility of the University of Nevada, Reno, about eight miles north of the Reno main campus. It also has special branch operations in southern Nevada.

## The University

The University of Nevada, Reno offers an opportunity for higher education to qualified applicants, regardless of race, color, creed, handicap, or sex. The university provides an environment where learning may take place both inside and outside the classroom.

The main purposes of the university are the discovery and transmission of knowledge and the development of various ways of apprehending reality.

As a state-supported institution, the university also has an important responsibility to serve society by investigating and discussing problems of the past, the present, and the future in an effort to facilitate intellectual, political, economic, and social growth. To meet this responsibility the university serves as a repository of knowledge as well as a center of independent inquiry and critical thinking.

The university offers baccalaureate study in the colleges and schools of agriculture, arts and science, business administration, education, engineering, human and community sciences, journalism, medicine, mines, and nursing. Graduate degrees are offered by each college and school. Additional instructional units include Continuing Education and Summer Session.

While the university has grown steadily by every standard, it is still a comparatively small, personalized institution. The student is offered personal contact with every form of higher education.

## The Campus

The main campus is located on 200 acres of rolling hills north of the business district of Reno, overlooking the picturesque expanses of the Truckee Meadows.

A blend of the old and the new, the campus is marked by ivy-covered buildings and traditional pillars in a setting of tall elms and sweeping lawns. In what is called the "new" part of the campus, some of the most modernistic facilities in the state graphically illustrate the university's progress. Together, they offer rich surroundings for the cultural and intellectual development of the student.

## The City

Reno/Sparks, cities of approximately 240,000, are bounded on the west by the majestic Sierra Nevada, and on the east by the rolling basin and range province. The climate is cool and dry, and is marked by the full pageant of the seasons.

A mixture of metropolitan and quietly provincial, the area is noted on the one hand for its fashionable hotels and tourist attractions, and on the other for its beautiful parks, which line the Truckee River, and its modern residential areas.

Recreational activities abound, both in Reno and its environs. Within an hour of the campus, for example, a student can drive to the Lake Tahoe resort area in the high Sierra or to the unique prehistoric desert sea, Pyramid Lake. The adjoining Sierra is also the site of a number of nationally famed ski areas including Squaw Valley, site of the 1960 Winter Olympics. Other scenic attractions include Virginia City, setting for one of the West's richest mining bonanzas, and Genoa, the state's first pioneer settlement.

## History of the University

Established by the Nevada State Constitution of 1864, the year of the state's admission into the Union, the university actually began work in 1874 in Elko as one of the rare preparatory higher schools in the intermountain region. In 1886, the university was moved to Reno, near the center of the state's population. College-level study formally began in 1887.

## The University: Missions and Goals

The University of Nevada, Reno is a constitutionally established, land-grant university. The university served the state of Nevada as its only state-supported institution of higher education for almost 75 years. In that historical role, it has emerged as a doctoral-granting university which focuses its resources on doing a selected number of things well. The university offers a wide range of undergraduate and graduate programs, including selected doctoral and professional studies, which emphasize those programs and activities which best serve the needs of the state, region, and nation. By fostering creative and scholarly activity, it encourages and supports faculty research and the application of that research to state and national problems. In performing its mission, the University of Nevada, Reno resolves to:

1. Offer high-quality degree programs in the arts, sciences, and in selected professions.
2. Emphasize undergraduate, graduate, and professional programs which meet the needs of the citizens of Nevada.
3. Maintain a select number of doctoral and organized research programs.
4. Offer a range of applied, interdisciplinary, and career oriented programs at both the undergraduate and graduate levels.
5. Provide community and public service programs through continuing education and cooperative extension.
6. Contribute to the advancement and dissemination of knowledge that will help to improve society at the state, regional, and national levels.

Goals identified to support the mission statement include:

1. Continually improve the quality of teaching, research, and public service activities.
2. Develop a curriculum that is sensitive to change, but which places a special value on a liberal arts foundation.
3. Provide an institutional environment supportive of the internal quality of campus life.
4. Utilize resources efficiently and effectively through priori-

tized allocations and reallocations.

5. Develop the means to obtain funds from public and private sources that will provide the support required to achieve these goals.

## Accreditation

The University of Nevada, Reno is accredited by the Commission on Colleges of the Northwest Association, an institutional accrediting body recognized by the Council on Postsecondary Accreditation and the U.S. Department of Education. The university has been accredited since 1938. The most recent evaluation was completed in 1988.

In addition to the Northwest Association institutional accreditation, there are numerous university programs which are accredited by their national professional accrediting organizations. These specialized accrediting organizations, which are recognized by the Council on Postsecondary Accreditation, include the American Assembly of Collegiate Schools of Business, the American Chemical Society, the Accrediting Council on Education in Journalism and Mass Communication, the American Psychological Association, the American Home Economics Association, the Council on Social Work Education, the Liaison Committee on Medical Education, the National Accreditation Agency for Clinical Laboratory Sciences, the National Association of Schools of Music, the National Council for Accreditation of Teacher Education, and the National League for Nursing. In addition, selected programs in engineering and mines are accredited by the Accreditation Board for Engineering and Technology as noted in the individual college sections. The university is also a member of many national professional associations.

## Degrees and Majors

The university offers major fields of study leading to bachelor's and advanced degrees through the academic departments in the various schools and colleges.

Specific degrees are listed in the registration section.

Options within majors are described in the college and departmental sections.

The majors offered are:

**Agriculture:** Agribusiness, agricultural education, animal science, biochemistry, integrated pest management,* resource management, textile and apparel merchandising, and veterinary science.

**Arts and Science:** Anthropology, art, atmospheric physics,* biology, botany, chemical physics,* chemistry, criminal justice, English, foreign languages and literatures,* French, general studies, geography, German, history, international affairs, mathematics, music, music applied, music education, philosophy, physics, political science, psychology, public administration and policy,* social psychology, sociology, Spanish, speech communication, teaching of English,* teaching of English as a second language,* teaching of mathematics,* theatre, and zoology.

**Business Administration:** Accounting, business administration,* computer information systems, economics, finance, logistics management, management, and marketing. (Law school preparation may be obtained in all majors.)

**Education:** Art, biological sciences, business education, chemistry, counseling and educational psychology,* educational leadership,* elementary education, elementary/special education, English, French, German, health education, history, industrial education, journalism, mathematics, music, physical education, physical sciences, physics, political science, recreation, secondary education, social studies, Spanish, special education, speech communication, teaching of English as a second language,* theatre, and trade and industrial education.

**Engineering:** Civil engineering, computer integrated manufacturing systems engineering,* construction engineering,* electrical engineering, engineering physics, and mechanical engineering.

**Human and Community Sciences:** Health education, human development and family studies, nutrition, physical education, predentistry, premedical, prephysical therapy, recreation, and social work.

**Journalism:** Journalism.

**Medicine:** Biochemistry, clinical laboratory science, medicine,* (Medical School class ONLY), pharmacology,* speech pathology, and speech pathology and audiology.*

**Mines:** Chemical engineering, computer science, geochemistry,* geological engineering, geology, geophysics, materials science and engineering, metallurgical engineering, and mining engineering.

**Nursing:** Nursing.

**Graduate:** The master's degree is offered in the areas noted in each of the colleges. The education specialist degree offers majors in counseling and educational psychology, curriculum and instruction, and educational leadership. A combined M.D./Ph.D. degree is offered with a major research emphasis in anatomy, biochemistry, pharmacology or physiology. Doctoral programs are offered in anthropology, Basque studies, biochemistry, biology, cellular and molecular biology, chemical physics, chemistry, counseling and educational psychology, curriculum and instruction, educational leadership, engineering, English, geochemistry, geology and related earth sciences, geophysics, history, hydrology and hydrogeology, medicine, metallurgical engineering, pharmacology, physics, political science, psychology, and social psychology.

## Interdisciplinary and Special Programs

There are several interdisciplinary and special programs offered, including Basque studies,* cellular and molecular biology,* chemical physics,* early childhood special education, environmental studies, ethnic studies, general studies, gerontology, historic preservation, honors program, hydrology and hydrogeology,* interior design, international affairs, juvenile court judges,* trial judges,* land use planning,* London studies program, Medieval and Renaissance studies, museology, National Student Exchange Program within the U.S., religious studies, study abroad through the Institute of European Studies, teacher certification, teaching English as a second language, Western Interstate Commission for Higher Education (WICHE), and women's studies.

Additional information is presented in the special section preceding the school and college sections.

## Commissioning Programs for the Military Services

The Reserve Officers Training Corps (ROTC) at the university provides an opportunity for men and women to earn a commission in the United States Army while completing baccalaureate and master's degree requirements. Program information is contained in the Military Science Department section in this catalog. Additional information is available from the Department of Military Science, University of Nevada, Reno, NV 89557, (702) 784-6751.

*Graduate majors only.

# Intercollegiate Athletics

Intercollegiate athletics has a long tradition at the university and has produced All-Americans, professional athletes, many outstanding coaches, and graduates in a multitude of academic disciplines.

The intercollegiate athletic program offers a variety of team and individual sports for men and women with a commitment to the development and education of the student athlete.

The men's program competes under the auspices of the National Collegiate Athletic Association (NCAA) in eight intercollegiate sports: football, basketball, baseball, track and field (indoor and outdoor), cross-country, tennis, and golf. Nevada is a member of the highly competitive Big Sky Conference in all sports except baseball and skiing. Baseball competes in the West Coast Athletic Conference. Skiing competes in the Northern California Collegiate Ski Conference and is a member of the NCSA.

The University of Nevada, Reno women's intercollegiate program is also a member of the NCAA and the Big Sky Conference. Sports offered include volleyball, basketball, skiing, swimming, tennis, cross-country, track and field.

Involvement in the intercollegiate program at the university is considered a desirable part of the total educational experience.

Additional information about specific sports is available upon request from the Intercollegiate Athletics Office, Lawlor Annex, (702) 784-6900.

# University Research and Services

All colleges and schools of the university maintain well equipped laboratories and special facilities in support of instruction and research.

Relics of the past, samples of the present, and specimens which may unlock secrets in the future are maintained in the several scientific collections and museums on the Reno campus, primarily in the fields of agriculture, biology, and the earth sciences.

The university also operates the Little Valley outdoor laboratory, a gift from Captain George Whittell which is located in the Sierra Nevada. This tract of land encompasses approximately four square miles of natural meadow and forest, and is used for the study of both basic and applied problems in the natural sciences.

In addition, a number of public service and research organizations, including federal and state agencies, are located at the university and are operated in cooperation with or as part of the university programs and facilities.

## University of Nevada System Computing Services

UNSCS serves all divisions of the University of Nevada System, providing computing support for their instructional, research, and administrative objectives.

Physical facilities consist of regional centers in Reno and Las Vegas. A UNSCS computer network provides access from all UNS campuses to the following UNSCS computers: one IBM 3090 and one CDC Cyber 855 (primarily for administrative processing), three Sun 3/280S's, a CDC Cyber 830, a Digital VAX 11/750, and MicroVax. The UNSCS network also links various campus local area networks. Remote printing stations are located in the university Business Building, at CCSN, NNCC, TMCC, WNCC, and at DRI Stead. An IBM AS/400 is available at TMCC and connected by a line to the university Business Building. Many academic computing resources are provided by local campus departments and colleges.

In addition to access to the above-mentioned computers and a wide range of application software, UNSCS provides consultant assistance, documentation, workshops, a newsletter, and campus microcomputer laboratory. Information on accounts and services may be obtained by calling (702) 784-1131 or visiting the consulting office in Room 302, Business Building.

Campus computing coordinators and committees play an active role in coordinating UNSCS academic computing services with campus needs and existing campus resources and facilities. The system Computing Planning and Policy Committee, CPPC, composed of chief academic and administrative officers from each campus, oversees the allocation of UNSCS administrative and academic computing resources. Two other system committees which participate in planning and in the allocation of resources are the Academic Computing Committee, ACC, and the Management Systems Committee, MSC.

## University of Nevada Press

The University of Nevada Press is a publisher of both scholarly and trade books. Established by the Board of Regents in 1961, the press is a public service division of the University of Nevada System. Its purpose is to make a contribution to the state of Nevada and to the scholarly community by publishing books dealing with history, government, natural resources, ethnic groups, and contemporary affairs

In addition to publishing books of general interest, the press is also the publisher of seven distinguished series of books: the Max C. Fleischmann Series in Great Basin Natural History, a collection of works dealing with the flora, fauna, and natural resources of the region; the Basque Book Series, devoted to the study of Basque culture, history, and politics in America and Europe; the Vintage West Series, reprint editions of significant early titles; the History and Political Science Series, analytical studies of important political figures and topics; the Western Literature Series, devoted to analysis and revival of significant regional authors; the Gambling Series, dealing with various aspects of the topic; and a new series entitled Ethnonationalism in Comparative Perspective. The press also publishes occasional art portfolios of works by prominent Western artists.

Decisions as to the publication of manuscripts are made by the Press Editorial Advisory Board, consisting of faculty members from the University of Nevada, Reno, the University of Nevada, Las Vegas, and the community colleges. Fifteen to 20 titles are produced each year.

Faculty, staff, and students are welcome to stop by the press's offices, located in the basement of Morrill Hall, during regular business hours (8:00 a.m. to noon and 1:00 to 5.00 p.m., Monday through Friday), or to call (702) 784-6573 for more information.

## University of Nevada, Reno Academic Services

### Campus Computing Services

In addition to the mainframe computers provided by the UNS Computing Services, the University of Nevada, Reno maintains over 1,000 microcomputers and 12 minicomputers. Campus Computing Services coordinates the planning, acquisition and utilization of these computers, terminals and other computer equipment. It also provides technical advice, software support, consulting, and training support to administrators and faculty.

### International Programs and Services

The Office of International Programs and Services coordinates the campus resources directed toward international academic and service activities. Information is provided to students and faculty on study abroad and Fulbright scholar opportunities. The office serves as the liaison to agencies, governments, and institutions sponsoring international students at the university. Affiliations with universities and academic programs overseas are supported through this unit. Campus services for inbound international students are coordinated through the Office of International Programs and Services; the Intensive English Language Center and the university's International Division in Tokyo are administered directly through this office. For more information, contact the director, Mackay Science, Room 130, (702) 784-1467, FAX (702) 784-4015.

#### European and Asian Studies

The university, through association with the Institute of European Studies, offers high quality academic programs of study at 10 campuses abroad. Year programs are available in Vienna (Austria),

Durham and London (England), Paris and Nantes (France), Freiburg (Germany), Milan (Italy), Madrid (Spain), Nagoya and Tokyo (Japan), Singapore, Kiev and Moscow (Russia), Beijing (People's Republic of China), and Taipei (Republic of China). Each institute center, except Durham, offers fall and spring semester programs. In addition, one-month summer programs are available in Freiburg, London, Madrid, Paris, and Vienna.

Students in nearly all subject areas can take courses through the institute which may be applicable to their regular programs at the university. The courses are not designed exclusively for foreign language majors.

Participation is generally limited to students who have completed at least two years of college and who give evidence of strong motivation, adaptability, and academic promise. A knowledge equivalent to two years of college study of the language of the host country is required for most programs, except Vienna and Singapore where classes are taught in English, and Japan where one semester of Japanese is required. Programs of study must be approved by the student's adviser and the Office of International Programs and Services. Limited financial aid is available. Further information and application forms may be obtained from the Office of International Programs and Services, Mackay Science Building, Room 130, 784-1467.

### Intensive English Language Center

The center offers elementary, intermediate and advanced levels of instruction in English as a Second Language to international students who are interested in learning the English language to qualify for admission to educational institutions in the U.S. upon completion of the program.

The program is offered both fall and spring semesters as well as during Summer Session. The curriculum provides for 20 hours per week of instruction in facilities located on campus. Applicants must be 17 years of age or over and have completed the equivalent of a U.S. secondary school diploma.

Individuals approved for the program are issued appropriate immigration forms to attend on a student visa. Students who apply and qualify for admission to an academic program, and who do not meet the university's English language requirement, are issued immigration documents to attend the intensive English language program together with a conditional letter of acceptance to the appropriate academic program.

The Intensive English Language Center reserves the right to dismiss students who do not attend classes regularly.

Additional information is available upon request from the director, Mackay Science, Room 129, (702) 784-6075.

### International Division in Japan

The International Division in Tokyo, Japan offers a full intensive English language program which provides the same curriculum and teaching standards as the Intensive English Language Center on the University of Nevada, Reno campus. All instructors are native speakers of English and hold master's degrees in TESL or linguistics.

Students attending the Tokyo center are encouraged to participate in English language and academic programs on the University of Nevada, Reno campus.

For further information, contact the director of the Office of International Programs and Services, (702) 784-1467, or contact Dr. Bill Twyford, University of Nevada, Reno International Division, Izumi-Hamamatsucho Building 7F, 1-2-3 Hamamatasucho, Minato-ku, Tokyo 105 Japan. Tel.: (03) 459-5551.

### The Study Abroad Resource Center

The Study Abroad Resource Center provides information about study abroad programs offered by the University of Nevada, Reno and other U.S. institutions throughout the world. Foreign study is available for all students in all majors. Many programs feature courses taught in English; others offer intensive foreign language study as well as university courses taught in the language of the host country. The Study Abroad Resource Center provides: course catalogs for foreign universities, travel information, internship information, financial aid referrals, and counseling for students interested in studying abroad.

For more information, contact the office, Mackay Science Building, Room 130, (702) 784-1468.

## Sierra Nevada Job Corps Center

Job Corps is a highly successful national vocational training program funded by the U.S. Department of Labor. The Sierra Nevada Job Corps Center is operated by the University of Nevada, Reno through its Continuing Education Division. The program, designed to serve the individual needs of each enrollee, provides a comprehensive residential program to prepare youth, 16 through 24 years of age, of all ethnic groups, for meaningful employment and the responsibilities of citizenship. Program support is contributed by university academic departments. For information call (702) 677-3620 or write to Sierra Nevada Job Corps Center, P.O. Box 60280, Reno, NV 89506.

## Division of Continuing Education

The Division of Continuing Education provides postsecondary educational opportunities for individuals who are interested in furthering their training and preparation in selected areas.

Any individual who is 18 years of age or over, or who can present evidence of high school graduation, may register as a nondegree student in Continuing Education for a maximum of six semester credits (or equivalent) of undergraduate classroom instruction in one semester or six semester credits per five-week term in Summer Session without being officially admitted to the university.

Continuing Education is made up of the following departments: independent study, professional development, extension programs, and summer session.

### Extension Academic Programs

Educational opportunities are offered at locations throughout northern Nevada to individuals wishing to continue their education on a part-time basis. These may be academic credit or noncredit special programs, depending on the needs of the individual communities. Programs may be offered in the evenings, on weekends, or during the summer.

### Independent Study by Correspondence

Students who wish to pursue academic study but find they cannot attend regular classes or for other reasons choose to study independently may enroll in courses offered by this department. Numerous college-level courses as well as a few noncredit courses are available through this program. Applications for enrollment in correspondence courses may be made at any time throughout the year. Students have one year in which to complete the course but may progress at their own pace with a minimum of restrictions. These courses may be taken for college credit and teacher certification. Correspondence courses may also be taken for advancement in vocation or for personal improvement. Most of the courses are approved by the Veterans Administration for those pursuing educational goals under this program.

While one course at a time is the recommended load, students may enroll in a maximum of two courses simultaneously. Nondegree students may enroll in correspondence courses in addition to the six semester credits or equivalent of classroom instruction.

A maximum of 60 semester credits earned in acceptable correspondence courses completed through a regionally accredited correspondence division in extension or off-campus courses may be applied toward a baccalaureate degree.

A catalog listing the course descriptions, in addition to information regarding the procedures and fees, may be obtained upon request from Independent Study, Continuing Education, Room 225, Midby-Byron Center, (702) 784-4652.

### Professional Development

Professional Development works closely with the university and business community to provide noncredit conferences, seminars, workshops, and certificate programs. These activities present the latest trends and topics and are intended to assist Nevada's professionals, from a variety of disciplines, in maintaining and improving their areas of expertise, as well as enhancing their career development.

### Summer Session

Summer Session annually offers a variety of courses, workshops, and institutes ranging from one to ten weeks. In addition to the two five-week terms, a three-week mini-term period for both on-campus and field study, following the end of the spring semester, is offered.

Graduate and undergraduate students have maximum flexibility to accelerate their study programs to approximate a full semester's study load. Teachers and administrators may complete certification requirements or gain additional knowledge or training. Adults and nondegree students may take part in special enrichment programs, lectures, and seminars.

Summer Session uses a single fee schedule and does not charge out-of-state tuition.

Instruction is provided by the university's own outstanding faculty and by nationally known visiting academicians.

Official admission is not required of students enrolling in undergraduate courses in the summer. The Summer Session student must be 15 years of age and have the ability to do university work.

*Official admission to the university is required prior to registration for each student who wishes to enroll in graduate courses.*

Additional information, or a Summer Session class schedule, may be obtained through the Summer Session Office, (702) 784-4046.

In addition, the dean of Continuing Education has administrative responsibility for the Office of International Programs and Services and the Sierra Nevada Job Corps Center.

## Instructional Media Services

Instructional Media Services (IMS) is the educational technology center of the entire campus. KUNR public radio is also a function of IMS. All of the facilities of IMS are dedicated to assisting faculty and students in the instructional and research process.

For convenience in locating appropriate services, IMS is divided into five areas.

### Classroom Services

This area assists with the use of media equipment in the classroom by providing daily delivery of media equipment and training in the use of state-of-the-art lecture rooms. Classroom Services also repairs audio-visual equipment and works with the film library in the distribution of media to the classroom.

### Instructional Engineering

This area provides design and maintenance of microcomputer systems of all types; planning and policy guidance in computer networking; design and installation of all types of classroom learning environments; and design and installation of long distance instructional delivery systems.

### Instructional Production Systems

IMS has production staff and facilities available for the preparation of instructional and research materials in the following areas: professional and classroom video production; a full line of studio and on-location photography; color and black and white computer graphics; and audio and videotape duplication.

### KUNR

Reno's only public radio station provides a training ground for students in journalism and other academic areas, while at the same time providing a full service public radio signal to the entire community.

Faculty and students are encouraged to call IMS for any needs related to the use of technology in the classroom or in research.

### Telecommunications

IMS has several unique capabilaities that can give faculty and students access to resources from around the world. The Campus Cable System carries video and computer data throughout the campus. Satellite programs can be received by IMS and redistributed to most rooms on campus. An instructional television broadcast system is capable of making live classes available to remote students in Carson City and Gardnerville. UNITE is an audio teleconferencing system that can electronically tie together 10 sites anywhere in the world where there is a telephone. A new computer-based communications system allows faculty and students to send still-video pictures or computer images over telephone lines between Elko, Las Vegas, and Reno.

## Libraries

The University of Nevada, Reno libraries strive to meet the diverse academic and research needs of the campus' faculty and students. The collection, housed in the Noble H. Getchell Library and five branch libraries, contains approximately 795,000 volumes, 3.5 million microforms and 5,000 current periodical titles. The library serves as a regional document and patent depository which receives virtually all available federal documents, many state documents, and publications from various international organizations, including the United Nations, and UNESCO.

Five branch libraries, located at different points on campus, house specialized collections that support university curricula. These include engineering, life and health sciences, medicine, mines, and physical sciences.

Library services include online literature searches in over 300 databases, interlibrary loan, and instruction in the use of library resources through classroom lectures and library science courses. Also available within the library are an audio-visual learning laboratory, and a film and video library of over 4,100 items which serve the entire University of Nevada System.

WolfPAC, the library's online public access catalog, provides electronic access to much of the main and branch libraries' collections through terminals located throughout the libraries. Dial-up access from other campus locations through the Campus Backbone is also possible. Library materials from Truckee Meadows Community College, Western Nevada Community College, Northern Nevada Community College, and the Desert Research Institute are included in WolfPAC.

Among the library's unique collections are the Nevada History, Modern Authors and Basque collections. The university is also privileged to have the 70,000-volume law library of the National Judicial College located on campus.

# College Service and Research

## Nevada Experiment Station

The experiment station has been in continuous operation since its establishment in 1888. The passage of the Hatch Act of 1887 and succeeding state legislation provided for the organization of the station.

The majority of the experiment station's faculty have joint responsibility with cooperative extension or resident instruction programs in the College of Agriculture or College of Human and Community Sciences.

Federal funds are appropriated under the Hatch Act to promote the efficient production, marketing, distribution, and utilization of agricultural products and under the McIntire-Stennis Act to promote the development, protection, and utilization of resources from the nation's forest and rangelands. Station personnel conduct scientific investigations of wildland management as well as arid land agricultural practices to assist in the maintenance of a quality environment and a productive agriculture for the future through wise use of our natural resources. Research areas include: agribusiness, natural resources and environment, cellular and molecular biology, and human resource development.

Additional research programs are designed to protect consumer health and improve the well-being of Nevada residents' nutritional status as well as to promote community development through improvements involving recreation, environment, economic opportunity, and public services.

Research is conducted in the laboratories of the Max C. Fleischmann College of Agriculture, Howard Medical Sciences and the Sarah Fleischmann College of Human and Community Sciences facilities on the campus of the University of Nevada, Reno, as well as at four field laboratory sites including (l) Animal Research and Extension Center—Reno, (2) Valley Road—Reno, (3) Newlands—Fallon, (4) Gund Ranch—Beowawe.

## Nevada Cooperative Extension

This educational outreach program provides information and instruction related to high priority needs and issues facing Nevada's citizens. Campus-based specialists work with field faculty located in four administrative areas and 14 counties. The faculty, working with community leaders, identify critical needs, plan and implement educational programs, and assess program success.

The offices of the field faculty located throughout the state serve as local campuses of the university and provide citizens information about university programs.

Extension programs are financed by an agreement between the U.S. Department of Agriculture, the state, and the counties, and are consistent with the provisions of federal and state laws relating to extension work.

## College of Arts and Science

### The Center for Advanced Study

*Fellows:* Blackadar, Mathematics; Brownell, English; B.T. Gardner, Psychology; R. Allen Gardner, (Dir.) Psychology; W. Jacobsen, English; Lightner, Chemistry/Biochemistry; McReynolds, Psychology; Nickles, Philosophy; Scott, Chemistry; Shin, Chemistry; Vig, Biology

The Center for Advanced Study endeavors to recognize, facilitate and promote research and scholarship in the College of Arts and Science at the University of Nevada, Reno.

Fellows in the center are recipients of the University of Nevada, Reno Outstanding Researcher Award and also members of the College of Arts and Science.

### Oral History

The Oral History Program (OHP) is principally a research and publication operation. Established in 1965, this statewide program produces printed primary-source oral histories that have enduring value as documentation of the history and culture of Nevada and the Great Basin. Research topics include (but are not confined to) mining, ranching, the development of casino gaming, politics and government, Great Basin Indians, and the experiences of various ethnic groups in the settlement and development of the West. The collection also includes a number of biographical chronicles.

The OHP's oral histories are derived from carefully-prepared, systematic interviews of people who can provide first-hand descriptions of events, people and places that are historically significant. From transcripts of the tape recordings, the program produces edited, indexed, half-tone-illustrated, bound volumes. These works reach a wide audience, and they are in steady use.

Tapes and master manuscripts of more than 200 volumes of oral histories are housed in the OHP archives. Complete sets of this collection are also maintained by the university libraries in Reno and Las Vegas, cataloged and available to the public. Catalogs, master indexes to the collection, and copies of oral histories (or selected pages) may be acquired through the OHP office.

## College of Business Administration

### Advisement Center

The center provides advice for prebusiness, undergraduate and graduate students in the College of Business Administration. The primary function of the center is to help students define their academic goals and select a major field of study in accordance with their abilities and interests. Students who are interested in pursuing an undergraduate business degree or a Master of Business Administration degree are encouraged to visit the center. For further information call 784-4912.

### Bureau of Business and Economic Research

The research activities of the College of Business Administration are carried on through the Bureau of Business and Economic Research. This bureau collects and disseminates economic data about the state; provides economic and business information to individuals, businesses, and governmental agencies; engages in studies relative to the economic development of the state and its adjoining regions; and encourages and assists research efforts of students and faculty members. The quarterly *Nevada Review of Business and Economics* and periodic monographs and working papers are published to report on studies and make data available to the public.

### Career Placement Services

The College of Business Administration instituted a career placement office in July 1990 to assist graduating seniors and Master of Business Administration students with career placement and internship programs. This department offers students a variety of services. For additional information call or visit 784-4912, Business Building, Room 408F.

### The Institute for the Study of Gambling and Commercial Gaming

The Institute for the Study of Gambling and Commercial Gaming is an organization whose mission is the stimulation of research and educational efforts relating to studies about gambling behavior and commercial gaming industries, and economic, business, social, and political effects of gambling on society. The institute is involved in the coordination of international conferences, sponsors the publication of books and professional journals, and aids in the

development of degree and nondegree courses and programs related to gambling and commercial gaming.

### Nevada Small Business Development Center

The Nevada Small Business Development Center (NSBDC) is a business development and management assistance program created and sponsored by the College of Business Administration and the U.S. Small Business Administration.

The program objective is to provide high quality professional management assistance to small businesses throughout the state. Resources available to existing or new small businesses include NSBDC professional staff, faculty, paid consultants, students and private sector volunteers. Services include one-on-one counseling, sponsored training programs and a wide variety of publications to assist small businesses. Offices are located at the University of Nevada, Reno, UNLV, NNCC, and through economic development authorities, chambers of commerce and the Nevada Cooperative Extension.

## College of Education

### Research and Educational Planning Center

The Research and Educational Planning Center (REPC) operates as the research arm of the College of Education. Grant-funded projects are developed and implemented through REPC. Field-based activities include educational research, development, evaluation, staff and faculty development, and technical assistance.

The REPC works directly with educators in schools throughout the state of Nevada, the state department of education, and with faculty in the College of Education and in other university departments.

Assistantships and student-initiated activities provide opportunities for graduate students to conduct independent research, work with center-wide projects, and become involved in all aspects of educational research and program development.

## College of Engineering

### Engineering Research and Development Center

The Engineering Research and Development Center promotes and encourages interdisciplinary research and administers sponsored grants and contracts for the college. Through this facility students receive significant exposure to research which is conducted with funding from federal agencies, the state, industries, foundations and individual contributions.

The ERDC has also developed a Standards and Calibration Center. This center provides necessary calibration to other university departments as well as state, federal agencies and private industries.

## College of Human and Community Sciences

### Child and Family Research Center

The Child and Family Research Center, aligned with the Department of Human Development and Family Studies, is a research, teaching, and service facility involving children from birth through five years of age. Approximately 250 children per semester and their families are enrolled in the center which includes infant, toddler, and preschool classrooms. Students and faculty from across campus use the center for child and family research, utilize the observation facilities, and participate in practica.

### Geriatric and Gerontology Center

Please refer to description under the School of Medicine in this section.

### Health Career Advisement Center

In addition to seeking advice from their academic advisers, students planning a career in any of the health professions should consult with the director of the Health Career Advisement Center. The office is a centralized resource for all university students interested in health careers. The director can assist students with information on the many career opportunities and options and the health-related degree programs available at the University of Nevada, Reno and other colleges. The office has up-to-date information about professional school admission requirements and applications for national admission testing. For an appointment call 784-4939.

### Senator Alan Bible Center for Applied Research

A college-wide center for research and development, the center functions in a support role to the university as well as to the departments within the college. The center serves four primary functions:

1. As a center for stimulation of applied research by faculty and graduate students, with a facilitating role ranging from advice on project design to supervision of research projects;
2. As a publication outlet for studies concentrating on Nevada state and local issues, including the periodical, *Nevada Public Affairs Review;*
3. As a survey research center with a computer assisted telephone interviewing facility, designing and conducting surveys for faculty, the university, and state, local and community agencies and policy makers; and
4. As a liaison between the university, state and local governments, and business and industry, in projects utilizing the expertise of faculty within the college.

## School of Medicine

### Nevada Area Health Education Program (AHEC)

The Nevada AHEC program provides support services to health care providers in rural and other medically underserved areas of the state in an effort to improve retention and recruitment of health care professionals as well as the quality of care in those communities. The program works in cooperation with the School of Medicine and other health sciences programs within the university system and provides services throughout the state utilizing a main office based in Reno and center offices in Elko and Las Vegas.

Specific services provided by AHEC include coordination of medical students' first year preceptorships and fourth-year rotations with physicians around the state. The preceptorship gives medical students their first clinical experience in which they can practice skills learned during the first year. The senior year rotation is a four-week stay with a rural family practice physician in which students gain skills in patient interviewing and diagnosis. AHEC has a residency rotation in rural Nevada for internal medicine and family practice School of Medicine residents. The program also offers field work experiences for health professions students in nursing, health education, nutrition, medical technology, and other areas.

In addition, the program operates a Learning Resource Center in cooperation with Northern Nevada Community College in Elko which serves as a resource to students and health professionals in rural Nevada. This center provides direct computer linkups with the National Library of Medicine, a portable computer database system, literature searches and interlibrary loans, patient education materials and self-study videotapes.

AHEC provides continuing education for a variety of health professionals throughout Nevada. These are designed to improve the quality of care and enable health care providers in rural areas to obtain necessary continuing education credits to maintain licensure.

AHEC also recruits students, primarily at the high school level, in rural and medically underserved areas of the state to go into all the health professions through a program that provides information, presentations, and work-study programs.

### Geriatric and Gerontology Center

This program, sponsored jointly by the School of Medicine and the College of Human and Community Sciences (with close affiliations to the School of Nursing and the College of Arts and Science), provides a focus for teaching, research and community service in the area of aging. The center staff not only works with students and faculty from all disciplines but also with local, state and federal agencies. The major goals of this program are: (1) to develop and enrich education in geriatrics and gerontology; (2) to advance scientific knowledge about aging and the special problems of the aged; and (3) to improve health and social services for Nevada's elderly citizens.

The following are activities of the center designed to meet the above goals: (1) curricula on aging are reviewed with suggestions for appropriate changes; (2) faculty knowledge in geriatric/gerontology is enhanced; (3) lectures, seminars, courses and conferences on aging are presented to a diverse audience (undergraduate and graduate students, faculty, special groups/organizations, professionals and the public at large); (4) funding is secured through grants for work in various gerontologic areas such as caregiving and the health status of Native American elders; (5) educational resources in geriatrics and gerontology are identified and help is provided to students, faculty and interested others on how to access these resources and (6) linkages are formed to stimulate research in aging (a number of past and present projects have emanated from center activities).

An interdisciplinary certificate program in gerontology for university undergraduates became effective in the fall of 1989. This program includes 12 hours of required subjects and 12 hours of electives. Details are available in the Geriatric and Gerontology Center office, 784-1689. The center is aligned closely with the Geriatric and Extended Care Program at the Reno Department of Veterans Affairs Medical Center which administers a teaching nursing home, a geriatric evaluation unit, consultation services, an outpatient clinic, respite care, rehabilitation for the disabled elderly and adult day health care. Clinical teaching in geriatrics for health profession students (medicine, nursing and others) is carried out at this facility.

### Nutrition Education and Research Program (NERP)

This program coordinates nutrition instruction and activities within the medical school's curriculum. It serves the medical community by integrating nutrition into the overall health care delivery system by also providing nutritional counseling for patients on referral by their private physicians (Nutrition Associates by appointment, 784-4474) and ambulatory care services through the Departments of Pediatrics, Internal Medicine, and Family Medicine. NERP also sponsors educational seminars and continuing education conferences for health professionals.

NERP conducts clinical nutrition research and is conducting a five-year study to determine the effects of diet and weight on cardiovascular risk factors on 500 normal volunteers from the Reno community.

The research activities of NERP are jointly sponsored by the Nevada Experiment Station and are shared with the Nutrition Department of the College of Human and Community Sciences. A computerized Nutrient Data Base to support the analysis of dietary intake supports major research projects to help us understand the relationships of what we eat to disease risk.

### Office of Rural Health

The Office of Rural Health is dedicated to the support of rural health care providers and institutions throughout the state. The office provides assistance in health manpower needs and continuing education programs for both providers and consumers. The office has a program, The Clearinghouse, which specializes in the recruitment of primary health care personnel, especially in rural and underserved areas of the state. Staff are in close and continuous contact with state national and local health care agencies and help monitor health manpower shortage areas. The office also administers a state-funded loan repayment program called the Nevada Health Service Corps which focuses on meeting the health manpower needs of rural and frontier areas throughout the state.

### Medical Care

**Craniofacial Pain and Temporomandibular Joint (TMJ) Dysfunction Clinic:** This special clinic, housed at 834 Willow Street, provides diagnostic services for those patients suffering from craniofacial and TMJ problems. The clinic functions as a diagnostic center and referral service for physicians and dentists treating patients with head and facial pain.

The clinic is also a center for collecting research data on TMJ disorders and provides continuing education programs for Nevada physicians and dentists. The clinic director is Joseph R. McMullen, D.D.S., M.D., 322-0943

**Ambulatory Care Centers:** The centers listed below, staffed by School of Medicine faculty in Reno, offer the gamut of professional medical services: Internal Medicine, 781 Mill Street, 323-5263; V.A. Medical Center, 1000 Locust Street, 786-7200; Family Medicine Center, University of Nevada, Reno, Brigham Building, 784-1533; Pediatric Clinic, Family Medicine Center, University of Nevada, Reno, Brigham Building, 784-6180; Speech Pathology and Audiology, University of Nevada, Reno Mackay Science Building, 784-4887; and Nutrition, University of Nevada, Reno Brigham Building, 784-4474.

## Mackay School of Mines

### Center for Mineral Bioprocessing

A Mackay Center for Mineral Bioprocessing has been established within the Mackay School of Mines. The goals of the center are to: (1) conduct fundamental and applied research work in the emerging multidisciplinary field of mineral bioprocessing; (2) to promote and advance the discipline; (3) to disseminate research and practical information on the field; and (4) to promote interaction of universities (particularly campuses of the University of Nevada System), industry and government in the discipline. The field includes the use of microorganisms in aiding the exploitation of ores and the bioremediation of toxic effluents potentially produced by mineral industry operations.

### Center for Neotectonic Studies

The Center for Neotectonic Studies was established within Mackay School of Mines to coordinate research related to the evaluation of the geological environments which may affect land utilization. The center coordinates research related to evaluation of seismic and volcanic hazards, ground water environments, slope stability and sub-surface disposal of hazardous or radioactive wastes. The director of the Center for Neotectonic Studies reports to the dean of the Mackay School of Mines.

### Center for Strategic Materials Research and Policy Study

The Center for Strategic Materials Research and Policy Study was established within the Mackay School of Mines by congressional legislation in 1986. That legislation provided for a $9.6 million research facility, completed in 1989, and a $5 million facility for strategic materials policy study that will be completed in 1991. These major research facilities were funded out of a national concern for the availability of strategic materials to the industrial economy of the free world. Strategic materials are essential in the production of high-temperature alloys, steel and stainless steel, industrial and automotive catalysts, and solid state electronic components used in computers. Research in the center is focusing on improving domestic mineral production and metal processing of strategic materials, exploration for new domestic and free-world supplies of strategic materials, evaluation of substitutes for strategic materials, development of recycling technology, and evaluation of existing laws and strategic materials policy.

### Mackay Mineral Resources Research Institute

The Mackay Mineral Resources Research Institute was established as a research division of Mackay School of Mines. The institute was established under a program sponsored by the U.S. Bureau of Mines. In 1982 Mackay School of Mines was selected to be one of four national centers for research in mining. The Generic Center managed under the institute is concentrating on mined land waste reclamation and is coordinating the research efforts of four other institutions on this problem. Other programs within the institute include research in critical and strategic mineral resource appraisal, development of new exploration methodologies, and geothermal research and engineering. The director of the institute reports to the dean of the School of Mines.

### Nevada Bureau of Mines and Geology

The Nevada Bureau of Mines and Geology is one of the public service divisions of the Mackay School of Mines. The bureau was established by an act of the legislature of 1929.

The principal purposes of the bureau are to assist the public in the proper development and utilization of Nevada's mineral resources, and to provide geoscience data to individuals, industry, and public agencies.

Field studies are made of mineral deposits and geologic formations throughout the state to develop information needed by prospectors and mining companies in their search for new deposits. Field, laboratory, and library studies are made of the geology of urban areas to provide basic data for agencies, engineers, environmentalists, and others who have responsibility for development planning. Reports pertaining to these activities are published or made available to the public by other means.

The bureau conducts cooperative programs with the U.S. Bureau of Mines and the U.S. Geological Survey, and conducts funded research programs for other governmental agencies. It is also the Nevada affiliate of the National Cartographic Information Service and supplies information on base maps and aerial photography. The director of the bureau reports to the dean of the School of Mines who oversees bureau activities.

### Seismological Laboratory

Established as a separate research division in 1974, the Seismological Laboratory has overall responsibility for instrumental studies of earthquakes in the Nevada region. The laboratory operates a statewide network of seismographic stations, and investigates the distribution of earthquakes, earthquake recurrence statistics, maximum earthquake magnitude, and problems related to seismic risk in Nevada. The laboratory publishes a series of bulletins, listing information on earthquakes analyzed for various periods of time, and serves as a repository of information and exchange of information on earthquake activity in Nevada and adjoining states. In addition to work of interest to the state, the laboratory carries out grant- and contract-supported research on seismic problems of national importance. The director of the Seismological Laboratory reports to the dean of the Mackay School of Mines.

## Financial and Administrative Services

The finance and administration division provides essential planning and operational services to the university community. It strives to enhance the instructional, research, and public service programs of the university by providing those services in a timely and useful manner. The six units that report to the vice president of this division are responsible for the following:

### Business Affairs

Business affairs is located in the Artemesia Building and is an organizational unit comprised of central services (mail, receiving, shipping, and stores), the College Inn, employee relations and benefits, University of Nevada, Reno Personnel Services, BCN Personnel Services, printing services, purchasing, real estate, and safety and loss control.

Business affairs provides services to the University of Nevada System's Business Center North institutions (the Chancellor's system units, Desert Research Institute, Northern Nevada Community College, Truckee Meadows Community College, the University of Nevada, Reno, and Western Nevada Community College).

### Central Services

Central services is located in the Central Services Building and provides mail, receiving, shipping, and stores services to the university.

The mail service includes distributing incoming and outgoing mail (including UPS, Federal Express, etc.) for the university and providing free distribution of intra-campus and intra-state agency mail and facsimile service. The receiving service includes receipt and delivery of all non-mail freight and packages. The shipping service includes the packaging and sending of all non-mail freight and packages. The stores service includes ordering, stocking, and delivery of commonly used items which are inconvenient to purchase off-campus, require lengthy delivery times, or result in savings by purchasing in bulk quantities.

### The College Inn

The College Inn is a 156-room hotel/residence/conference facility, with full food service capabilities, located immediately adjacent to the University of Nevada, Reno campus. The College Inn was secured by the university through a grant from the Fleischmann Foundation. It serves adult continuing education programs offered by the university, the National Judicial College and the National Council of Juvenile and Family Court Judges, and all other organizations, faculty, and staff of the University of Nevada System. The College Inn may be used, at a reduced rate, for both university and personal needs. For additional information, call 323-0321.

### Employee Relations and Benefits

Employee relations and benefits is located in the Artemesia Building and administers all employee benefits and assistance programs for all faculty and staff of units within the University of Nevada System's Business Center North. These programs include

retirement and group insurance plans, tax sheltered annuities, counseling and employee assistance programs, worker's compensation and safety programs, and related training programs, seminars, and workshops.

### Personnel Services

University of Nevada, Reno Personnel Services processes all personnel-related documents and maintains the official employee records for all university faculty. The ultimate responsibility for the academic program, however, lies with the vice president for academic affairs. The Business Center North Personnel Services office is responsible for processing all personnel-related documents and maintaining the official employee records for all classified employees. Both offices are located in the Artemesia Building.

### Postal Services

A branch of the U.S. Postal Service (University Station) is located on the university campus at the corner of Sierra and Artemesia. All usual U.S. post office services, except general delivery, are available, and mail boxes may be rented.

Students living on campus in residence halls must have a post office box to receive mail since mail addressed to residence halls cannot be delivered by the U.S. Postal Service and is returned to the sender. (Also see "Central Services.")

### Printing Services

Printing services, located in the Artemesia Building, is available to all faculty, staff, and students, and provides offset printing, photo-direct printing, high speed copying, typesetting, darkroom facilities, and bindery services.

### Purchasing

The purchasing department is located in the Artemesia Building and provides centralized buying services for the institutions in the University of Nevada System's Business Center North.

The purchasing department also processes all university insurance claims, provides for short-term risk insurance for special occasions, and the registration and licensing of all motor vehicles and trailers.

The property inventory section in the purchasing department maintains a computerized listing of all Business Center North equipment and handles the disposal of excess property for all BCN institutions.

### Real Estate

The Real Estate Department is located in the Artemesia Building. This office maintains the real estate records and an inventory of property owned by the Board of Regents.

The Real Estate Department handles the purchases, sales, rentals and leases of property for the institutions in Business Center North.

*The Stead Apartments:* One- and two-bedroom unfurnished apartments are available at Stead for married students who are enrolled full-time and married staff. Students with children are given preference. These apartments are managed by the Stead apartment manager, telephone 972-0781.

### Safety and Loss Control

The Safety and Loss Control Department is located in the Artemesia Building and directs the worker's compensation and employee safety programs for units within the University of Nevada System's Business Center North.

## Controller

The controller provides a system for financial reporting and accountability of all university and university-related funds and is responsible for collection, disbursement and custody of these funds.

Services provided include cashiering (fee assessment and collection, and other cash collections); accounts payable; payroll; sponsored project management and reporting; student loan disbursement and collection; accounting services for plant funds, endowment funds and auxiliary funds; and agency funds custodianship.

## Facilities Management

Facilities management is responsible for management of the university facilities. This includes facilities services, parking services, physical plant operations and maintenance, and scheduling services.

### Facilities Services

The Office of Facilities Services (784-6948) maintains the inventory of all university instructional and non-instructional space and prepares evaluative space information for the Facilities Planning and Management Board whose chief responsibility is campus master planning. The office also processes long-term space assignment requests made to the board and provides alternative emergency instructional settings.

### Parking Services

All members of the university community — students, faculty, and staff — are permitted to park their vehicles in specified areas on university property in accordance with the University Parking and Traffic Regulations. Vehicles must be registered and have official parking permits.

Meter parking, visitor parking, and parking for the handicapped are also available in designated areas.

The University Parking and Traffic Regulations, approved by the Board of Regents, governs all vehicles operated on campus. Vehicles parked in violation of the regulations are subject to citation and/or impounding.

Permits and parking information are available at the parking services department at 1305 Evans Avenue, (702) 784-4654, and in the Lombardi Recreation Building (second floor multipurpose room) during registration.

### Physical Plant

The Physical Plant Department provides services for operation and maintenance of the university's facilities and grounds. Planning, engineering, design and construction of new facilities and work is provided under the department. Building repairs and maintenance, heating, air conditioning, custodial services, key assignments, motor pool services, and utility services are available through the Physical Plant Department.

### Scheduling Services

The Office of Scheduling Services (784-6837) coordinates all off-campus and faculty staff requests for space utilization. The office also processes classroom changes after the add/drop registration deadline.

## Financial Services

Services provided by this office include special financial projections and analysis, assistance to campus departments in the man-

agement of their finances, assisting departments with the preparation of agreements and contracts, and monitoring of capital projects and their funding. The office also reviews agreements before approval by campus and/or system administrators.

## Lawlor Events Center

The Lawlor Events Center is a multi-purpose public assembly facility. It maintains a top quality, professional staff and is capable of accommodating university sponsored athletics, entertainment, educational and cultural events, as well as outside public and private events for which the facility is suited. The 12,000-plus seat center, which opened in the fall of 1983, has been designed and constructed with flexibility and quality in mind. Along with providing a home for Wolf Pack basketball, the center provides university students, staff, and area residents with entertainment, cultural and educational opportunities not otherwise available in the Reno/Sparks area. The center also brings in events which promote business and bring visitors to our community. For information on the Lawlor Events Center or event information call (702) 784-4659.

## Planning, Budget, and Analysis

The Office of Planning, Budget, and Analysis coordinates the development and refinement of the academic and fiscal planning of the university, and the development and allocation of its budget. It prepares the biennial budget request and the annual operating budget. It conducts studies which describe, analyze, and evaluate the operations and outcomes of the institution. The office serves as the staff to the university planning and budget team.

# Development

The vice president for development oversees the alumni relations, fund-raising, governmental relations, and public relations and information efforts of the university. The units involved in these efforts include the Alumni Association, the offices of Development and Alumni Relations, Government Relations and Economic Development, Communications, and the University of Nevada, Reno Foundation.

## Governmental Relations

The university maintains several governmental relations programs as one component of its public relations efforts. These programs involve state and national governments and are substantially assisted by community-based groups. Activities are designed to support the legislative efforts of the president and the Board of Regents to enhance support and funding for instruction and research. Major events include the Nevada Leadership Forum, Blue and Silver Dinner, and President's Round Tables. This office also coordinates the Legislative Relations Steering Committees for the community and faculty .

## Southern Nevada Office

This office coordinates alumni relations, student recruitment and development activities in southern Nevada. The office is located at 3100 W. Charleston, Suite 208, Las Vegas, Nevada 89102.

## Special Events

The Special Events Office designs and produces a variety of special events on campus, in the community, and elsewhere to address the university's public relations and fund-raising goals.

Some of these events include the annual Graduation Celebration, the Foundation Annual Banquet/William F. Harrah Lecture Series, and the Midby-Byron Distinguished Leadership Awards Dinner.

The Special Events Office also maintains the university's master invitation list, coordinates the university's master special events calendar and is available to assist colleges, schools, and departments with their special event planning. For further information, call (702) 784-4831.

## Alumni Association

The University of Nevada, Reno Alumni Association Inc., organized in 1895, encourages a lifelong relationship between alumni and their university and works to promote the welfare of the institution.

The association's activities include the operation of regional chapters throughout Nevada and other states, support of a variety of student activities, and development of programming in the field of alumni continuing education.

Officers and council members are elected annually during Homecoming weekend. Membership in the association is open to all graduates and those who attended the university for one semester or more.

The association offices are located in Morrill Hall on the Reno campus. For further information, write to the Alumni Office or call (702) 784-6620.

## Alumni Relations

Alumni Relations works closely with the Alumni Association representing the 35,000-plus graduates of the university who maintain contact. The office provides staff support for a variety of programs including: Homecoming, Alumni College, Senior Scholar Award, Golden Reunion, Graduation Reception, young alumni activities, and chapter development. The director coordinates the Alumni Travel Program and serves as the liaison between the association and the university.

Fiscal and budgetary responsibility for the association is maintained by the Alumni Relations Office.

For further information, or to update alumni files (address changes, name changes, etc.), call (702) 784-6620.

## Office of Communications

The Office of Communications is the liaison between the university and the publics it serves. The office is responsible for both on and off-campus communications, and is the central clearinghouse and authorized source of reference for commonly quoted university facts and figures. Located in Jones Visitor Center, this office is headquarters for the News Bureau, Publications and Graphics, the Speakers Bureau, and the university magazines, *Silver and Blue* and *Discovery*.

The News Bureau serves as a liaison between the campus community and the news media, disseminating university news through news releases and public service announcements to newspapers, magazines, radio, and television stations as well as educational and other professional publications throughout the United States. The bureau distributes a campus newsletter, *Campus Connections*, to all members of the faculty and staff, and provides institutional video and script support. Call (702) 784-4941 for more information.

Publications and Graphics coordinates the design and production of university publications, including brochures, fliers, posters, magazines, catalogs, newsletters, and other promotional materials. This office is charged with implementing the university's visual

and written style guidelines. Publications and Graphics is located in Ross Hall, Room 210. Call (702) 784-4959 for more information.

The Speakers Bureau, established in 1968, is a free public service which makes available the resources of the university system to organizations throughout the state. The bureau is comprised of faculty and staff from the university as well as members of participating community colleges, the Desert Research Institute, and the Nevada Historical Society who volunteer their time to present topics of interest to requesting groups and organizations. Call (702) 784-1583 for more information.

The university's quarterly magazine, *Silver and Blue*, is edited and published by the Office of Communications. It is distributed to alumni, benefactors, and other friends of the university, contains feature stories about current university projects and people, and reports on alumni achievements. Call the editor at (702) 784-4941 .

The Office of Communications also maintains the university's general information telephone lines: For more information about the University of Nevada, Reno or any of its programs or activities, call (702) 784-INFO. Nevada residents outside the Reno area can reach the university toll-free by calling 1-800-622-4UNR.

## University of Nevada, Reno Foundation

Established in May 1981, the foundation is the central fund-raising organization for all academic and public service programs at the university. The foundation is governed by a 60-member board of trustees made up of alumni, community leaders, business leaders, and other friends of the community.

The foundation is charged with the coordination, cultivation, solicitation and processing of all private funds and gifts donated to the university. In addition to its own accounting and computer services staff, the foundation also includes resource people who are available to all colleges, schools, and departments for consultation and assistance. The office oversees several major programs, including the annual fund campaign, the President's Associates program, major and planned giving, scholarship solicitations, and all special and capital campaigns.

Through the efforts of the staff, volunteers, and support from the community, the foundation is able to secure funding support to such areas as major endowed programs, scholarships, new equipment, buildings, libraries, the Alumni Association, the Graduation Celebration, Foundation Professorships, and the Faculty Travel Program. The University of Nevada, Reno Foundation is housed in Morrill Hall. Call (702) 784-6622 for more general information. Call (702) 784-1587 for Foundation Accounting Services.

## Dodd/Beals Fire Protection Training Academy

A comprehensive schedule of intensive training programs in flammable liquids and gases fire control is operated at the Stead Campus in coordination with the Western States Petroleum Association. The academy also offers up-to-date hazardous materials classes, curriculum including both classroom and hands-on training. The training is available to public fire service and petroleum industry personnel and offers not only classroom instruction but also field work on practical fire problems.

# Affiliated Organizations of the University

## Desert Research Institute

As a full-time environmental research and development organization, the Desert Research Institute (DRI) is the only one of the University of Nevada System's seven operating divisions which does not award degrees. However, the institute's faculty do support graduate student instruction and research supervision on the two university campuses. DRI's mission is to conduct research of importance to the state, the nation, the international scientific community, and in support of industrial needs and Nevada's economic diversification objectives.

Established in 1959, the Desert Research Institute currently conducts scientific investigations concerning atmospheric physics, air quality, water resources, archaeology, environmental and ecological responses to climatic change, and the development of technology in support of research applications.

Members of DRI's research faculty teach selected, technical subjects at the University of Nevada, Reno and the University of Nevada, Las Vegas, an arrangement that provides additional expertise in highly technical curricula without the corresponding full-time staffing requirements. Selected university graduate students are also hired to support DRI researchers on contracted projects, providing underwritten topics for theses and dissertations.

DRI receives more than 90 percent of its funding in the form of research grants and contracts (1991 estimated budget, $18 million). The state of Nevada funds the remaining amount to underwrite the salaries of the institute's core administrative staff. From time to time, various research efforts of importance to the state are also funded on an individual basis. DRI's president, the institute's chief executive officer, reports to the University of Nevada System Chancellor and to the Board of Regents.

The institute is currently staffed by approximately 300 fulltime professional scientists, technicians and support personnel located in DRI office and laboratory facilities at Stead and in the Dandini Research Park in Reno, and in Las Vegas, Boulder City and Laughlin in southern Nevada.

Each of DRI's five research centers concentrates on a distinct area of environmental science that complements and interacts with the research areas addressed by the other centers. In contrast to the traditional academic organization into classic disciplines, i.e., chemistry, physics, geology, mathematics, etc., each DRI center is a combination of the several scientific disciplines relevant to the overall topics being investigated. It is common for DRI research teams to be assembled from among several centers, and also at times from the faculties of the university campuses in Las Vegas and Reno and other universities, depending upon the nature of the task.

### The Research Centers

The five DRI centers are the Atmospheric Sciences Center, Biological Sciences Center, Energy and Environmental Engineering Center, Quaternary Sciences Center and Water Resources Center. Though they are based in Nevada, DRI research teams regularly travel throughout the U.S. and the world as projects require.

The *Atmospheric Sciences Center* has built an international reputation in the areas of cloud physics, air motions and weather modification research. Its scientists participate worldwide in projects ranging from the formational processes of Gulf and Atlantic hurricanes and High Plains hail suppression, to the development and application of weather modification techniques to augment the winter snowpack in the Sierra Nevada Range and elsewhere.

Pioneering basic research is conducted into the effects of cloud formation on global climates, ice crystal formation and boundary layer air turbulence. Parallel studies include the design, management and evaluation of cloudseeding efforts to increase precipitation. ASC also operates the federally funded Western Regional Climate Center, coordinating climatic research and data analysis for 11 Western states.

The *Biological Sciences Center* conducts research aimed at improving our understanding of the interactions within and among

environmental systems in the earth's biosphere for more effective management of biological resources. This is a broad focus encompassing global climatic change and the implications those changes have for environmental conditions in the intermountain West. With the anticipated development of an advanced controlled-environment research greenhouse, the center will expand experiments involving environmental simulation and modeling in cooperation with other DRI centers and related university departments.

The *Energy and Environmental Engineering Center* conducts research on the nature of air pollution conditions in urban settings as well as the relationship of urban air pollution sources with downwind rural air quality areas. The center has developed and applied advanced "source receptor" techniques to characterize air quality conditions in Las Vegas, Reno, Phoenix, Tucson, Denver, and central and southern California. The center's advanced instrumentation and air sampling capabilities have led to its involvement in national studies of acid deposition and to become the lead agency in the state of California's study of that problem.

A major new program area involves a ground-breaking effort to determine the influence of pollutant plumes from major southwest urban areas on the air quality of rural desert and mountain regions, particularly concerning the possible impacts on the scenic visibility of national parks and recreation areas.

The *Quaternary Sciences Center* focuses on the natural paleoenvironmental record of climatic change in the Western United States over the last 1.8 million years (Quaternary Period), and the more recent development of human cultures in arid lands. This research emphasizes an anthropological approach to historic, prehistoric, geologic and archaeological studies concentrated in the Western and Southwestern United States. The center's interdisciplinary program includes specialists in the fields of paleobotany, faunal analysis, geology, geomorphology, palynology, paleoclimatology, and climate modeling in addition to the core subjects of archaeology and anthropology.

Major ongoing projects include an examination of the technological change of Native Americans from a hunter-gatherer culture to agriculture in the American Southwest and cultural resources surveys and analyses in advance of industrial or governmental and disturbing activities to preserve and interpret the archaeological record. Other investigations involve studies of prehistoric and Neolithic societies in Jordan and Cyprus.

The *Water Resources Center* investigates the hydrologic, chemical, engineering, economic and legal aspects of water resources with regard to both quality and quantity. These investigations include development of computer simulation models used in planning, managing and evaluating groundwater flow, geothermal resources, hydroelectric applications and other water topics. The center has a strong water quality program examining the effects of radionuclide transport at the Nevada Test Site. A related program in the environmental pollution of groundwater seeks new techniques for detecting, identifying and containing hazardous wastes. Other research efforts examine existing water management systems and the feasibility of new management techniques for conserving or increasing water supplies and maintaining or improving water analysis. The center's facilities include an EPA certified water quality laboratory to support hydrogeologic, geochemical and biological studies, an isotope laboratory involved with groundwater recharge investigations, extensive computer facilities, field analytical equipment and technical library.

The Alessandro Dandini Research Park, a 470-acre tract overlooking the Truckee Meadows on Reno's northern boundary, contains the offices and laboratories of several Desert Research Institute centers, the institute's administration and the adjacent Truckee Meadows Community College. The park is planned as a site for private, corporate or government research groups or agencies able to collaborate scientifically with DRI and take advantage of the institute's expertise and facilities.

For further information about the Desert Research Institute, contact the President's Office, P.O. Box 60220, Reno, Nevada 89506, or call (702) 673-7311 in Reno or (702) 798-5771 in Las Vegas, Nevada.

## National College of Juvenile and Family Law

The National Council of Juvenile and Family Court Judges, founded in 1937, is the oldest and largest judicial membership organization in the country. The council is dedicated to improving the standards and effectiveness of the nation's juvenile and family courts through continuing judicial education, research, technical assistance and publications.

The council's headquarters and its training branch, the National College of Juvenile and Family Law, are located at the University of Nevada, Reno. Its research center, the National Center for Juvenile Justice, is located in Pittsburgh.

The National College of Juvenile and Family Law, the nation's largest training center for judges and other professionals in the juvenile justice system, conducts a variety of programs on campus for judges and court administrators from all parts of the United States, its territories, Canada, and several other foreign countries. In addition to the resident programs, the college also provides regional and state institutes across the nation. Since 1969, more than 102,000 juvenile justice personnel have participated in its continuing judicial education programs.

From its headquarters at the university's Midby-Byron National Center for Judicial Education, the council publishes books and several periodicals, including *Juvenile and Family Court Journal*, a quarterly journal devoted to the behavioral and legal problems of juvenile delinquency, the *Juvenile and Family Law Digest*, a monthly review of major court decisions affecting juveniles, and the *Juvenile and Family Court Judges Newsletter*, published eight times annually.

The council receives support through the generosity of corporations and foundations as well as local, state, and federal agencies. Past supporters include the Max C. Fleischmann Foundation, the United States Department of Justice, the Office of Juvenile Justice and Delinquency Prevention, the American Bar Endowment and a broad group of individuals concerned with the improvement of justice for children.

## The National Judicial College

The university is the academic home for The National Judicial College. This institution has the high purpose of improving the administration of justice by providing programs of judicial education and training for the nation's judges. An affiliate of the American Bar Association, the college offers formal classes covering such topics as evidence, sentencing, and judicial writing which are taught by judges and specialists from across the country. After class, judges also share ideas and experiences in informal discussion groups.

The college conducts resident, extension, special and innovative programs on a year-round basis. Resident sessions are of one to four weeks in duration, each year attracting some 1,700 state court trial judges, administrative law judges, special court judges, tribal judges, federal magistrates, court administrators and other court personnel. Nearly 700 foreign judges from 155 countries have received training, bringing the total to more than 37,000 judges who have completed courses both on and off the University of Nevada, Reno campus during the 27-year history of the college.

The college participates in the master of judicial studies degree program conducted by the university for trial judges.

# Federal Agencies

The Reno Research Center, Bureau of Mines, U.S. Department of Interior, is located adjacent to the campus of the university. This facility performs extractive metallurgy research and is headquarters for the bureau's state mineral officer for Nevada and California.

The U.S. Geological Survey (USGS), U.S. Department of Interior, is currently located in the School of Mines Building on campus. This facility supports the Basin and Range Province Research Program being conducted in a 12-state area.

Offices of the Agricultural Research Service, Economic Research Service, and Forest Service of the federal government are also housed on the Reno campus.

# Admission Information

## General Requirements

**Age:** Applicants for admission to the university must be at least 15 years of age.

**Diversity:** The university actively seeks women, nontraditional, minority, handicapped, and international student applicants. The university encourages diversity among its student population.

**Placement Tests:**[1] American College Test (ACT) or Scholastic Aptitude Test (SAT) scores are required for freshman admission to the university for use in evaluation, academic advisement, and proper course placement. Special testing arrangements may be made for handicapped applicants.

An applicant 25 years of age or older is exempt from the ACT/SAT requirement.

The Foreign Language and Mathematics Placement Tests are special examinations required prior to registration. Registration in beginning foreign language courses do not require placement testing.

**Admission Filing Dates:** Application forms must be submitted not later than July 1 with proper credentials for admission to the fall semester and December 1 for admission to the spring semester. Applications received after these dates will be processed on a first come, first served basis.

**Application for Admission:** Application forms are available in the Office of Admissions and Records. Each individual who is interested in attending the university is responsible for submitting complete credentials to the Office of Admissions and Records which become the property of the university and are not returnable. The following items are required:

1. A completed Application for Admission, dated and signed.
2. A nonrefundable $20 application fee.
3. An *official transcript*[2] must be sent directly from the high school.
4. If applying with advanced standing, a separate official transcript must be sent directly from each college or university attended whether credit was earned or not.
5. ACT or SAT scores, as specified.
6. Applicants must provide official documentation of immunization: measles, mumps, ruebella, diptheria/tetnus.
7. *International applicants* must submit the following additional credentials:

(a) Satisfactory scores on the Test of English as a Foreign Language (TOEFL) indicating an ability to speak, write, and understand the English language sufficiently to pursue full time study. The Test of Written English (TWE) is required for potential graduate teaching assistants.

(b) Adequate proof of financial responsibility or sponsorship by a reputable U.S. citizen or organization for all obligations while attending the university.

(c) A recently completed (within six months) medical history and examination conducted in the United States and signed by a United States medical doctor.

**Application for Resident Fees:** Individuals claiming eligibility for resident fees at the university are required to submit a completed application to the Office of Admissions and Records. Students registering for seven credits or more who have not proven resident status are charged nonresident tuition.

**Cancellation of Admission or Registration:** The university reserves the right to cancel the admission or registration of an individual whose attendance at the university, in the opinion of the appropriate administrative offices and the president, is not mutually beneficial to that person and to the institution.

Individuals who have registered at other educational institutions may *not* disregard such records and make application on the basis of their high school or selected college transcripts.

An ineligible applicant who gains admission to the university on the basis of incomplete or fraudulent credentials or misrepresentations in the written application for admission, shall have his or her:

- Admission and registration cancelled without refund of any fees; and
- Total credits rescinded that have been earned following such admission; and
- Future registration at the university prohibited.

The director of admissions and registrar is responsible for the verification of documents and credentials. If it is determined the student sought admission on the basis of incomplete or fraudulent credentials or misrepresentations in the written application for admission, the student is notified in writing of the director's intention to take the above action. The student has 10 days thereafter to reply in writing. The director then makes a determination and takes appropriate action, notifying the student in writing. The student may file a written appeal to the president within 10 days. The decision of the president is final.

## Early Admission

Provisional early admission consideration is given based upon an official six- or seven-semester transcript and ACT or SAT scores received in support of the application for admission.

All students accepted for provisional admission must submit a final official high school transcript indicating successful graduation and date of completion prior to registration at the university.

Students who are at least 15 years of age may be permitted to enroll as nondegree students in a maximum of six undergraduate credits per semester.

## Undergraduate Academic Requirements

### Admission to Bachelor's Degree Programs

The minimum academic requirements for admission to all undergraduate degree programs are the same. Specific programs may have additional admission requirements.

**High School Graduation:** Each applicant for admission to freshman classification must present satisfactory evidence of graduation from an accredited or approved high school. Graduates of nonaccredited or nonapproved high schools may be admitted on probation.

**Grade Point Average:** A minimum overall high school grade point average of 2.3 (A=4, B=3, C=2) or higher is required. All credit courses with grades are included in computing the average.

[1]The American College Testing Program (ACT), P.O. Box 168, Iowa City, Iowa 52243, and the Scholastic Aptitude Test (SAT), CN 6200, Princeton, New Jersey 08541-6200.

[2]Transcript Note: All academic records must be submitted in the English language. Applicants who are enrolled in other educational institutions at the time of application may submit incomplete transcripts and end-of-course grade reports, but official final transcripts of the work in progress must be submitted before the final admission status may be determined.

**High School Courses (Units) Required:** Specific courses (13.5 units), in addition to the graduation and GPA requirements:

*English* (4): emphasis on composition, rhetoric, and American, English and world literature.

*Mathematics* (3): includes algebra, geometry, trigonometry or advanced mathematics.

*Social Studies* (3): including world history and geography, U.S. history, economics, government, and law.

*Natural Science* (3): including biology, chemistry, and physics (with at least two years in a laboratory science).

*Computer Literacy* (1/2): understanding computers and their use.

**Approved Alternatives That Satisfy the High School Course Requirements:** The high school course requirement is waived for an applicant who satisfies one of the following:

- Graduation from high school with a GPA of 3.0 (B) or higher in the required academic courses, *or*
- Graduation from high school with a GPA of 2.5 (C+) or higher in the required academic courses *and* an ACT (enhanced) composite score of 21 or higher, or SAT combined score of 925 or higher.
- Transfer applicants with 15 or more acceptable semester credits in transferable general education courses with a cumulative GPA of 2.0 (C) or higher.
- Appeals: Students who are denied admission to the university may petition, in writing, to the director within 10 days of receipt of their denial letter. The Special Admissions' Committee will review the petition and make a determination of admissibility.

## Admission for International Students

The minimum academic requirements for international applicants are:

1. Official evidence of an educational level equivalent to graduation from an accredited American high school.
2. Evidence of above-average ability (B or higher) in an academic curriculum as verified by official transcripts or satisfactory test scores. Applicants who cannot submit official transcripts of record may obtain specific information upon request from the Office of Admissions and Records.
3. Applicants with advanced standing must submit evidence of above average achievement in their college-level courses.
4. All new international students must report to the international student adviser and the Intensive English Language Center (IELC) for an English placement test before registering. The center is located in the Mackay Science Building, Room 127, or phone 784-6075. Based on the results of that test, additional English language courses may be required of the student during the first semester on campus.

## Admission on Probation

**Freshman on Probation:** A Nevada resident who graduates from high school and satisfies the specific units required, and has *either* a high school GPA of 2.0 to 2.29 *or* an ACT (enhanced) composite student score of 21 or higher (or an SAT combined score of 925 or higher) qualifies for admission on probation.

A freshman admitted on probation receives good standing when 15 semester credits or more are earned at the university with a cumulative GPA of 2.0 or higher.

The freshman on probation classification does not apply to applicants transferring from other educational institutions.

## Admission to Advanced Standing

**Advanced Standing:** Admission with advanced undergraduate standing is granted to a student transferring from another accredited college or university provided the applicant meets two conditions. First, the applicant must be in good standing at the educational institution last attended; and second, official transcripts must be presented from each college or university attended showing an overall 2.00 GPA or above on all acceptable transfer credits. An applicant transferring to the university with less than 15 acceptable transfer credits is required to satisfy both the transfer and high school graduate admission requirements.

Applicants from accredited institutions ordinarily are granted credit for all work completed at the previous institutions, provided such courses are equivalent or comparable to those in the curricula offered at the university. Credit is evaluated by the Office of Admissions and Records and granted in accordance with established university regulations and the following guidelines:

1. The accreditation of the institution and the listing published in the current American Association of Collegiate Registrars and Admissions Officers "Transfer Credit Practices" govern the acceptance of transfer credit.

*Regionally Accredited Institutions:* Credits earned in institutions that are accredited, or are approved candidates for accreditation, by one of the six regional accrediting associations (MSACS, NCACS, NEASC, NWASC, SACS, WASC) recognized by the Council on Postsecondary Accreditation (COPA), are normally transferable provided the courses are comparable to those offered by the university, or other regionally accredited colleges and universities, and the courses are relevant to the student's academic program.

*Nationally Accredited Institutions:* Credits earned in specialized institutions offering associate, bachelor, or advanced degrees, that are accredited, or approved candidates for accreditation, by one of the *five* national accrediting associations (AABC, AICS, ATS, NATTS, NHSC) recognized by the Council on Postsecondary Accreditation (COPA), are evaluated on an individual course-by-course basis with transfer credit granted for those that are comparable to those offered by the university, or by other regionally accredited colleges and universities, provided the courses are relevant to the student's academic program. Joint approval of the dean of the college concerned, in consultation with the appropriate department chairman, and the director of admissions and registrar is required to grant transfer credit from these specialized institutions.

*Unaccredited Institutions:* Credits earned in U.S. institutions of higher education that are *not* accredited by one of the regional or national accrediting associations recognized by the Council on Postsecondary Accreditation (COPA), are *not* accepted in transfer by the university. The policies permitting advance course placement and the earning of credit for nontraditional learning provide adequate opportunities for the objective evaluation of knowledge acquired through a variety of learning experiences including military service schools.

2. Elective credit may be granted for individual courses which are not offered in the university program, provided the courses are clearly baccalaureate-level. Joint approval of the dean of the college and director of admissions and registrar is required.

3. The specific credit which may be applied toward satisfying degree requirements in the assigned college is determined by the adviser and/or dean of the college.

a. Sixty-four semester credits must be earned from a regionally accredited four-year educational institution.

b. Thirty-two upper division semester credits must be earned at the University of Nevada, Reno in residency.

c. Credit may be granted for lower-division courses from other institutions which are comparable to university upper-division courses. Such credit may be applied toward satisfying the individual college's upper-division credit or specific course requirements if approved by the dean of the college concerned.

d. Repeated credit is not allowed.

e. Graduates from the Federal Bureau of Investigation National Academy are granted a maximum of eight semester credits which are applicable toward the criminal justice program. Documentation is required for evaluation by the Office of Admissions and Records.

f. A summary of acceptable advanced-standing credits earned

at each previously attended institution, and the transfer admission grade point averages computed relative to the university grading system, are noted in the Student Information System (SIS). The credit and grade point totals earned at the University of Nevada, Reno are recorded separately.

**Correspondence Study and Continuing Education:** A maximum of 60 semester credits earned in acceptable correspondence study courses completed through a regionally accredited correspondence division [including U.S. Armed Forces Institute (USAFI)/Defense Activity for Nontraditional Education Support (DANTES)] and/or in extension or off-campus courses may be applied toward a baccalaureate degree.

# Credit for Nontraditional Learning

## Examinations

Five types of examinations are approved for earning university-level credit:

1. College Board Advanced Placement Examinations (CBAPE).
2. College-Level Examination Program (CLEP General and Subject).
3. ACT Proficiency Examination Program (ACT PEP).
4. National League for Nursing Placement Examination (NLN), Profile II, and Pharmacology.
5. National Occupation Trades and Industry Examination (NOCTI).
6. Special examinations administered by university departments.

The maximum number of credits that may be earned in any combination of these examinations is 60 semester credits for a bachelor's degree. Credit earned by examination does not apply toward satisfying the university resident credit requirement for graduation.

Each student is responsible for arranging to complete the various examinations and for requesting the official score reports to be sent directly to the university Office of Admissions and Records. Information regarding test dates, costs and registration may be obtained from Testing Services, University of Nevada, Reno, NV 89557, telephone (702) 784-4638 or by writing directly to the respective testing organizations:

**1. CBAPE, Box 23060, Oakland, CA 94623-2306**

*Advanced Placement* (AP) examinations are administered each May in the high schools, not at the colleges. High school students must make arrangements by January through their principals or AP coordinators to take the AP examinations.

The CBAPE institutional code for the University of Nevada, Reno to receive score reports is 4844.

**2. CLEP, Box 23060, Oakland, CA 94623-2306**

*College-level examinations* (CLEP) are administered by colleges only. Individuals may take these examinations during the third week of each month at any of the 700 test centers in the U.S., one of which is the University of Nevada, Reno. Individuals taking the college-level examinations should note that certain examinations require an essay in addition to the objective section.

**3. ACT PEP, Box 168, Iowa City, IA 52240**

Military personnel may contact the Base Education Center for test information.

The ACT institutional code for the University of Nevada, Reno to receive score reports is 2494.

**4. NLN Examinations, 10 Columbus Circle, New York, NY 10019**

National League for Nursing examinations (Profile 11) may be taken at a variety of selected sites. Please contact an adviser in nursing for more information.

The office of testing services is responsible for coordinating an annual evaluation of all revised and new national examinations with the departments concerned and reporting the results to the director of admissions and registrar for reference and publication. The evaluation status of any examination may be modified when there is adequate justification to change the amount of the credit to be granted.

It is the student's responsibility to request the score reports and essays as required to be sent to the Office of Admissions and Records.

## Special Department Examination

A regular, currently registered student in good standing who has the knowledge and skills taught in a university course may qualify to take an examination for credit subject to these regulations:

1. Credit may not be earned in a course which covers at an elementary level the subject matter of a more advanced course for which the student has already received credit.
2. Credit by special examination may not be attempted in a particular course more than once.
3. Credit by special examination may not be earned in a course the student has failed or audited until one calendar year after issuance of the final grade.

Each department is responsible for determining and identifying the specific course offerings that are appropriate for credit by examination and for providing information to students. Each special examination should be equivalent to the same quality, content and grading standard as applied to the examination administered to students who enroll in the course.

**Procedure:** A student desiring to earn credit by examination must initiate an application in the Office of Admissions and Records where it is reviewed to determine eligibility. Each authorized applicant must then obtain written approval to take the examination from the adviser, the dean of the college in which the student is registered and the chairman of the department offering the course. A $25 per course examination fee is payable to the controller. The completed application is submitted to the faculty member named by the department chairman to administer the examination.

Grading is on an S or U basis except that a required course in a student's major or minor may receive a letter grade from A to F upon the advance written approval of the adviser.

The final grade assigned and each completed examination must be filed in the Office of Admissions and Records by the instructor for recording to the student's permanent academic record where it is treated as any other grade. The grade must be filed prior to the last day of instruction for the student to receive credit for that particular semester. Each examination is retained in the Office of Admissions and Records where it may be examined by any faculty member.

**If additional information is needed,** specific questions regarding credit by examination policies and procedures should be directed to the Office of Admissions and Records.

## Noncollegiate Learning Experiences

Credit may be granted and a grade S assigned for selected courses or programs recommended in the *Guide to the Evaluation of Educational Experiences in the Armed Services* and the *National Guide to Credit Recommendations for Noncollegiate Courses* subject to the approval of the director of admissions in consultation with the dean of the college concerned.

## College Board Advanced Placement Examination (CBAPE)

These examinations are primarily for students who complete courses in high school. Upon receipt of an official score report from the College Board and a satisfactory essay when required, the Office of Admissions and Records grants credit as specified and assigns a grade of S for scores of 3, 4 or 5.

Those who successfully complete CBAPE examinations in French, German, Latin or Spanish satisfy the foreign language requirement in the College of Arts and Science.

An "e" means an essay is required along with the objective test.

| Examination | University Course Equivalent | Credit Granted |
|---|---|---|
| Art | | |
| History | None | 3 |
| Studio | ART 100 | 3 |
| Biology | BIOL 111 | 4 |
| Chemistry | CHEM 101, 102 | 8* |
| Computer Science A | C S 183 | 3 |
| Computer Science AB | C S 183, 283 | 6 |
| Economics | | |
| Macroeconomics | EC 101 | 3 |
| Macroeconomics | EC 102 | 3 |
| English (including essay) | | |
| English Language and Composition | ENGL 101, 102 | 3 or 6 e** |
| English Language and Composition | ENGL 291, plus 101 with an essay | 3 or 6 e*** |
| Foreign Languages | | |
| French, German, Spanish | | |
| Language | 203, 204 | 6 |
| Literature | 204, 295 | 6 |
| Latin | | |
| Vergil | 205, 209, 295 | 6 |
| Catullus-Horace | 205, 209, 295 | 6 |
| History | | |
| American | HIST 101**** | 3 |
| European | HIST 106 | 3 |
| Mathematics | | |
| Calculus A, B | MATH 215 | 4 |
| Calculus B, C | MATH 216, 310 | 8 |
| Music | | |
| Listening and Literature | None | 3 |
| Theory | None | 3 |
| Physics | | |
| B | PHYS 151, 152 | 6 |
| C (Mechanics) | PHYS 201 | 3 |
| C (Electricity and Magnetism) | PHYS 202 | 3 |
| Political Science | | |
| American Government and Politics | P SC 103**** | 3 |
| Comparative Government and Politics | P SC 211 | 3 |

*Credit awarded only after successful completion of the laboratory portion of CHEM 101 and 102 at the University of Nevada, Reno.

**With an objective test score of 3 or 4, three credits are granted for ENGL 101; with an objective test score of 5, six credits are granted for ENGL 101 and 102.

***With an objective test score of 3, three credits of ENGL 101 and three credits of ENGL 291 are granted.

****Does not satisfy the U.S. or Nevada Constitution requirements.

## College-Level Examination Program (CLEP)

Credit may be granted and a grade of S assigned upon receipt in the Office of Admissions and Records of an official score report showing completion of one or more general examinations with a score of 500 or above, or subject examinations with a score of 50 or above, supported by a satisfactory essay where specified.

The general examination(s) should be completed before an individual enrolls at the University of Nevada, Reno, and must be completed prior to achieving sophomore classification at the university. Subject examinations may be taken at any time. The University of Nevada, Reno's testing services tests on Mondays and Tuesdays of the weeks advertised in the CLEP Bulletin, and are located in Thompson Student Services Center, Room 105, 784-4638.

An "e" means an essay is required in addition to the objective test.

| Examination | University Core Equivalent | Credit Granted |
|---|---|---|
| *General:* | | |
| English Composition (including essay) | ENGL 101 | 3 e* |
| Humanities | None | 6 |
| Mathematics | MATH 105 | 3 |
| Natural Sciences | None | 6 |
| Social Sciences | None | 6 |
| *Subject:* | | |
| Biology | | |
| Biology | BIOL 103 | 3 e |
| Microbiology** | BIOL 251 | 4 e |
| Business | | |
| Introduction to Business Management | None | 3 |
| Introductory Accounting | ACC 201, 202 | 6 |
| Introductory Business Law | None | 3 e |
| Introductory Marketing | None | 3 e |
| Money and Banking | None | 3 |
| Economics | | |
| Introductory Macroeconomics | EC 101 | 3 |
| Introductory Microeconomics | EC 102 | 3 |
| Introductory Microeconomics and Macroeconomics | None | 6 |
| Chemistry, General | CHEM 101 or 201 | 4 e |
| Dentistry | | |
| Dental Materials | None | 0 |
| Oral Radiography | None | 0 |
| Tooth Morphology and Function | None | 0 |
| Education, History of America | None | 3 |
| English | | |
| American Literature | ENGL 241 | 3 e |
| American Literature I | ENGL 241 | 3 e |
| American Literature II | None | 3 e |
| Analysis and Interpretation of Literature | ENGL 291 | 3 e |
| College Composition (including essay) | ENGL 101 | 3 e*** |
| English Literature | ENGL 235 or 236 | 3 e |
| Freshman English (including essay) | ENGL 101 | 3 e*** |
| Foreign Languages | | |
| College French—Levels 1 and 2 | None | 3 |
| College German—Levels 1 and 2 | None | 3 |
| College Spanish—Levels 1 and 2 | None | 3 |

*General English Examination: Scores earned prior to October 1978 or after April 1986 require a satisfactory essay and a score of 500 to 639 to award three credits, or 640 or higher to award six credits which satisfies the University of Nevada, Reno English requirement. Scores earned from October 1978 through April 1986 require a satisfactory essay and a score of 610 to 749 to award three credits, or 750 or higher to award six creditswhich satisfies the University of Nevada, Reno English requirement.

**Examination discontinued in 1986.

***English Subject Examinations: With an objective test score of 64 or higher and a satisfactory essay examination, six credits are granted which satisfies the University of Nevada, Reno English requirement.

| Examination | University Core Equivalent | Credit Granted |
|---|---|---|
| History | | |
| Afro-American* | None | 3 e |
| American | HIST 101** | 3 e |
| American I: to 1877 | HIST 101** | 3 e |
| American II: 1865 to present | HIST 102** | 3 e |
| Western Civilization I: to 1648 | HIST 105** | 3 e |
| Western Civilization II: to present | HIST 106** | 3 e |
| Home Economics | | |
| Human Growth and Development | H EC 131 | 3 e |
| Mathematics | | |
| Calculus with Elementary Functions | MATH 216 | 4 |
| College Algebra | None | 3 |
| College Algebra-Trigonometry | MATH 115 | 5 |
| Trigonometry | None | 2 |
| Medical Sciences | | |
| Anatomy, Physiology, Microbiology* | None | 6 |
| Clinical Chemistry* | None | 4 |
| Head, Neck and Oral Anatomy | None | 0 |
| Hematology* | None | 4 |
| Immunohematology and Blood Banking* | None | 3 |
| Nursing | | |
| Behavioral Sciences for Nurses* | None | 0 |
| Fundamentals of Nursing* | None | 0 |
| Medical-Surgical Nursing* | None | 0 |
| Political Science | | |
| American Government | P SC 103** | 3 e |
| Psychology | | |
| Educational Psychology | None | 3 |
| General Psychology | PSY 101 | 3 e |
| Sociology, Introductory | SOC 101 | 3 e |
| Statistics** | MATH 251 | 3 e |
| Tests and Measurements | None | 0 |

*Examination discontinued in 1986.
**Does not satisfy U.S. or Nevada Constitution requirements.

## ACT Proficiency Examination (PEP)

Credit may be granted for selected PEP examinations completed with satisfactory scores. Upon receipt of an official score report, the admissions office grants credit as specified and assigns a grade of S for a standard score of 50 and above, or a letter grade of C or higher. The examinations may be taken at any time. They are offered on the first Thursday and Friday of February, May, June and November. Registration is required through the ACT PEP Registration Packet available in Thompson Student Services Center, Room 105, 784-4638.

| Examination | University Course Equivalent | Credit Granted |
|---|---|---|
| Business | | |
| Accounting: Level I | ACC 201-202 | 6 |
| Accounting: Level II | None | 0 |
| Accounting: Level III, Areas I, II, III | None | 0 |
| Business Environment and Strategy | None | 0 |
| Finance: Level I | None | 3 |
| Finance: Levels II, III | None | 0 |
| Management of Human Resources: Level I | None | 3 |
| Managment of Human Resources: Levels II, III | None | 0 |
| Marketing: Level I | None | 3 |
| Marketing: Levels II, III | None | 0 |
| Operations Management: Level I | None | 3 |
| Operations Management: Levels II, III | None | 0 |
| Statistics | EC 261 | 3 |

| Examination | University Course Equivalent | Credit Granted |
|---|---|---|
| English | | |
| Freshman English (including essay)* | ENGL 101, 102 | 3 or 6 e** |
| Shakespeare* | ENGL 271 | 3 e |
| Education | | |
| Corrective and Remedial Instruction in Reading | None | 0 |
| Educational Psychology | None | 3 |
| History of American Education* | E L 101 | 3 e |
| Reading Instruction in the Elementary School | None | 0 |
| History | | |
| African and Afro-American History | HIST 455 | 3 |
| Afro-American History*** | HIST 455, 456 | 6 |
| Nursing | | |
| Adult Nursing | None | 13 |
| Commonalities in Nursing Care, Areas I and A, II and B | None | 0 |
| Differences in Nursing Care, Area I, II, III | None | 0 |
| Fundamentals of Nursing | None | 0 |
| Health Restoration I | None | 0 |
| Health Restoration II | None | 0 |
| Health Support, Area I | None | 0 |
| Health Support, Area II | None | 0 |
| Maternal and Child Nursing, AA Degree | None | 0 |
| Maternal and Child Nursing, BS Degree | None | 10 |
| Nursing Health Care | None | 0 |
| Occupational Strategy/Strategies, Nursing | None | 0 |
| Professional Strategies | None | 0 |
| Psychiatric/Mental Health Nursing | None | 0 |
| Psychology, Abnormal | PSY 441 | 3 |
| Science | | |
| Anatomy and Physiology | None | 6 |
| Earth Science* | None | 3 e |
| Microbiology | None | 3 |
| Physical Geology | GEOL 101 | 3 |

*Examinations discontinued November 1987.
**With an objective test score of 50 or higher (or a grade of C or higher), and a satisfactory essay examination, six credits are granted which satisfies the university English requirement.
***Examination discontinued May 1988.

## National League for Nursing Placement Examination (NLN), Mobility Profile II

A total of 26 credits may be granted for NLN Mobility Profile II examinations completed with a decision score of 100 and/or an advising score of 70 percent. Upon receipt of an official score receipt, the Admissions and Records Office grants credit as specified and assigns a grade of S. The examinations may be taken at any time and scores are accepted for five years from the date of testing.

| Examination | University Course Equivalent | Credit Granted |
|---|---|---|
| Care of the Adult Client | None | 13 |
| Care of the Client During Childbearing and Care of the Child | None | 10 |
| Pharmacology in Clinical Nursing | None (satisfies the pharmacology requirement in nursing) | 3 |

The documentation required for evaluation by the Office of Admissions and Records includes:

1. A copy of the Report of Separation, DD214, or the DD295 for active duty personnel, and

2. An official transcript of the courses or program completed.

USAFI/DANTES courses completed by the group-study method may be accepted in accordance with the advanced standing regulations.

Credit is not granted for USAFI/DANTES courses completed by examination (nonenrolled), Military Occupational Specialties (MOS) training programs, or work experience. Credit for these types of learning experiences may be earned by special department examination.

## Graduate Admission Requirements

Any student who wishes to do graduate study must first be admitted to the university in either graduate standing or graduate special classification. Each applicant is responsible for filing the required credentials with the Office of Admissions and Records at least three weeks prior to the desired registration period to allow sufficient time for processing.

A University of Nevada, Reno graduate is eligible to attend as a graduate special without making formal application as stated. Such students may obtain a graduate special certificate from the Office of Admissions and Records prior to the first registration in this classification, if needed.

**Early Admission:** A student who has completed at least one quarter or semester in the final year preceding graduation with a baccalaureate or higher degree may apply for early admission to graduate standing.

Two final, official transcripts showing graduation must be received in the Office of Admissions and Records directly from the institution awarding the degree for each student granted early admission.

**General Requirements:** Each applicant must submit the following:

1. A completed Application for Admission, properly dated and signed.

2. A nonreturnable $20 application fee.

3. Graduate standing applicants must request each college or university attended to send *two* official transcripts directly to the Office of Admissions and Records. A University of Nevada, Reno graduate is not required to submit transcripts of the credit earned at the university.

4. Graduate standing applicants must submit Graduate Record Examination (GRE) scores (aptitude and advanced when required). *or* Graduate Management Admission Test (GMAT) scores for advanced degrees in business administration. GRE scores are required for economics.

5. Individuals claiming eligibility for resident fees are required to submit an Application for Resident Fees along with the other admission credentials.

6. International student applicants must submit satisfactory scores on the Test of English as a Foreign Language (TOEFL) and a recently completed (within six months) medical history and examination signed by a medical doctor.

7. Potential international graduate teaching assistants must submit the Test of Written English (TWE).

**Test Score Requirements:** Each student is responsible for arranging to complete the required examinations and for requesting the official score reports to be sent directly to the university Office of Admissions and Records. The institutional code for the university for these tests is 4844. Information regarding test dates, costs and registration may be obtained from Testing Services, Thompson Student Services Center, Room 105, University of Nevada, Reno, NV 89577, telephone (702) 784-4638 or by writing directly to the respective testing organizations:

1 **Graduate Record Examinations (GRE)**
Educational Testing Service (ETS)
C N 6000
Princeton, NJ 08541-6000

2. **Graduate Management Admission Test (GMAT)**
Educational Testing Service (ETS)
C N 6104 Princeton, NJ 08541-6104

3. **Test of English as a Foreign Language (TOEFL)**
Test of Written English (TWE)
Educational Testing Service (ETS)
Regular Service C N 6153
Princeton, NJ 08541-6153

Students who have tested at an earlier date and did not designate the University of Nevada, Reno to receive their score report(s) must request the proper ETS agency to forward an official score report directly to the Office of Admissions and Records. A score report fee is required by ETS.

**Academic Requirements:** The academic requirements for admission to graduate study are stated in detail in the Graduate School section of this catalog.

**Transfer Graduate Credit:** Each graduate standing student who plans to apply graduate credit earned at *another* institution toward an advanced degree at the University of Nevada, Reno must complete a Graduate Credit Transfer Evaluation Request form available in Admissions and Records. Results of the evaluation are distributed to the student, adviser and graduate dean for reference in program planning.

## Admission to Institutions within the University of Nevada System

Each individual who wishes to transfer to another institution within the university system is required to submit an application for admission, fee, and the supporting credentials directly to the appropriate admissions office in accordance with established policy.

Admission of the applicant and the acceptance of transfer credit are governed by the advanced standing regulations of the institution to which the application is submitted.

# Regulations for Determining Residency for Tuition

## Regulations for Tuition Charges

The Office of Admissions and Records is responsible for the determination of residence status for tuition purposes for students enrolled at the University of Nevada, Reno. An Application for Resident Fees must be submitted by each student claiming legal residence in Nevada. A recent Nevada high school graduate whose parents' permanent address is listed in Nevada is exempt from this procedure.

Information and application forms are available upon request in the Office of Admissions and Records.

The following regulations are Board of Regents' policy for all institutions in the University of Nevada System:

## SECTION 1. Purposes

It is the purpose of these regulations to provide uniform rules throughout the University of Nevada System and all member institutions thereof, in determining whether students shall be classified as in-state students or out-of-state students, for tuition purposes.

## SECTION 2. Definitions

1. The word *tuition* means a charge assessed against out-of-state students which is in addition to registration fees or other fees assessed against all students.

2. The term *bona fide resident* designates a person who resides in the state of Nevada with the intent of making it his true, fixed, and permanent home and place of habitation, having clearly abandoned any former residence and having no intent to make any other place outside of Nevada his home. When residence for a particular period is required in these regulations, this shall mean that the person has been physically present and residing in the state during all the period for which residence is claimed.

3. The words *he* and *she* shall apply to the female person as well as the male, unless the context clearly otherwise requires.

4. The word family means the father or mother of the student or the legal guardian of the student, if appointed by a court at least six months prior to the date of matriculation and for purposes other than avoidance of tuition.

5. The term *date of matriculation* is the date of the first day of instruction in the semester or term in which enrollment first occurs, except that for a student at the University of Nevada School of Medicine, the *date of matriculation* shall be the date that notice is sent that the student has been admitted to the medical school.

## SECTION 3: Tuition Charges

Tuition shall be charged to those persons classified as out-of-state students registering for seven credits or more in a given semester at any member institution of the University of Nevada System; however, that registration in Community College Division community service courses which are not state funded shall not cause tuition to be assessed, nor shall such enrollment be included in *date of matriculation* for evaluation of residency.

## SECTION 4. Rules for Determining Status

1. A person who is not classified as an in-state student under these regulations shall be classified as an out-of-state student.

2. All students whose families are bona fide residents of the state of Nevada shall be classified as in-state students.

3. For the purposes of determining tuition, a student who, at the date of matriculation, as defined in Section 2.5 of this chapter, is and has been a bona fide resident of the state of Nevada for at least six (6) months prior thereto, shall be classified as an in-state student.

4. An applicant for admission to the University of Nevada School of Medicine who has been a bona fide resident of the state of Nevada for at least six (6) months prior to the last day for filing an application for admission to the school (November 1 of each year) shall be classified as a Nevada resident for the purposes of being considered for admission to the University of Nevada School of Medicine.

5. A student who is a member of the Armed Forces of the U.S., stationed in Nevada, or whose spouse, parent, or guardian (as defined in the word *family*) is a member of the Armed Forces and stationed in Nevada, shall be entitled to classification as an in-state student.

6. A person who has attended a member institution of the University of Nevada as an in-state student may continue or return in that status without subsequent reclassification because of changed circumstances, unless he has abandoned his Nevada residence and established residence elsewhere.

7. When a student who has been classified as an out-of-state student becomes eligible for classification as an in-state student, such reclassification shall become effective at the next registration period.

8. All public school teachers who are employed full time by the school districts in the state of Nevada are classified as instate students.

9. All full-time teachers in private schools in the state of Nevada whose curricula meet the requirements of NRS 394.130 shall be classified as in-state students.

10. A student who matriculates as an out-of-state student and thereafter resides in the state while attending the university is presumed to be residing in the state temporarily for the purpose of attending school and not as a bona fide resident. The student may qualify for reclassification as an in-state student only if the presumption is rebutted by clear and convincing evidence that the student has resided continuously in the state of Nevada for a period of at least 12 months as a bona fide resident with the intention of making Nevada his true, fixed, and permanent home, having clearly abandoned his former residence and domicile and having no intention of making any other place outside of Nevada his residence and domicile.

11. A student who registers and enrolls but does not attend classes may, for purposes of these regulations, withdraw from the university and be deemed not to have matriculated. Any determination concerning his residence status will be voided until such time as he shall again apply for admission.

12. An alien student holding a permanent immigrant visa and otherwise meeting the requirements for in-state student status shall be classified as an in-state student. Alien students holding other types of visas shall not be classified as in-state students except as may be required by federal law upon due consideration of evidence of in-state residence.

13. A student who is attending the University of Nevada, Las Vegas or the University of Nevada, Reno through the National Student Exchange Program shall be entitled to classification as an in-state student for tuition purposes, and for tuition purposes only, during the time of the exchange. Time spent in Nevada while a student is on exchange shall not be counted toward satisfying the residence requirements as described in Section 4.3 above nor shall

such enrollment be included in the *date of matriculation* for evaluation of residency.

## GUIDELINES FOR DETERMINING CHANGE IN TUITION STATUS.

The following are guidelines to assist the University of Nevada System personnel in making determinations on applications for changes in tuition status under Section 4.10 of these regulations:

**Residence in Nevada While Attending Any Institution of the University of Nevada System:** A student attending any institution of the University of Nevada System who has matriculated as an out-of-state student is eligible for reclassification as an in-state student if the student has resided continuously in the state of Nevada for a period of at least 12 months and the student can present evidence of intention to become a bona fide resident:

a. Registering to vote in Nevada;
b. Obtaining a Nevada driver's license, if the student drives an automobile;
c. Registering in Nevada any vehicles owned by the student; and
d. Filing a Federal Income Tax return in Nevada.

If the student does not provide all of the evidence stated in paragraphs a through d above, the system will consider other convincing, independent evidence which the student may wish to present to prove intent to become a bona fide resident.

## SECTION 5. Application of Regulations

It is the intent of the Board of Regents to apply these regulations effective immediately. The application of these regulations shall not affect the status of any student now classified as an in-state student. Any person who is now classified as an out-of-state student, but who, under these regulations, is eligible for reclassification as an in-state student shall, upon application, become eligible for such classification at the time of the next registration period. No reclassification under these regulations shall give rise to any claim for refund of tuition already paid to the University of Nevada.

## SECTION 6. Determination of Status

Each member institution of the University of Nevada affected shall implement these regulations through the Office of Admissions and Records on each campus, under the direction of the president. The president of each member institution shall establish an appellate procedure, whereby the student may appeal decisions of the admissions office concerning tuition or his status as an in-state or out-of-state student to an appellate board, which will hear evidence and make a final determination. The student may appeal the decision to the appellate board within 30 days from the final determination by the admissions office. In the event the appeal is not taken within that time, the decision of the admissions office shall be final for that school term.

In determining whether a person is a resident of Nevada for tuition purposes, the appellate boards may consider such available evidence as may demonstrate permanent, bona fide residence in the state for purposes other than going to school. A person who leaves home from another state to attend an institution of the University of Nevada System with the intention of doing so as a student and remaining in the state until the student's education is completed does not acquire Nevada residency. The intention to remain permanently in the state even after the student's education is completed must be demonstrated.

The presentation by a person of one or more items of evidence as indicia of bona fide residence is not conclusive on the issue of residency. Instead, in making determinations on the question of residency, the appellate boards shall consider each such matter on case-by-case basis and shall give the evidence presented as indicia of residence the weight and sufficiency it deserves, after taking all available evidence into consideration.

## SECTION 7. Exceptional Cases

In exceptional cases, where the application of these regulations works an injustice to an individual who technically does not qualify as an in-state student, but whose status, either because of the residence of the student or his family is such as to fall within the general intent of these regulations, then the Appellate Board shall have the jurisdiction to recommend that such students be classified as in-state students. If the recommendation is approved by the president, the student shall be so classified. The intent of this provision applies only in the infrequent, exceptional cases where a strict application of these regulations results in an obvious injustice.

# Regulations for Reduced Nonresident Tuition

On January 26, 1988 the University of Nevada Board of Regents approved the following policy to be effective for the 1988 fall semester:

**Good Neighbor Nonresident Tuition Policy:** A graduate of a high school or community college, in a northern California county bordering on Nevada, may be charged reduced nonresident tuition when enrolling at the University of Nevada, Reno, Northern Nevada Community College, Truckee Meadows Community College or Western Nevada Community College. Furthermore, an individual who resides in a qualifying county, and who has maintained a legal bona fide resident status for a period of at least 12 consecutive months prior to the first day of the semester in which enrollment is sought, may also be charged reduced nonresident tuition.

The reduced nonresident tuition for approved applicants is $200 per semester. The policy is effective for each qualified student who is approved for admission and enrollment effective for the next semester. Students approved under this policy are ineligible for any claim for refund of nonresident tuition already paid to the University of Nevada, Reno.

The list of approved California counties includes: *Alpine, El Dorado, Inyo, Lassen, Modoc, Mono, Nevada, Placer, Plumas, and Sierra counties.*

Application forms are available upon request from the Office of Admissions and Records, Lower Floor, Clark Administration Building, or by calling the Office of Communications, (702) 784-INFO.

On February 23, 1990 the University of Nevada Board of Regents approved the following policy to be effective for the 1990 fall semester:

**Children of University of Nevada, Reno Alumni:** Children of University of Nevada, Reno alumni, who graduated with a baccalaureate degree, and who reside outside the state of Nevada, are eligible for reduced nonresident tuition of $200 per semester upon application when enrolling in undergraduate studies only at the university.

# The University Core Curriculum

Completion of the university's core curriculum is required of all undergraduate students. Core curriculum requirements DO NOT APPLY to transfer students who entered the university prior to the 1990 fall semester or to students who began transfer course work at the following University of Nevada System institutions prior to the 1990 fall semester: Community College of Southern Nevada, Northern Nevada Community College, Truckee Meadows Community College, Western Nevada Community College, University of Nevada, Las Vegas.

The university core curriculum consists of 33-36 credits, selected from the following seven areas of study (1) English, (2) mathematics, (3) natural sciences, (4) social sciences, (5) fine arts, (6) the western tradition, and (7) capstone courses.

## Core Courses

Students are responsible for keeping track of their progress throughout the core curriculum. It is strongly recommended that students meet with their academic adviser each semester prior to registering for classes. Classes completed at the university to satisfy core curriculum requirements must be taken for a letter grade.

See the Course Listings section of this catalog for course descriptions and prerequisites.

Core curriculum courses are listed below:

### 1. FIRST-YEAR WRITING COURSES (English)—three to six credits

Initial placement in first-year English courses is to be based on the pending ACT/SAT test scores and the university placement test.

| English Course | ACT English | SAT Verbal |
|---|---|---|
| ENGL 1 | 20 or below | 474 or below |
| ENGL 101 | 21 to 29 | 475 to 624 |
| ENGL 102, 102H* | 30 or above | 625 or above |

Successful completion of ENGL 102 satisfies the core curriculum requirement. Normally, students take ENGL 101 the first semester and ENGL 102 the second semester. ENGL 1 is for students who need extra practice in writing skills before starting ENGL 101 .

The core requirement in English must be completed before starting the western tradition sequence.

International students must complete ENGL 114 and any prerequisite.

| | Credits |
|---|---|
| ENGL 101—Composition I | 3 |
| ENGL 102—Composition | 3 |

### 2. MATHEMATICS—three credits

Placement is based on ACT or SAT scores, unless otherwise noted, and the university placement test.

| Math Course | Enhanced ACT Math Score | SAT |
|---|---|---|
| MATH 101 | 20 or below | 469 or below |
| MATH 105, 115 | 21 to 24 | 470 to 539 |
| MATH 211, 213, 215 or C S 183 | 25 or above | 540 or above |

| | Credits |
|---|---|
| MATH 105—Fundamentals of College Mathematics | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| MATH 211—Elements of Calculus | 3 |
| MATH 213—Calculus for Science | 3 |
| MATH 215—Calculus I | 4 |

### 3. NATURAL SCIENCES—six credits (at least one course from Group A. The second course may be taken from either Group A or Group B). Requirement met for science majors by the first two courses designed for majors in a science discipline.

| Group A | Credits |
|---|---|
| BIOL 100—Biology: Principles and Applications | 3 |
| BIOL 111—Organismal Biology | 3 |
| CHEM 100—Molecules and Life in the Modern World | 3 |
| CHEM 101—General Chemistry | 4-5 |
| CHEM 102—General Chemistry | 5 |
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| CHEM 202—General Chemistry for Scientists and Engineers | 4 |
| PHYS 100—Introductory Physics | 3 |
| PHYS 151—General Physics | 3 |
| PHYS 152—General Physics | 3 |
| PHYS 153—General Physics Laboratory (to be taken with PHYS 151 | 1 |
| PHYS 154—General Physics Laboratory (to be taken with PHYS 152) | 1 |
| PHYS 201—Physics for Scientists and Engineers I (to be taken with PHYS 204) | 3 |
| PHYS 202—Physics for Scientists and Engineers I (to be taken with PHYS 205) | 3 |
| PHYS 203—Physics for Scientists and Engineers III (to be taken with PHYS 206) | 3 |
| PHYS 204—Physics for Scientists and Engineers I (to be taken with PHYS 201) | 1 |
| PHYS 205—Physics for Scientists and Engineers II (to be taken with PHYS 202) | 1 |
| PHYS 206—Physics for Scientists and Engineers III (to be taken with PHYS 203) | 1 |

| Group B | Credits |
|---|---|
| ANTH 102—Human Origins and Evolution | 3 |
| B CH 150—Biotechnology: Science and the Citizen | 3 |
| GEOG 103—Geography of Man's Environment | 3 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| METE 151—Introduction to Materials | 3 |
| NUTR 121—Human Nutrition | 3 |
| PHYS 109—Planetary Astronomy | 3 |
| PHYS 110—Stellar Astronomy | 3 |
| PSY 103—Introduction to Psychology as a Natural Science | 3 |

### 4. SOCIAL SCIENCES—three credits

| | Credits |
|---|---|
| ANTH 101—The Human Experience | 3 |
| ANTH 200—People and Cultures of the Old World | 3 |
| ANTH 201—People and Cultures of the New World | 3 |
| ANTH 202—Introduction to Archaeology | 3 |
| EC 101—Principles of Macroeconomics | 3 |
| EC 102—Principles of Microeconomics | 3 |
| GEOG 106—Introduction to Cultural Geography | 3 |
| P SC 101—American Politics: Process and Behavior | 3 |
| P SC 211—Comparative Government and Politics | 3 |
| P SC 231—World Politics | 3 |
| PSY 101—Introduction to Psychology as a Social Science | 3 |
| SOC 101—Principles of Sociology | 3 |

### 5. FINE ARTS—three credits

| | Credits |
|---|---|
| ART 100—Visual Foundations | 3 |
| ART 116—Survey of the Art of Western Civilization I | 3 |
| ART 117—Survey of the Art of Western Civilization II | 3 |
| ART 121—Drawing | 3 |
| MUS 111—Concert Choir | 1 |
| MUS 118—Symphonic Band and Wind Ensemble | 1 |
| MUS 119—Symphonic Choir | 1 |
| MUS 120—Survey of Jazz | 3 |
| MUS 121—Music Appreciation | 3 |
| MUS 122—Masterworks of Music | 3 |
| MUS 125—University Orchestra | 1 |
| MUS 149—Studio Instrument/Voice for the Nonmajor | 1 |
| MUS 201—Music History I | 3 |
| MUS 202—Music History II | 3 |
| MUS 203— Music HistoryIII | 3 |
| MUS 204—Chamber Music for the Nonmajor | 1 |
| RPED 263—Aesthetics and Criticism of Dance | 3 |
| RPED 264—History of Dance I: Primitive-19th Century | 3 |
| RPED 265—History of Dance II: 20th Century | 3 |
| THTR 100—Introduction to the Theatre | 3 |
| THTR 110—Theatre: A Cultural Context | 3 |
| THTR 118—Orientation to Performing Theatre | 3 |
| THTR 221—Interpretation | 3 |

*Honors level.

## 6. THE WESTERN TRADITION—nine credits

All three western tradition courses are required. W T 201 must be taken first. W T 202 and 203 may be taken in any order. W T 203 satisfies the U.S. and Nevada constitution requirements.

| | *Credits* |
|---|---|
| W T 201—Foundations of Western Culture AND | 3 |
| W T 202—The Modern World AND | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |

## 7. CAPSTONE COURSES—six credits

The last two courses in the university core curriculum should be taken in the senior year. Two required capstone courses build upon the core curriculum and courses taken in the major. They focus on ethical and substantive issues, problems and themes that affect the world community, analysis of different cultures and traditions, or issues relating to science and society. Contact your academic adviser for additional courses.

| | *Credits* |
|---|---|
| ANTH 390—The Heritage of Early Civilization | 3 |
| ANTH 440—History of Anthropology | 3 |
| C J 411—Comparative Criminal Justice Systems | 3 |
| EC 463—Economic History of Europe | 3 |
| EC 464—Economic History of the United States | 3 |
| EC 481—History of Economic Doctrines | 3 |
| FLL 450—Hispanic Women's Literature in Translation | 3 |
| GEOL 451—Summer Field Geology | 3 |
| H P 403—World Architecture | 3 |
| MGRS 462—Business and Society | 3 |
| MGRS 488—Strategic Management and Policy | 3 |
| MINE 472—World Mineral Economics | 3 |
| MUS 321—Exploring World Music | 3 |
| P SC 414—Government and Politics in East Asia | 3 |
| P SC 415—Government and Politics in Latin America | 3 |
| P SC 417—Government and Politics in China | 3 |
| P SC 431—Holocaust and Genocide | 3 |
| P SC 435—International Political Economy: North-South Relations | 3 |
| P SC 436—International Human Rights | 3 |
| P SC 460—Politics and Literature in the 20th Century | 3 |
| W S 440—Gender, Science and Technology | 3 |

# Registration and Records

## Period of Registration

Instructions and the specific dates for registration are published in the class schedule which is available in the Office of Admissions and Records prior to the beginning of each semester. *Fees are due according to the instructions each semester in the schedule of classes. Registrations will be cancelled for nonpayment of fees.*

**Returning Students:** Students returning to the university after an absence of one or more semesters are required to submit a registration application by July 1 for the fall semester or December 1 for the spring semester so that proper registration forms may be prepared.

Each individual who attends another educational institution since last enrolling at the university must submit official transcripts from each school attended whether credit was earned or not.

An ineligible student who is approved for registration on the basis of incomplete or fraudulent credentials or misrepresentations in the written application for registration, will have his or her:

- registration cancelled without refund of any fees paid; and
- credits rescinded that have been earned following such readmission; and
- future registration at the university prohibited.

The director of admissions and registrar is responsible for the verification of documents and credentials. If it is determined the student sought registration on the basis of incomplete or fraudulent credentials or misrepresentations in the written application for registration, the student is notified in writing of the director's intention to take the above action. The student has ten days thereafter to reply in writing. The director then makes a determination and takes appropriate action, notifying the student in writing. The student may file a written appeal to the president within ten days. The decision of the president is final .

**Penalty for Late Registration:** A regular student enrolling for seven credits or more (or equivalent) after instruction begins is charged a late registration fee.

**Clearance of Accounts:** A student whose record indicates a delinquent indeptedness to the university is not permitted to register, or receive a transcript of record, certification of enrollment, or diploma.

## Advisement for University Course Requirements

**Planning and Scheduling Classes:** Prior to registration, students should seek academic advisement from their college adviser.

**Required Courses:** (Please refer to the University Core Curriculum section of this catalog.)

*Authorized exemptions:*

1. An ACT English standard score of 29 or above (or SAT verbal scores of 600 or above), verified by a satisfactory written composition administered and evaluated by English department personnel, qualifies a student for exemption from ENGL 101 and placement in 102. Credit is not awarded for ENGL 101 as a result of this advanced placement.

2. The English requirement may also be satisfied by: (1) a CBAPE examination in English with a score of 3, 4, or 5. (2) a CLEP general examination in English composition with a score at the 92nd percentile or higher, (3) a CLEP subject examination in college composition or freshman English with a score of 64 (92nd percentile) or higher, (4) an ACT PEP examination in freshman English with a score of 50 or higher, or a grade of C or higher, (5) satisfactory completion of a special department examination, or by (6) acceptable transfer credit equivalent to ENGL 102. Each examination *must be supported by a satisfactory written essay.*

Each student is expected to complete the university English requirement during the freshman year so that the knowledge acquired can be applied to the remaining courses in the degree program.

**English as a Second Language (ESL):** All undergraduate students for whom English is not the native language are required to complete the Test of English as a Foreign Language (TOEFL) for placement within the ENGL 111, 112, 113, 114 course sequence. A TOEFL score of 500 or higher is required for placement in ENGL 111; a score of 550 or higher is required for placement in ENGL 113. A demonstrated proficiency in English by the satisfactory completion of ENGL 114 or the equivalent is the university requirement for graduation.

International undergraduate students must register in the proper English course each semester until the ENGL 114 requirement is satisfied.

International graduate teaching assistants must achieve an acceptable score on the Test of Written English (TWE).

**Mathematics:** Each student must complete three credits of 100-200 level (University of Nevada, Reno) mathematics at the 105 course level or higher to satisfy the requirement for graduation. Courses excluded are MATH 173, 174, 210, and 480. Courses that meet the core curriculum requirement are MATH 105, 115, 211, 213, and 215.

The mathematics requirement may also be satisfied by earning three credits in the examinations offered by ( I) CBAPE, (2) CLEP, general and subject, (3) special department examinations, or (4) by receiving equivalent transfer credit in comparable mathematics courses.

## Registration

Registration instructions appear each semester in the schedule of classes which may be obtained from the Office of Admissions and Records.

**Credit Load:** The maximum number of credits a student may take per semester with the approval of the assigned faculty adviser is 21 undergraduate or 16 graduate. Noncredit courses are considered as credit equivalents. Any exception requires the advance written approval of the dean of the student's college. A graduate student must obtain the approval of the graduate dean.

**Addition of Courses:** A student may add courses or change sections up to the close of the late registration period. Exceptions may be made after this date by the dean of the college for individual cases involving illness, accident, or similar emergencies.

*Audit to Credit:* An auditor changing to a credit basis must do so before the end of the late registration period.

**Dropping a Course:** A student may drop a course during the first *eight* weeks of the semester without a grade or teacher approval.

The dropping or changing from grade to audit of individual courses during the ninth week through the end of the semester is not permitted. Under extenuating circumstances, including illness, accident or similar medical emergency or other hardship cases, as described in the incomplete policy, the student has the options of either requesting an incomplete in one or more courses, or withdrawing from the university. In both cases, the student has to follow the rules described in the appropriate sections of the catalog regarding the incomplete and withdrawal from the university policy.

*Credit to Audit:* A student may change from credit to audit during the first *eight* weeks of the semester. Changes are not acceptable after the end of the eighth week.

**Withdrawal from the University:** A student wishing to withdraw for the semester from the university should obtain the proper form from admissions and records and contact the Office of the Special Assistant to Vice President for Student Services, Thompson Student Services Center, Room 105, for an exit withdrawal interview and assistance in finalizing the withdrawal from the university. When the student obtains the required signatures and files the completed form in admissions and records, the withdrawal is official. A student who leaves the *university without officially withdrawing receives a failing grade in all courses.*

**Change of College, Major, or Adviser:** A student may change college, major, or adviser by obtaining the proper form from admissions and records (or the dean of the college) and securing the required signatures. The completed form must be filed in admissions and records before it becomes final.

Each student must satisfy the course requirements of the college or major to which transfer is made.

**Removal from a Major:** A student may be removed from a major at any time if found in violation of university conduct regulations or of the ethical standards of a professional program in which the person is majoring. This action must be approved in writing by the dean of the college concerned upon recommendation of the department faculty and filed with the registrar.

**Change of Name:** A student may change name by completing a change of name form in admissions and records and submitting a copy of appropriate supporting documentation.

**Cancellation of Courses:** The university reserves the right to cancel any course where the enrollment is insufficient to warrant offering the course.

**Satisfactory/Unsatisfactory:** A baccalaureate student may earn a maximum of 30 semester credits in courses graded on an S/U basis, subject to the approval of each individual college.

1. A transfer student may earn a maximum of one-fourth of the remaining credits at the university on an S/U basis providing the total does not exceed university policy.
2. A transfer student with more S/U credits than allowed by university policy is ineligible for additional S/U registration, except for required courses offered on an S/U basis only.
3. Each course that is taken to satisfy a university requirement must be completed with a regular letter grade.
4. Each college is responsible for determining the total number of credits earned with grades of S, P, or Cr and the specific courses (transfer, elective, or required) which are acceptable toward a degree in that college within the limits of the university maximum.
5. Each course that is approved for S/U grading *only is* so designated in the university catalog for reference.
6. Credits and grades recorded in accordance with the satisfactory/unsatisfactory policy are applicable toward meeting graduation requirements but are excluded when calculating the grade point average.

*Procedure:* Each student is responsible for indicating the S/U grading option at the time of registration for each course approved by the adviser.

The instructor assigns an S or U grade to each student so registered.

## Categories of Students

**Regular:** An individual who is admitted to a degree program is defined as a *regular* student and is classified according to the total number of semester credits completed.

A *regular* student may enroll either full-time or part-time for any given semester.

**Nondegree:** An individual who is not admitted to a degree program is defined as a *nondegree* student. Anyone who is 15 years of age or over, may register nondegree. A nondegree student may register in a maximum of six undergraduate-level semester credits (or equivalent) in classroom instruction in one semester. This includes students in noncredit courses and those registered as auditors. Although there is no limit to the number of credits that may be earned as a nondegree, a maximum of 32 semester credits is acceptable toward a baccalaureate degree.

All *nondegree* students are governed by university regulations, including suspension and disqualification, and are encouraged to seek official admission at the earliest possible date.

Nondegree students may also register in courses offered through Continuing Education and Correspondence Study.

**Auditor:** A student who wishes to enroll for no credit may register as an *auditor* with the approval of the department offering the course. While no credit or grade may be earned, auditors may, at the discretion of the teacher, have the same class privileges as other students.

An auditor whose performance in class is considered unsatisfactory may be dropped by filing in the Office of Admissions and Records a written authorization signed by the instructor, department chairman, and dean.

## Classification of Students

**Undergraduate:** Regular students are classified by the Office of Admissions and Records based upon the number of semester credits completed:

| | |
|---|---|
| Freshman | 29 credits or less |
| Sophomore | 30-59 credits |
| Junior | 60-89 credits |
| Senior | 90 credits or more |

Junior or senior classification is usually required for a student to register in courses numbered 300 through 499.

**Graduate:** Regular students are classified at the time of official admission as either graduate special (for those not seeking a degree) or graduate standing (for those in graduate degree programs).

## Full-Time and Part-Time Students

**Undergraduate:** Regular students who register for 12 credits or more in a given semester are defined as full-time. Those registering for 11 credits or less are defined as part-time.

**Graduate:** Regular students registered for nine credits or more are defined as full-time. Those enrolled in eight credits or less are part-time.

**Nondegree:** Nondegree students are limited to a maximum of six undergraduate credits or equivalent of classroom instruction per semester.

# Grades and Examinations

## Grades and Marks

A, the highest grade, is given for work of exceptional quality. Each credit earned with a grade of A carries four grade points.

B is awarded for better than average work. Each credit earned with a grade of B carries three grade points.

C represents average work. Each credit earned with a grade of C carries two grade points.

D is the lowest passing grade for which credit is allowed—one grade point for each credit earned.

F means failure and receives no credit or grade points. Failed courses count as credits attempted.

S and U indicate satisfactory or unsatisfactory performance in courses offered with this grading option, noncredit courses, and completed graduate courses involving thesis or dissertation. An S indicates achievement equivalent to an A, B, or C for undergraduate courses; U represents D or F performance. For graduate courses, an "S" indicates achievement equivalent to an A or B; U represents C, D, or F performance. Neither S nor U is assigned a grade point value.

AD indicates audit and is given when a student registers in a course for no credit.

W signifies the dropping of a course, or withdrawal from the university, with passing grades and is not included in the grade point average. After the first eight weeks of the semester, an F is given to each student who is failing at the time of dropping a course or withdrawing from the university.

I is a neutral mark and means INCOMPLETE. An I is given when a student is performing passing work, but for some uncontrollable reason is unable to complete the course requirements during the instructional period. An I is excluded from grade point average computation.

An I given prior to the 1990 fall semester and not made up within one calendar year from the date of issuance remains an I indefinitely. Credit may then be earned only by registration and the successful completion of the course.

Effective 1990 fall semester, to be considered for an I, each student is responsible for initiating a Request for Incomplete form and providing adequate evidence of their uncontrollable reason to the instructor prior to the assignment of final grades. Non-attendance, poor performance or requests to repeat the course are unacceptable reasons for an I.

Acceptable student requests for an incomplete require the instructor to indicate the work needed to complete the course and the approximate grade of the student at the time the I is given on the form. Department chairman approval is required prior to the instructor's filing of the completed form with their final class list. An assigned incomplete not accompanied by an approved Request for Incomplete form is unacceptable; an F will be recorded.

Marks of I are automatically changed to F if they are not made up by the last day of the next regular semester (Summer Session excluded). Students are not permitted to graduate with an outstanding incomplete issued under this policy.

An extension of an Incomplete for one semester may be requested. A completed and approved Request for Incomplete form must be filed in the Office of Admissions and Records by the instructor at least two weeks prior to the end of the I expiration semester.

An incomplete is made up if the student completes and submits the outstanding course requirements to the instructor before the end of the next regular semester following the semester in which the incomplete was earned. The instructor is responsible for reporting the final grade and acquiring the approval of the department chair and dean on the Grade Report for Incomplete form prior to filing in the admissions and records office.

IP signifies a course in progress such as a master's thesis or doctoral dissertation. This grade is reserved for special courses which require more than one semester to complete. Students may not graduate with grades of IP on their record.

NR signifies that an instructor has failed to assign a grade to a student. This grade is assigned by the registrar until the proper grade is determined. Students may not graduate with grades of NR on their record.

**Repeat:** Students may repeat a maximum of 12 lower-division credits. The course(s) must be repeated during the next regular semester in which the course is offered and the student is enrolled. The most recent grade earned will be used in the grade point calculation. Previous grades remain on the transcript. Students who wish to take advantage of this option must file an application for repeat in the Office of Admissions and Records.

Other university courses may be repeated to gain additional grade points. The number of credits are added to those attempted but no additional credits are earned.

## Grades and Grade Point Average

**Examinations:** Each instructor is responsible for the proper evaluation of each enrolled student throughout the instructional period.

**Final Grades:** Each instructor is responsible for determining and submitting final grades to the chairman of the department concerned who, in turn, files them in admissions and records where they become a part of the official records of the university. The final grades shown on the student's grade report are considered final unless the student notifies the registrar within six months of the date of issuance that an error has occurred.

**Grade Point Average:** The grade point average (GPA) is determined by dividing the sum of the grade points earned by the total number of credits attempted for a regular letter grade. I, AD, W, NR, IP, S, and U are excluded in the computation of the GPA.

# Grade Changes and Appeals

**Changing a Final Grade:** After the final grades are filed in admissions and records, a grade may normally be changed only to correct a clerical error. For these changes, the instructor must file in admissions and records a completed Change of Grade form approved by the chairman of the department and the dean of the college.

**Appealing a Final Grade:** A student may appeal a final grade in a course by filing an Intent to Appeal a Grade form with the chairman of the department concerned within 20 days of issuance of official grades by the registrar. Failure to file the proper forms within the specified deadlines results in the student forfeiting the right to appeal that grade. Appeal forms and specific regulations are available upon request in admissions and records.

**Appealing Grades Received for Improper Withdrawal:** Under certain circumstances, a student who does not withdraw from the university in accordance with official procedures may appeal the

grades received for that semester. The appeal procedure applies *only to emergency or hardship situations defined as follows:*

1. Personal illness or accident involving extended hospitalization, or

2. Sudden and unexpected departure from the area involving the inability to return to the university, e.g., death in the immediate family, induction to military service.

The appeal must be made for all of the course work in the semester in question and must be made within six months of the issuance of final grades unless the student can demonstrate incapacity beyond that date.

It is the student's responsibility to support the appeal with written, documented evidence, such as an official hospital record, to substantiate the hardship claimed. In addition, if the date of departure from the university came after the free drop period, the student must also provide documented evidence from each instructor that he/she was passing each course listed on the record for that semester.

A student who meets the specified criteria and elects to file an appeal must submit a written statement and the supporting documentation to the director of admissions and registrar. The appeal is then reviewed by the college dean.

**Academic Renewal:** Under certain circumstances, an undergraduate may petition the registrar for academic renewal. If the petition qualifies, the student may have a maximum of two consecutive semesters of course work disregarded in all calculations regarding academic standing, grade point average, and eligibility for graduation. If summer work is to be included in the work to be disregarded, then a five-week summer term shall count as one-half semester.

Eligibility for academic renewal shall be subject to the following conditions:

1. At the time the petition is filed, a minimum of five years shall have elapsed since the most recent course work to be disregarded was completed.

2. In the interval between the completion of the most recent course work to be disregarded and the filing of the petition, the student shall have completed a minimum of 15 credits of course work at an accredited institution of higher education with a minimum grade point average of 2.50 on all work completed during that interval. Courses taken during this interval may be repeats of previously attempted college work.

The petition to be filed by the student shall specify the semester(s) or term(s) to be disregarded. If more than one semester or term is to be disregarded, those shall be consecutive, completed within two calendar years, with no intervening enrollments at the universty.

If the petition qualifies under this policy, the student's permanent academic record shall be suitably annotated to indicate that no work taken during the disregarded semester(s), even if satisfactory, may apply toward graduation requirements. However, all work will remain on the academic record, ensuring a true and accurate academic history.

**Academic renewal may be effected once during a student's academic career and applied to the first undergraduate degree only.**

# Academic Recognition

**Distinction at Graduation:** Each student who graduates with a GPA of 3.75 or higher receives the bachelor's degree with High Distinction, or with Distinction if the GPA is between 3.5 and 3.74, provided these additional requirements are satisfied:

- Ninety-six (96) semester credits or more are earned in courses graded A through F.
- Sixty-four (64) semester credits or more are earned in residence at the university in courses graded A through F.
- Transfer students must satisfy the GPA requirement at the university and have a combined transfer-university GPA of 3.75 or higher for High Distinction, or 3.5 to 3.74 for Distinction.

**Honors at Graduation:** The requirements to graduate in the Honors Program are:

*Cum laude, magna cum laude,* or *summa cum laude* is awarded to a graduating baccalaureate degree student who completes the honors program and all university, college and major requirements, with the specified GPA (both in the major and overall), based upon at least 96 credits in courses graded A through F: *cum laude:* GPA of 3.5 to 3.69; *magna cum laude:* GPA of 3.7 to 3.89 with grade of A on senior honor thesis; *summa cum laude:* GPA of 3.9 or above with grade of A on senior honors thesis.

A minimum of 64 semester credits or more must be earned in residence at the university in courses graded A through F. Each transfer student must satisfy the university requirements and have a combined transfer-university GPA that satisfies the minimums specified.

Completion of the honors program requires earning 18 or more honors points with at least nine being in major courses numbered 300 and above. For additional information, refer to the Honors Study Program in the Interdisciplinary and Special Programs section of this publication.

**The Gold Medal:** Awarded annually at Commencement, the Gold Medal for scholarship is given to the graduating senior who has achieved the highest undergraduate GPA while completing 120 semester credits or more in regularly graded (A, B, C, D, F) courses involving classroom instruction at the university .

# Undergraduate Academic Standards

**Class Conduct:** A student may be dropped from class at any time for negligence or misconduct upon recommendation of the instructor and with the approval of the dean.

**Grade Point Deficiency:** An undergraduate student is deficient when less than 2 grade points are earned for each credit registered excluding those completed with grades of I, AD, W, NR, IP, S, or U. Deficiency in grade points endangers academic standing and leads to the penalties described in the following sections on probation, suspension, and disqualification.

A baccalaureate degree student may not earn credits or grade points in university courses numbered below 100 to apply toward a four-year degree or to remove a negative grade point deficiency.

## Probation

**Conditions:** An undergraduate student is placed on academic probation at any time the following occur:

1. The cumulative GPA is below 2.0.

2. The GPA for each of two consecutive semesters is below 2.0 even though the cumulative average is 2.0 or above.

3. The GPA for any semester is below 1.0.

**Restriction:** The credit load of a student on probation is determined in consultation with the assigned faculty adviser and, when necessary, the dean of the school or college.

**Release from Probation:** An undergraduate student who has reduced the deficiency to a 2.0 GPA on the cumulative record is no

longer on probation. A student who had an overall 2.0 GPA or above at the time probation occurred is off probation at the end of the semester in which a 2.0 average or above is obtained.

## Suspension

**Conditions:** An undergraduate student deficient 15 or more cumulative grade points at the end of any semester is suspended from the university. If the class preparation, attendance, or progress of a student toward a degree is deemed unsatisfactory, the student may be suspended from the university at any time.

**Penalty:** A suspended student may not register during *the fall or spring semester in any university course which involves classroom instruction* for credit. Noncredit or audit enrollment is permitted.

**Requirements for Readmission:** To qualify for readmission, an undergraduate student must earn a minimum of six or more acceptable semester credits if on first suspension, or 12 or more acceptable semester credits if on second suspension, with a 2.5 GPA or above. These credits may be earned in correspondence study, university summer session, or at another regionally accredited educational institution. Courses which are not acceptable as a basis for readmission are those (1) in which credit has already been earned, (2) failed previously, (3) completed for audit, (4) which are nonbaccalaureate and nontransferable. The university suspension and disqualification regulations do not apply to a suspended student until official readmission occurs.

**A student seeking readmission following first suspension from the university who has** not attended the university for a period of five (5) years or more and who does not meet the stated readmission requirements, may be considered on the individual merit of each case by the director of admissions and registrar. Readmission under this procedure requires the joint approval of the appropriate academic dean.

A student who is readmitted after suspension is on probation. Second suspension occurs whenever the GPA at the end of any semester is less than 2.0 and the total grade point deficiency is 15 or more.

**When the grade point deficiency is reduced to minus 14 or less, the regular probation and suspension rules apply.**

**Readmission Procedures:** A student under academic suspension may apply for readmission whenever the credit and grade requirements are satisfied as stated. An application for readmission must be submitted to the director of admissions and registrar by June 15 to be considered for the fall semester or December 1 for the spring semester.

If the student has attended other educational institutions after being suspended from the university, official transcripts must be submitted for evaluation.

Applications for readmission are available upon request from the Office of Admissions and Records in Clark Administration Building.

## Disqualification

**Conditions: A student readmitted after a** second academic suspension is on probation. Disqualification occurs whenever the undergraduate GPA at the end of any semester is less than 2.0 and the total grade point deficiency is 15 or more. When the grade point deficiency is reduced to minus 14 or less, the regular probation and disqualification rules apply.

**Penalty:** A disqualified student may register only as an auditor or in a noncredit course. After a period of two years from the date of disqualification, the student may apply for readmission by filing a letter of appeal in admissions and records. Each case is considered on its own merits, and no individual case is considered as establishing a precedent.

If the student's appeal is upheld, registration for credit is authorized in Summer Session, or correspondence study, at the university. Upon completion of 12 or more acceptable semester credits with an overall GPA of 2.5 or above, the student qualifies for readmission on probation.

# Graduate Academic Standards

Each graduate student is subject to the academic standard regulations published in the Graduate School section of this publication.

Graduate special students who are suspended because of graduate credit grade point deficiencies may register in *undergraduate courses only.*

# Requirements for Graduation

**Catalog:** A student may elect to graduate under the degree requirements of the year of admission and registration, the year of acceptance to a major in which the student is graduating, or the year of graduation, but not a combination of these. In the case of reentry after an extended leave of absence of more than five years, a student may use the requirements of the year of re-entry, the year of acceptance to the major in which the student is graduating or the year of graduation, but not a combination of these. When course offerings or prerequisites within the academic major have changed, the major department shall determine acceptable alternatives.

UNS community college students may use the catalog in effect the year of admission to the community college—provided admission to the university is within a five-year period of time from initial enrollment in a baccalaureate-level program at the community college.

Students who matriculate to the university beginning fall semester 1987, or who elect to graduate under the 1987-88 catalog or later, must satisfy the mathematics graduation requirement as specified in the Advisement for University Course Requirements Section.

Degrees, diplomas, or certificates may not be granted unless all requirements are fulfilled. A degree, diploma or certificate that is awarded in error, or upon fraudulent claims, will be withdrawn immediately and the student record corrected accordingly.

**Academic Requirements:** In order to graduate, students are required to have a minimum cumulative GPA of 2.00, including all postsecondary course work attempted. In addition, a University of Nevada, Reno GPA of 2.00 or higher is required. This includes all courses repeated and excludes those courses resulting in marks of AD, I, NR, IP, S, U, and W (Audit, Incomplete, Not Reported, In Progress, Satisfactory, Unsatisfactory, Withdrawal). Additional academic requirements may be established by the dean of an individual college.

**Course Requirements (For students entering the university prior to fall 1989 semester):** In addition to the courses specified by each school or college, university course requirements in constitution (United States and Nevada), English, mathematics, natural science, and social science or humanities must be satisfied by each candidate for a degree. Specific course information is available in each student's college dean's office.

The three-credit natural science course, and the three-credit social science or humanities course, are determined by the individual college from which the student is graduating.

Credits earned by examination are applicable, except for the United States and Nevada Constitution requirement, which must

be satisfied by the completion of an appropriate course. A single course may satisfy only one university requirement in English, mathematics, natural science, and social science or humanities.

Any course offered for credit by the university may be used to fulfill degree requirements, provided the course is the proper level and is acceptable by the dean of the college concerned as a part of the student's approved program of study. Mere accumulation of credits does not assure fulfillment of requirements for a degree.

**Each first-time freshman student entering the university, beginning with the 1989 fall semester, and thereafter, must satisfy the university core curriculum along with the college, department and major requirements for graduation.**

**Resident Credit Requirements:** A candidate for a bachelor's degree at the University of Nevada, Reno must complete 32 upper-division credits in residence. Students who have completed the residency requirement and have no more than 12 credits remaining for degree completion may petition to graduate in absentia. Students must obtain permission from their college dean. The total number of transfer credits allowed toward the degree must not be exceeded.

Authorized exceptions to this rule are: preprofessional students who complete three years or more of approved resident credit at the university may transfer a maximum of 32 semester credits of satisfactory work from an accredited professional school to apply toward a bachelor's degree in their designated major, *provided* all department, college, and university requirements for graduation are satisfied.

A prephysical therapy student who completes the required 96 credits of prephysical therapy curriculum, with the last 40 credits in approved residence at the university, may complete the remaining 32 credits by the satisfactory completion of a 12- to 24-month certification course from an approved school of physical therapy.

Credit earned as an approved part of a degree program through the Institute of European Studies (IES), the National Student Exchange (NSE), and the University Studies in the Basque Country Consortium (USBCC), is exempt from the resident credit regulations.

**Application for Graduation:** During the registration period *two* semesters before the expected date of graduation, each candidate for a bachelor's degree is required to submit a completed Application for Graduation in duplicate to the assigned faculty adviser for approval and forwarding to the dean of the college. The dean of the college retains the application for reference until the beginning of the final semester and then forwards the approved application to admissions and records within the ten-day filing period.

An undergraduate or graduate application which is submitted to the adviser after the first ten days of the final semester is assessed a late application fee. The late fee is in effect until February 15, June 15, or October 15 in the respective filing period in which graduation is planned. An application filed after these dates *is not* acceptable for that graduation period.

A candidate who does not graduate on the expected date must *resubmit a new application and pay the application fee.*

## Bachelor's Degrees and Credit Requirements

A minimum of 124 semester credits are required to graduate with a bachelor's degree from the University of Nevada, Reno. The individual schools and colleges may require additional credits as specified in the listing of Bachelor's Degrees Offered and Credits Required.

## Second Undergraduate Degrees

A student may earn a second bachelor's degree provided all specified requirements are satisfied.

A candidate for a second degree must earn a minimum of 32 additional upper-division credits in residence after receiving the first degree and must satisfy the specific course requirements prescribed by the school or college concerned.

Under certain circumstances, a student may be approved to pursue two different bachelor's degrees simultaneously subject to the same requirements specified for a second degree provided the dual or second degree has a different name. Refer to the name listing of the different degrees offered. Each student must complete and file a dual or second degree declaration form in admissions and records supported by a copy of the additional degree program as approved by the department adviser and dean of college concerned.

The regular application for graduation and fee payment procedures apply for each degree sought.

## Dual Undergraduate Majors

A student may elect to complete two majors within the requirements of one bachelor's degree program. The request to plan a second major must be made to the assigned faculty adviser prior to the student's junior year so the second major program can be properly approved and planned in consultation with the appropriate department and dean. Upon approval, each student must complete a dual major declaration form and file in admissions and records along with a copy of the approved second major program. Upon completion of all requirements, the two majors are listed on the application for graduation for approval by the adviser and dean prior to filing in admissions and records.

## Undergraduate Minors

Each department offering an approved major, or any university interdisciplinary committee or board, may propose a minor for official program approval. A minor requires a minimum of 18 credits including nine or more upper division.

The program requirements for each approved minor are specified in the college and department sections. A student completing the requirements must list the minor on the application for graduation for approval by the adviser and dean prior to filing in admissions and records. The minor is recorded when all graduation requirements are satisfied.

## Undergraduate Thesis

Whenever a thesis is required for an undergraduate degree in any department, school, or college of the university, and such thesis is to be filed in the university.

## Advanced Degrees

For professional and graduate degrees, see the Graduate School section in this catalog.

## BACHELOR'S DEGREES OFFERED AND CREDITS REQUIRED

| | Credits Required |
|---|---|
| **Agriculture—** | |
| Bachelor of Science (B.S.) | 128 |
| Bachelor of Science in Veterinary Science (B.S. in Vet. Sc.) | 128 |
| **Arts and Science—** | |
| Bachelor of Arts (B.A.) | 128 |
| Bachelor of Arts in Criminal Justice (B.A. in C.J.) | 128 |
| Bachelor of Fine Arts (B.F.A.) | 128 |
| Bachelor of Music (B.M.) | 128 |
| Bachelor of Science (B.S.) | 128 |
| Bachelor of Science in Chemistry (B.S. in Chem.) | 128 |
| Bachelor of Science in Geography (B.S. in Geog.) | 128 |
| **Business Administration—** | |
| Bachelor of Arts (B.A.) | 128 |
| Bachelor of Science in Business Administration (B.S. in Bus. Ad.) | 128 |
| **Education—** | |
| Bachelor of Arts in Education (B.A. in Ed.) | 128 |
| Bachelor of Science in Education (B.S. in Ed.) | 128 |
| **Engineering—** | |
| Bachelor of Science in Civil Engineering (B.S. in C.E.) | 130 |
| Bachelor of Science in Electrical Engineering (B.S. in E.E.) | 132 |
| Bachelor of Science in Material Science and Engineering (B.S. in M.S. and E.) | 135 |
| Bachelor of Science in Engineering Physics (B.S. in E.P.) | 132 |
| Bachelor of Science in Mechanical Engineering (B.S. in M.E.) | 129 |
| **Human and Community Sciences—** | |
| Bachelor of Arts | 128 |
| **Journalism—** | |
| Bachelor of Arts (B.A.) | 128 |
| **Medicine—** | |
| Bachelor of Science (B.S.) | 128 |
| Bachelor of Science in Medical Sciences (B.S. in Med. Scs.) | 128 |
| **Mines—** | |
| Bachelor of Science in Chemical Engineering (B.S. in Chem. E.) | 134 |
| Bachelor of Science in Computer Science (B.S. in C.S.) | 130 |
| Bachelor of Science in Geology (B.S. in Geol.) | 128 |
| Bachelor of Science in Geological Engineering (B.S. in Geol. E.) | 138 |
| Bachelor of Science in Geophysics (B.S. in Geophys.) | 130 |
| Bachelor of Science in Metallurgical Engineering (B.S. in Met. E.) | 134 |
| Bachelor of Science in Mining Engineering (B.S. in Min. E.) | 134 |
| **Nursing—** | |
| Bachelor of Science in Nursing (B.S. in Nurs.) | 128 |
| **Interdisciplinary—** | |
| Bachelor of General Studies (B.G.S.) | 124 |
| Bachelor of Science (B.S.) | 128 |

# Transcript of Record

Upon the written request of eligible students and the payment of the proper fees, the Office of Admissions and Records issues official transcripts of the permanent records. (See Fees and Expenses section of this catalog for transcript fee payment instructors and statement on payment of accounts.)

Transcripts of record do not show grades or credit earned on work in progress until the official close of the respective semester or registration period. Transcript orders must be placed in advance of the date needed to provide adequate time for processing.

# Regulations for Student Records

## Confidentiality and Release of Information

The confidentiality and security of student educational records are of primary importance to the university.

As amended, the Family Educational Rights and Privacy Act of 1974 insures that eligible students have the right to inspect and review educational records, files, and other data; to waive the right of inspection and review of confidential letters and statements of recommendation filed since January 1, 1975; to challenge the content of educational records to insure that it is not misleading or inaccurate; to preclude any or all directory information from being released. Student access is not permitted to the financial statements of parents; confidential statements and recommendations filed prior to January 1, 1975; records which the student has waived the right to inspect; records of instructional, supervisory, and administrative personnel; records of the law enforcement unit of the university, which are kept separate from educational records, maintained solely for law enforcement purposes and available only to law enforcement officials of the same jurisdiction; records which are created and maintained by a physician, psychiatrist, psychologist, or other recognized professionals or paraprofessionals acting or assisting in a professional or paraprofessional capacity; or records of the university which contain only information relating to a person after that person is no longer a student. Requests for review of educational records are processed within 45 days of submittal

The university does not allow access to, or the release of, educational records or other personally identifiable information without the written consent of the student except that the university must disclose information to students requesting review of their own records and to authorized governmental officials or agencies for audit and evaluation of state and federally supported programs. The university may disclose, without a student's written consent, educational records or other personally identifiable information to full-time university employees having authorized access; to the director of admissions and registrar and/or appropriate officials of another school or school system in which the student intends to enroll; to people or organizations providing student financial aid; to accrediting agencies engaged in accrediting functions; to parents of a student whose status as a dependent has been established according to Internal Revenue Code of 1954, Section 152; in compliance with a judicial order or lawfully issued subpoena; to authorized officials in connection with an emergency, if knowledge of the information is necessary to protect the health or safety of a student or other people. The written consent must be signed, dated, and include the birth date of the student. The written consent must specify the educational records to be disclosed, the purpose or purposes of the disclosure, and the party or parties to whom the disclosure may be made.

Directory information is considered public and may be released without written consent unless specifically prohibited by the student concerned. Data defined as directory information include student's name, address (refers to either local or permanent), telephone number, date and place of birth, major field of study, participation in officially recognized activities and athletics, weight and height of athletic team members dates of attendance, degrees and awards received, and the most recent previously attended educational agency or institution. In general, directory information *is not* available until after the end of each registration period.

*A student may restrict the publication of information which appears in the fall semester campus directory, and the release of directory information, by completing the proper section on the registration form, or by notifying the Office of Student Relations, located in Jot Travis Union, Room 104, immediately following registration each semester.*

Each office in which the educational records of students are located maintains a record of requests and releases of personally identifiable information.

## Retention and Disposition

The maintenance, retention, and disposition of documents relative to student educational records are governed by institutional policy.

A listing of documents and disposition schedules by specific office includes:

### Admission and Records

1. The permanent academic records of students are retained indefinitely.

2. Applications for admission and/or readmission, transcripts issued by other institutions, applications for resident fees, military service documents, undergraduate admission evaluations, advanced standing admission evaluation, including CBAPE, CLEP and ACT-PEP, changes of college, major or adviser and pertinent correspondence are retained for one year following graduation or one year after the last date of attendance.

3. The admission files of students who do not register, are disapproved or are incomplete, changes of registration, withdrawal forms, transcript requests, and disciplinary action notices are retained for one year.

The fee for document reproduction is $2 per copy. Policy prohibits reproduction of transcripts and similar documents issued by other educational institutions.

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# Fees and Expenses

All fees assessed are subject to change by the Board of Regents. The Board of Regents uses the Western Interstate Commission for Higher Education (WICHE) average rates of member states for the primary guide to establish tuition and fees. Every effort is made to keep the fees as low as possible and still provide the desired level of service.

## Payment of Accounts

A student or former student having a delinquent account with the university is not permitted to register, receive a transcript of record, certification of enrollment, or a diploma.

## Application Fee

People making application for admission to the university are charged a fee of $20, which is not refundable nor applicable to any other fee. The fee is payable through the Cashier's Office, Ross Hall.

## Registration Fees

The registration fee for undergraduate-level courses (001-499) is $49 per credit. Graduate-level courses (500-799) are $66 per credit. Exceptions to this are medical school students and people 62 years of age and older. Summer fees are published in the summer school publications. Continuing education fees vary by course and program. Specific charges are available upon request from the continuing education office.

## Tuition for Nonresidents

Tuition of $1,800 per semester is charged undergraduate and graduate students (excluding four-year medical students) registered for seven or more credits who are nonresidents of Nevada. This is in conformity with Sections 10.020 and 396.540, Nevada Revised Statutes. Each student is responsible for providing documentary proof of Nevada residence on the application provided through the Office of Admissions and Records. This fee is in addition to the per credit registration fee. Tuition of $200 per semester is charged to nonresident students who are approved under the "Good Neighbor" policy.

## Four-Year Medical Program

The registration fee for medical students is $2,530 per semester. Nonresident students are charged tuition of $5,995 per semester in addition to the registration fee.

## Fees for Senior Citizens

Individuals 62 years of age or older are permitted to register for credit or as auditors in any course without fee except as noted below. Lab fees and special instruction fees, however, are not waived. Such registration does not entitle a person to any privileges usually associated with registration, e.g., student association membership, health service, or intercollegiate athletic tickets.

Enrollment in Summer Session or off-campus credit courses (independent study by correspondence and field study programs excepted) and in noncredit continuing education courses is permitted for one-half the regular registration fee. Reduced fee benefits are always subject to programs being otherwise self-sustaining .

Nondegree students who are native speakers of a foreign language may be permitted to register without fee for credit or as auditor in literature courses in that language.

## Late Registration Fee

Students are expected to complete registration during the designated period and are assessed a fee if late. The fee is $5 for each day to a maximum of $25 for the fifth day or later. The late registration fee is applicable only to undergraduate and graduate students registered for seven credits or more during the fall and spring semesters.

In the event the university does not provide adequate time for registration, the registrar may defer the assessment of this fee one day. This decision is made during the final hours of the scheduled registration period.

## Student Associations

All students registered for seven or more credits are members of Associated Students of the University of Nevada (ASUN) as undergraduates and Graduate Student Association as graduate students.

## Student Health Center

All students may pay an optional fee of $40 per semester and be entitled to the services offered by the Student Health Service. A $10 late fee applies to those who pay the optional fee after the end of the late registration period. The same services are available to any student's spouse and at the same rates. Payment of the Student Health fee is required to purchase the supplemental accident and health insurance coverage.

## Accident and Health Insurance

An accident and health insurance plan is available to all students who pay the health service fee. Coverage can be purchased at registration or at the Cashier's Office. Further information about the insurance plan is available at the Student Health Center.

## Admission to Intercollegiate Athletic Events

All undergraduate students registered for seven or more credits are entitled to admission to intercollegiate athletic events pursuant to regulations established by the ASUN and the Athletic Department.

# Refund of Fees

## Registration Fees

1. 100 percent of registration fees are refunded for net credit load reductions made on or before the last day of registration.

No refund of registration fees is granted for courses dropped after the last day of late registration.

2. 100 percent of registration fees are refunded for withdrawal from the university completed by the last day of registration. For withdrawals after the last day of late registration and prior to the sixth calendar week of instruction, a 50 percent refund of fees is granted. No refund is granted thereafter.

## Nonresident Tuition

1. 100 percent of nonresident tuition is refunded for net credit reduction to six credits or less or total withdrawal from the university on or before the last day of late registration.

2. No refund of nonresident tuition is granted for courses dropped after the last day of late registration.

3. A 50 percent refund of nonresident tuition is granted for total withdrawals from the university completed after the last day of late registration and prior to the end of the sixth calendar week of instruction. No refund is granted thereafter.

## Dates of Refunds

Refunds of registration fees and nonresident tuition are issued near the end of the first six weeks of instruction.

## Insurance and Special Fees

1. The optional hospital and accident insurance premium is nonrefundable but remains in force for the duration of the policy.

2. Refund of course related special fees are prorated on the basis of actual usage. Authorization for a refund of special fees must be originated by the department chairman.

# Refunds for Exceptional Circumstances

Upon presentation of documentation to the special assistant to the vice president for student services, Thompson Student Services Center, Room 105, and approval of the vice president for student services, a full refund of the registration fee and nonresident tuition is given upon official withdrawal at any time during the first eight weeks of the semester in the following instances:

1. Induction of the student into the U.S. Armed Forces.

2. An incapacitating illness or injury which prevents the student from returning to school for the remainder of the semester.

3. Death of student.

4. Death of spouse, child, parent, or legal guardian of the student.

No refund is made if withdrawal is after the eighth week, regardless of circumstances.

# Grant-In-Aid and Accounts Receivable

Each student is expected to pay all assessed fees during registration unless the student is entitled to a grant-in-aid, elects the deferred payment plan, or makes arrangements, prior to registration day, with the Controller's Office for an accounts receivable procedure.

# Deferred Payment Option

Deferred payment is available to students whose fees are $280 or more. Special course fees, the health center fee, and accident and health insurance are not deferrable. A part of the residential hall and food service fees may also be deferred. Approximately one-half (1/2) of the total due is payable upon registration. The balance is due and payable not later than Friday of the sixth week of instruction. This option is available during the fall and spring semesters only. Any unpaid balance on a deferred fee payment becomes a student accounts receivable on the due date and is treated as an official fee hold for future registration and transcript privileges. A penalty fee of $10 per $100 (or fraction thereof) is charged on the deferred balance not paid by the due date.

# Payment by Personal Checks

Personal checks are accepted in payment of fees or bills due the university. The university does not furnish counter checks and checks altered in any way are not accepted. A $15 collection fee is assessed for any check returned unpaid by the bank. Such checks must be made good within ten calendar days after notification or suspension procedures are instituted.

# Payment by Credit Cards

MasterCard or VISA are accepted in payment of registration and housing fees only. Payment must be made in person.

# Special Instruction Fees

The fees assessed for specialized instruction depend entirely upon current costs and are required for:

1. Courses requiring equipment, facilities, or materials not available on the university campus; for example, bowling, golf, or certain field courses.

2. Private instruction in music and similar arts.

3. Noncredit courses, conferences, workshops, postgraduate professional seminars, and similar educational offerings.

4. Personal expenses of students incurred in connection with field trips or laboratories.

# Graduation Fee

Each student who graduates with a bachelor's, master's, professional, or doctor's degree, or receives an education specialist certificate, is required to pay a $15 graduation fee.

# Transcript of Record Fee

A fee of $2 must be paid in advance for each transcript of record. The fee is payable through the Cashier's Office, Ross Hall.

## Other Fees

American College Testing Program (ACT) examination, $25 if taken at a time other than national test dates; special examination fee, $25 per course; SOAR orientation fee, $20 for students, $15 for parents and family members, $5 per child under 16; Placement Office fee for opening placement files, updating, or reactivating credentials, $10, Placement Office fee for computer use, $15; late application for graduation, $5.

## Housing and Food Service Annual Fees

### Housing

The housing fees for the 1990-91 academic year are listed for information. Fees are pending final approval.

Double occupancy—$2,130 per person per year, plus a refundable damage security deposit of $100 per semester.

A limited number of small single and larger private rooms are available at a higher rate.

Continued residence hall and meal plan services are contingent upon good conduct and prompt payment of fees as delineated in the housing and food service agreements.

### Meal Plans

Students who live in residence halls are currently required to purchase one of the meal plans. The 1991-92 annual rates are pending Board of Regents approval. (In 1990-91 the 20-meal-per-week plan cost $1,350 per year.)

Fifty-five percent of the two-semester rate for housing and food service is payable for the fall semester and 45 percent is payable for the spring semester. For the spring semester only agreement, the rate is 50 percent of the total.

### College Inn

The annual room and board rates for 1991-92 are pending approval by the Board of Regents. (The combined annual room and board rate in 1990-91 for a large double suite with a 15 meal per week plan was $3,568.)

### Deferred Payment Option

The Residential Life and Housing Office offers residents a payment plan option to meet a variety of student financial needs. The desired payment schedule can be selected upon submittal of the signed housing/food license agreements.

### Cancellations and Refunds

Once the student has signed the housing/food license agreements, the student is obligated to these fees for the academic year.

After August 1, refunds are made only to those students who withdraw from the university. Students who do not cancel their contracts prior to August 1, are obligated to pay the housing/food service fees for the entire year. For those who withdraw from the university, refunds are made at the rate of 75 percent though the second week of the semester, 50 percent during the third through the sixth weeks, and 25 percent during the seventh and eighth weeks. For cancellations prior to August 1, all fees except a $100 per space administrative charge are refunded.

# Student Services and Activities

The Office of Student Services is administered and coordinated by the vice president of student services. Major program areas are administered by the associate dean of students for enrollment services (outreach, recruitment, admissions, records, registration, student financial aid, student employment, and scholarships); the ASUN manager (associated students, student activities, and bookstore); the special assistant to vice-president for student services who coordinates the Student Mediation Center, exit withdrawals and testing services; the associate dean, student life (residential life and housing, food services, discipline and judicial boards, student union, campus police, and planetarium); and the associate dean, student development (academic advising, orientation, counseling services, career advisement, substance abuse prevention, and the Women's Resource Center).

The vice president also works in cooperation with the vice president for academic affairs, the academic deans, and the Graduate School in the areas of admissions, student recruitment, retention, academic support, student affirmative action, and the student code of conduct and due process.

## Academic Skills Center

The Academic Skills Center provides assistance to undergraduate students who require academic support services and special advisement services to help them succeed in the academic environment. The office provides the following services: the Educational Opportunity Program awards, workshops for GRE preparation, Bureau of Indian Affairs grants, individual advisement, readers for blind students, interpreters for the deaf, notary services, individual and group tutoring in a wide variety of courses, counseling for handicapped students, assistance in basic English and writing. There is also a typing lab which is open to all students Monday-Thursday 8:00 a.m. to 8:00 p.m., and Friday 8:00 a.m. to 5:00 p.m. in Thompson Student Services Center, Room 107. Tutoring is also available to undergraduate students during these same hours. These services are designed to help students overcome the four major obstacles to higher education: financial, communication, cultural, and physical barriers. Additional information may be obtained in Thompson Student Services Center, Room 107, or by calling (702) 784-6801.

**Handicapped Students:** A handicapped student is defined as one with a physical, sensory, learning, or emotional impairment which substantially limits the person from participating in and/or securing the benefits of a postsecondary education The handicapped condition may be temporary or permanent. Handicapped students who need temporary parking permits, assistance in scheduling classes or special academic support services should call at Thompson Student Services Center, Room 107,(702) 784-6801.

Special assistant to vice president for student services is located on the first floor of Thompson Student Services Center. Areas of responsibility include the Mediation Center, exit interviews, select retention programs, and Testing Services.

## Student Mediation Center

The Student Mediation Center facilitates communication when conflict arises between students, faculty, and administrators. The center adheres to the triple principles of impartiality, independence, and confidentiality. Appointments may be made by calling the Mediation Center in Thompson Student Services Center, Room 105, (702) 784-4177.

## Campus Tours and Visitations

The Office of Outreach Services encourages prospective students and their families to visit the University of Nevada, Reno campus. Tours are offered by Student Ambassadors (a volunteer organization) who provide a student's perspective of the university. Tours are offered weekdays at 10:00 a.m. and 3:00 p.m. Special tours (i.e., weekends, holidays, large groups, etc.) require at least a one-week advance notice and may be arranged by calling (702) 784-4865. High school and community college faculty and counselors are encouraged to use the Office of Outreach Services to assist their students in the educational planning process. This includes services such as school visitations, campus visits, tours, printed materials and special events programs.

## New Student Orientation

Orientation programs are designed to provide information, academic advisement, class scheduling opportunities, and social activities for new students of all ages and from all walks of life. All programs are voluntary and selected programs require a fee in order for new students to participate.

Orientation information is sent to all newly admitted students prior to the semester in which they plan to enroll. It contains timely, important details for new students, as well as the orientation program schedule and reservation form. New students orientation, staff assistance, and guidance is available from members of the student orientation staff (SOS) and the prime time network (PTN for adult students). Members of SOS and PTN are trained to conduct information sessions and answer questions about the university.

New students and parents/family members are encouraged to contact the Student Development Office in Thompson Student Services Center, Room 102, (702) 784-6116, for more information.

## Academic Advising Services

Academic Advising Services provides official academic advising for undeclared majors in the College of Arts and Science. The primary function of the office is to help undecided students define their academic goals and select a major field of study that best matches their interests and abilities. Nondegree students, and students who have questions about the university's academic programs, are encouraged to visit the office. For assistance, contact the staff at 784-1537.

## Minority Student Affairs

The Minority Student Affairs (MSA) Office is dedicated to the advancement, recruitment and retention of minority students at the University of Nevada, Reno. The office provides career counseling, information on scholarships, grants, and fellowships directed to minorities, academic advisement, personal guidance, and Graduate School information. MSA also offers job referral services, and for the students' professional growth, MSA hosts numerous free workshops covering such topics as resume writing, interviewing techniques, self-esteem, and success. MSA is located in Mackay Science Building, Room 205, (702) 784-4936.

## Counseling Center

### Professional Counseling

The Counseling Center is the primary counseling office for students at the University of Nevada, Reno. The center offers both individual and group counseling services. The staff members are professionally trained counselors and counseling psychologists with expertise in helping students with a variety of concerns. Personal problems and career and educational objectives are discussed. Typical concerns include adjustment problems, resolution of conflicts, interpersonal relationships, career development, and learning more about oneself. All sessions are confidential, and any counseling records are open only to the student and the counselor. The counseling center is not connected with, nor does it report to, any academic or disciplinary agency on campus.

Throughout the year the Counseling Center offers a variety of opportunities for students to participate in group sessions which explore interpersonal and communication issues. These sessions consider issues such as personal growth, anxiety reduction, sex roles and sexuality, and women's concerns.

Appointments may be made by calling the Counseling Center in Thompson Student Services Center, Room 206, (702) 784-4648.

## Testing Services

This office schedules and administers national and institutional tests (ACT, GRE, GMAT, LSAT, MCAT, NTE, TOEFL) which are required for admission to undergraduate and graduate programs and professional schools. CLEP, NLN, and ACT PEP tests are also scheduled for students who wish to qualify for advanced placement or credit by examination. Information pertaining to dates, registration, etc., and free test bulletins which offer sample tests are available in Thompson Student Services Center, Room 105, (702) 784-4638.

## Office of International Students and Scholars

The Office of International Students and Scholars provides a variety of services to nonimmigrant students and scholars at the university. This office if the first point of contact for international students and scholars at the university. It provides advisement on personal, academic, financial matters, and assistance and information on regulations and laws governing their status in the United States.

The Office of International Students and Scholars maintains records on nonimmigrant students as required by the U.S. Immigration Service. New international students must report to the International Student Office prior to registration and be aware of the following regulations:

1. They must register on a full-time basis each semester (undergraduate —12 or more credits; graduate—nine or more credits).
2. Financial obligations must be paid on time.
3. They must enroll in the University of Nevada, Reno Student Health Service and insurance plans.
4. Employment off campus is prohibited unless properly authorized.

The international student adviser serves as the adviser to the International Club which provides social and cultural programs for global awareness on campus and in the community. The Family Friendship Program helps establish the connection between international students and community members.

The Office of International Students and Scholars is located in Thompson Student Services Center, Room 104, (702) 784-6874.

## Student Information Services

The activities office of the student union and campus food service serves as a university clearinghouse for information, particularly with reference to extracurricular and cocurricular activities. Students who seek any kind of information or have problems relating to extracurricular or cocurricular activities may obtain assistance from the personnel in this office or may be referred to the appropriate agency if a specialized problem exists .

## Substance Abuse Program

The counselor is responsible for developing and sponsoring services and activities designed to positively resolve the concerns about substance abuse. Included are prevention, education, awareness, intervention, treatment, and rehabilitation services. Workshops, inservice trainings, conferences and consultation services are also available for students. Educational programs are sponsored in conjunction with recognized living groups, ASUN and campus organizations. All information and services are confidential and without cost to the university community. For more information, visit Thompson Student Services Center, Room 206, or call (702) 784-4648.

## Upward Bound Program

The Upward Bound Program, funded by the U.S. Department of Education, is designed to identify and assist 65 high school students who have the potential to succeed in postsecondary education programs. These students must meet eligibility requirements which include a limited family income and/or first-generation college status. Assessments, counseling, tutoring, cultural events and career planning activities are provided during the academic year. A six-week instructional program is offered on the campus during the summer for credit. Program graduates attend the summer session for university credit. For more information or to make a referral, visit Thompson Student Services Center, Room 103, or call 784-4978 .

# University Police

*Emergency Number: 911. Non-emergency calls for service, e.g., escort service: 334-2121. Office: Monday-Friday 8:00 a.m. to 5:00 p.m., 784-4013.* The university police is an agency of the university community. Its purpose is to serve and protect the students, staff, faculty, and all other people and property within the jurisdiction of that community.

Police officers and personnel are on duty 24 hours a day every day of the year, and their services and facilities are available at all times.

University police have the exclusive responsibility of acting upon law enforcement matters and performing police functions for the University of Nevada, Reno main campus, Stead apartments, and agricultural installations in the Truckee Meadows. The police also have jurisdiction at the Sierra Nevada Job Corps, the Truckee Meadows Community College, and the Desert Research Institute.

Police personnel are sworn peace officers, performing the same services as those of any municipal police agency. They investigate all crimes and enforce federal, state, and local laws within their jurisdiction, as well as university regulations.

Officers are among the best trained and equipped in the state. They are graduates of the Nevada Highway Patrol Academy or the Northern Nevada Police Academy. They are also certified in first aid and CPR. Many of the officers hold either associate or bachelor's degrees in the sciences relating to criminal justice, sociology, psychology, community relations, and other public service-related fields. In addition to this extensive training they also attend many short courses and training seminars throughout the year.

Any member of the university community who needs emergency help or medical assistance may contact the police personnel day or night by dialing 911. They are located at 1305 Evans Avenue, on the east side of the main campus.

The non-emergency dispatch number (334-2121) reaches the 24-hour dispatch center, which is in direct contact with other emergency centers in the area.

# Fleischmann Planetarium

Fleischmann Planetarium is operated by the University of Nevada, Reno for the community as a science education/entertainment center. Located at the northern end of the campus, its heart is a domed theater containing a planetarium instrument, a sophisticated array of special effects equipment, and a Cinema 360 projector. This is an all-sky motion-picture system that recreates daytime environments in the theater, just as the planetarium shows objects in the nighttime sky.

The Hall of the Solar System, located on the upstairs building level, contains six-foot-diameter globes of the earth and moon, a meteorite collection, and other exhibits about the sun, planets and their satellites.

A small observatory houses several telescopes which are regularly used for public viewing of celestial objects.

Multi-media planetarium shows and hemispheric films are presented for school groups and the general public throughout the year. In addition, a museum containing exhibits and displays on astronomy, is open daily. Call 784-4811 for a schedule, 784-4812 to make reservations.

# General Information

## Absences

There are no official absences from any university class. It is the personal responsibility of the student to consult with the professor regarding absence from a class. In the event that a student misses a class because of an official university function, or because of serious personal considerations, members of the Student Development staff may, at their discretion, send an explanation to the instructor involved at the student's request. The instructor makes the final determination on whether the missed work can be completed at a time other than during the regularly scheduled class period. Contact Thompson Student Services Center, Room 103, 784-6116, for assistance.

# Housing Information

Living on campus can be a very special and rewarding part of your experience at the University of Nevada, Reno. The Residential Life and Housing Office provides students with a number of residential opportunities as well as several food service plans. The core of the housing program is provided by the university residence halls which supply complete living facilities for approximately 1,000 men and women. In addition, a number of national fraternities and sororities maintain chapter houses near the campus, and the College Inn assigns a limited number of rooms for student use with a preference given to graduate students.

## General Policy

All regular, full-time students are eligible to live in university residence halls. Undergraduate student residents are expected to be enrolled in at least 10 credits per semester. On campus living is available to part-time (seven credits or more) students on a space available basis; however, priority is given to full-time students.

Students are encouraged to request housing information immediately after they have been officially admitted to the university since the demand for on-campus housing usually exceeds the space available.

Currently, all students living in the College Inn and residence halls are required to purchase one of several meal plans for the duration of their housing license agreement.

## Residence Halls

The University of Nevada, Reno maintains five residence halls which are supervised by the Residential Life and Housing Department.

**Coed Residence Halls:** Men and women are assigned to different areas in Nye, White Pine, and Juniper Halls. While the traditional personality of men's or women's floors is maintained, the student government and some social, recreational and cultural activities are coeducational in nature.

Nye Hall is a high-rise hall accommodating 560 students with two students assigned to each room. There are lounges on each floor with a larger reception and lounging area in the main floor lobby. A computer lab and a weight-training room are located on the lower level.

White Pine Hall accommodates 160 students in an innovative suite style. Each suite consists of four bedrooms, a living room, and bathroom facilities. There are no hallways or corridors, as all suites open directly to the outside. The spacious study lounge is available for special events and laundry facilities are available on the ground floor.

Juniper Hall, which houses 141 students, also offers a suite arrangement, which includes two bedrooms and a common foyer/dressing area. As with Nye Hall, all public areas are carpeted and laundry facilities are available.

**Residence Halls for Men and Women:** Manzanita Hall has a long tradition as the women's residence hall. A study lounge and comfortable living room help create a home-like environment shared by 100 women. Lincoln Hall is available for male students except for those areas which may be assigned to the Honors Program. Individuality in rooms and a recreation room serve the 66 men residents of this tradition-filled campus hall.

**How to Apply for Housing:** Each new student requesting university housing receives an application after official admission to the university. Completed license agreements should be returned as soon as possible to the Residential Life and Housing Office.

Rooms are assigned in the order in which license agreements are received, and usually all space is assigned several weeks before fall semester begins.

For additional information, write to Residential Life and Housing Department/060, University of Nevada, Reno, Nevada 89557-0039, or phone (702) 784-1113.

## Married Student Housing

The university maintains 40 one-bedroom, unfurnished apartments which share central laundry facilities. Applications for married student housing may be requested from the Residential Life and Housing Department.

Additional married student housing is available at the Stead facility. See *Stead Apartments* under Other Housing Options.

## Other Housing Options

The Housing Office maintains a listing service for the university community. The listings include off-campus privately managed apartment and house rentals, as well as listings of rooms in private homes and students seeking roommates.

While the university endeavors to assist students in locating suitable housing in the Reno area, it does not inspect or approve such off-campus facilities. Therefore, all rental arrangements are made between the parties involved, and the university does not assume any responsibility in this area.

Landlords utilizing the services of the Residential Life and Housing Department are required to abide by the university's policy on nondiscrimination. All reported acts of discrimination are subject to investigation and referral to the Nevada Commission on Equal Rights of Citizens. Those found guilty are denied listing privileges and are subject to legal action initiated by the injured party and/or the state.

*Stead Apartments:* One and two bedroom unfurnished apartments are available at Stead for married students who are enrolled full-time and married staff. Students with children are given preference. These apartments are managed by the Stead Facilities administrator, telephone 972-0781.

*College Inn:* The College Inn is a residence and conference facility with food service capabilities. It currently assigns 50 rooms for student use. For more information, telephone College Inn management at 323-0321.

# Food Services

The university dining commons is located in Jot Travis Student Union. Snack bars are located in Jot Travis Student Union, and the education and business buildings. The dining commons serves three meals a day except weekends when brunch and dinner are served. The dining commons is ordinarily closed during university recesses and over Thanksgiving, Christmas, and Easter breaks.

Dining commons regulations for students are:

1. Several meal plans are available. Students who purchase a meal ticket must retain one of the four meal plans for the entire semester. Students who live in the residence halls are required to select one of the meal plans for two consecutive semesters.
2. If the contract meal option is selected, students are expected to forward funds for housing and food service along with their new student or renewal housing license agreement. If the deferred payment option is selected, the signed deferred payment form should also be returned with the contract and funds.
3. The first meal served each academic semester is dinner on the first day the residence halls are officially open.
4. Students living off campus who wish to eat in the dining commons may pay cash or purchase a meal ticket from the dining commons.
5. Students who officially withdraw receive a refund in accordance with the refund schedule (see Fees and Expenses section).

# Jot Travis Student Union

Jot Travis Student Union is the social and recreational center of the university.

The union provides lounges, game room, snack bar, dining commons, faculty-staff dining room, space for banquets and luncheons, three auditoriums (Alumni, ASUN, and Pine) for programs and discussion groups, meeting rooms for campus and off-campus groups, gallery arrangements for exhibitions of paintings, sculptures and prints, ticket sales, check cashing, notary service, foreign travel information and international student I.D. cards, campus-wide lost and found, student, faculty, and staff university I.D. cards and the scheduling for all student activities and events.

The university bookstore and the associated student offices are located in Jot Travis Student Union.

# University Student Health Center

All University of Nevada, Reno, Truckee Meadows Community College and Western Nevada Community College students and spouses of registered eligible students may purchase Student Health Center services.

The Student Health Center is located on the ground floor of Juniper Hall with the entrance on Manzanita Lake side (back of the building). The center is open from 8:00 a.m. to 5:00 p.m., weekdays, throughout the year, except for holidays. General outpatient medical care is provided by physicians and nurse practitioners. Other services available include sports medicine, women's health, colposcopy, immunizations and allergy shots. Part-time consultants have weekly dermatology and mental health clinics. Appointments are recommended to reduce patient waiting. Patients without appointments are generally seen in the order of arrival. Emergencies are seen immediately.

Physicians from the Department of Family and Community Medicine provide after hours, weekend and holiday phone coverage. The after hours phone number is 784-6598. If medical care is necessary after hours then this care is at the student's expense.

The health center fee is $40 per semester payable through late registration. From late registration until the last day to drop classes the fee is $50. Students are not able to purchase the Student Health Center services or supplemental insurance after that date. However, students may be seen at the Student Health Center for a per visit fee. The Student Health Center fee covers ONLY eligible care at the center.

The Student Health Center fee covers some medications, X-rays and laboratory tests for the treatment of acute illness and injury. Additional fees may be necessary for other medications and tests.

Additionally, students requiring physical examinations for personal needs may have those completed at a reduced rate.

The center provides services during the semester breaks for students. Students enrolled for any number of credits during the summer sessions are eligible for care during the enrolled session only. Students not enrolled during the summer but enrolled the previous semester may purchase summer health care. The summer health care fee is $40.

Students who purchase student health are eligible to purchase supplemental health insurance. This additional insurance provides some coverage toward expenses for hospitalization, consultation and services not available at the center. Coverage is in effect during the entire semester, whether at school or away. Additional coverage is available for non-student spouse and/or children. It is strongly recommended that students without other medical insurance coverage purchase this supplemental coverage. This coverage may be purchased during the same enrollment period for the Student Health Center services.

# Financial Aid[1]

The university administers an extensive financial aid program so that qualified students will not be denied an education because of financial need. Aids such as scholarships, fellowships, assistantships, awards, grants, loans, student employment, and deferred payment are granted in order to encourage continued academic success and to assist needy, capable students in financing their college educations.

Financial aid is offered to qualified students who hold promise or have demonstrated their ability to engage successfully in the pursuit of higher education and who have need of assistance in meeting educational expenses. This need may be overcome through a single financial aid or a combination of aids available.

Because of the emphasis placed upon a college education and the increasing costs to the student and his parents, the university will continue to enlarge upon and refine its program of financial aid to students. It is with assistance from interested individuals, groups, business firms, governmental agencies, and alumni that the university can continue to meet these ever-increasing responsibilities.

The majority of university financial aids for students are administered by the director of student financial services located in the Thompson Student Services Center.

## Qualifications

Financial aid is predicated upon the applicant maintaining at least a 2.0 (C) average (undergraduate) or at least a 3.0 (B) average (graduate) and, except for the Pell Grant, being regularly enrolled as at least a half-time student (six or more semester credits for undergraduates, five or more graduate credits for graduate students). Except for the Stafford Student Loan Program, students receiving financial aid must be admitted into a degree program. Students enrolled for half-time or more are eligible for all federal financial aid contingent upon their need and the availability of federal funds.

Further, students receiving financial aid must maintain satisfactory progress toward completion of their respective degree or certificate in order to remain eligible for student aid funds. Satisfactory progress, as defined by university policy, means that each student must complete and receive credit for at least the *minimum* number of credits in each category for which they were funded each semester.[2] These are listed below.

Full: Undergraduate—12 or more credits
Graduate—9 or more graduate credits

3/4 time: Undergraduate—9 through 11 credits
Graduate—7 through 8 graduate credits

1/2 time: Undergraduate—6 through 8 credits
Graduate—5 through 6 graduate credits

Students who do not complete the required number of credits are ineligible to receive federal financial aid until the deficit is made up. Appeals concerning the university's *satisfactory progress* requirements may be made to the Student Financial Services Appeals Committee.

**Time Limitations:** Students receiving federal financial aid are expected to complete their educational objectives within a reasonable length of time. These times are: *Undergraduate: A* maximum of five[3] years of assistance. *Graduate: A* maximum of two[3] years of assistance for students seeking a master's degree; a maximum of three[3] years for students seeking a doctoral degree (beyond a master's degree).

Financial aid eligibility is prorated for transfer students or students who have completed credits at the University of Nevada, Reno.

The use of financial need as a major factor in determining eligibility of a student for assistance is an effort to offer more equitable distribution of the limited funds available to qualified students.

Financial aid is considered as a supplement to the funds provided by the student and family. The university evaluates all outside sources of income which are available and expects the student to utilize them completely. The director of student financial services attempts to make available the assistance necessary to provide for the balance of the student's legitimate educational expenses.

Applicants for the Stafford (Guaranteed) Student Loan, Perkins Loan, Nursing Student Loan, Health Professions Student Loan, Exceptional Financial Need Scholarship for Freshman Medical Students, Disadvantaged Health Professional Scholarship, Supplemental Educational Opportunity Grant, Nevada Student Incentive Grant, and the College Work-Study Program are required to complete and submit the ACT Family Financial Statement (ACT-FFS) or other approved need analysis application, the University of Nevada, Reno Data Form and Financial Aid transcripts. Entering freshmen may secure the ACT-FFS from their local high school counselor. All other students may obtain the FFS from the university Office of Student Financial Services.

## Loans

Three main types of loans are available to qualified university students from funds provided by interested donors. They include the following:

1. Emergency loans involving small amounts of money for short periods of time are readily available to qualified students for emergencies.
2. University loans are available to qualified students who have completed at least one semester at any University of Nevada System campus for educationally connected expenses while they are enrolled as at least half-time students.
3. Long-term loans on a low-interest basis are available through the university for qualified students under these programs:
   (a) Perkins Loans.
   (b) Stafford Student Loans.
   (c) Nursing Student or Health Professions Loans.
   (d) Health Educational Assistance Loans.
   (e) Supplemental Loans for Students/Parent (PLUS) Loans.

[1]Refer to the Financial Aids Calendar at the end of this section for deadline dates.

[2]Courses numbered 1-99 may not be used for minimum number of credits since they do not apply toward a baccalaureate degree.

[3]Exceptions to these time limitations may be considered on an individual basis, if extenuating circumstances warrant such consideration. Questions should be directed to a financial aid officer, Thompson Student Services Center, Room 200.

In the event of the death of a student, the vice president of student services may, if circumstances warrant, authorize the cancellation of any or all financial obligations due the university. This policy does not supersede existing federal regulations governing Perkins Loans, nursing, or other federal aids already having cancellation provisions.

Further information on loans may be obtained by contacting the Office of Student Financial Services.

## Grants

Grants such as the Pell Grant, Health Professions-Exceptional Financial Need Scholarship Program, Disadvantaged Health Professional Scholarship, Nevada Student Incentive Grant, and the Supplemental Educational Opportunity Grant are outright gifts to help students defray educational expenses. Grants are awarded primarily on the basis of need and are utilized in conjunction with other financial aid resources. For further information, contact the director of student financial services.

## Student Employment

*Regular student employment* referral service for all campus part-time jobs and numerous off-campus positions is available to qualified students. This service is for those students who are enrolled on at least a half-time basis in a degree program and are making satisfactory academic progress. The student employment officer and staff fill hundreds of part-time jobs each semester with qualified students. Full-time summer internship program opportunities exist through Student Employment Office contact with employers.

The coordinator of job location and development has the responsibility for developing additional jobs, particularly those that are career oriented.

Further information may be obtained from the Student Employment Office in Thompson Student Services Center.

*The Work-Study Program is* available to those entering or returning students who are enrolled on at least a half-time basis who can qualify on the basis of financial need. Under this program students may obtain work in their major areas which relate to their educational or vocational objectives.

The university makes all decisions regarding recruitment, hiring, and all other terms and conditions of employment without discrimination on the basis of race, color, creed, sex, national origin, physical or mental handicap, or other factors which are not a lawful basis for employment decisions.

A financial aid consumer information brochure is available upon request from the Office of Student Financial Services.

## Scholarships and Prizes

All communications concerning scholarships should be addressed to the Office of Student Financial Services, Thompson Student Services Center, Room 200. All applications are due on or before March 1.

Students should understand that scholarships are awarded primarily on the basis of scholastic proficiency, with factors of need, character, service, and certain specialized talents also bearing upon selection. Scholarship applications are available in January and due by March 1 of the year preceding the academic year for which the awards are sought. Recipients of scholarships are notified by letter at approximately the time of commencement each year. *Each recipient must be offcially admitted and register full time at the University of Nevada, Reno to receive the award.*

Scholarship stipends are divided into two equal parts with one-half made available to the student on registration day of the fall semester. The second half of the award is released to the student on registration day of the spring semester, provided the recipient has maintained scholarship proficiency during the fall semester.

Scholarships are offered to students for the purpose of encouraging continued academic excellence and to promote higher achievement. Recipients must be regularly enrolled, full-time students at the university during the academic year when they receive their awards.

Applicants for regular undergraduate scholarships are normally students who have a minimum 3.0 grade point average (on a four-point scale) for all college credit with at least 12 credits completed at the University of Nevada, Reno. Annual scholarship awards are routinely divided in half with the first stipend released on fall registration day and the second on spring registration. Students are eligible for their spring scholarship stipends provided they complete 12 or more credits in the fall semester and remain in good academic standing. Applicants for regular freshman scholarships usually have completed high school in Nevada with a B or better average in the academic course work attempted and must score sufficiently high in the American College Testing Program.

There are three types of scholarships available to students at the university, as follows:

### Amounts of Awards

Most scholarships range from $400 to $2,000

**Type I Awards:** These awards are made to students from any division of the university, usually without respect to class level or academic interest. Applications for Type I scholarships are made available in January from the Office of Student Financial Services. March 1st is the deadline to apply.

**Type II Awards:** Type II awards are scholarships granted to students pursuing work in a particular college or department who, in addition to meeting general scholarship criteria, have the endorsement of the faculty scholarship representative in the college or department concerned. Students interested in receiving a Type II award are encouraged to contact the Scholarship Office. It is the policy of the Scholarship Committee to coordinate Type I and Type II awards to prevent overawards of scholarships.

**Type III Awards:** Type III awards are presented to students by individuals or organizations independent of the university. Funds associated with them are held in trust by the university and administered by the Scholarship Office. The Scholarship Office has a limited number of Type III scholarship applications and information about other independent scholarships. Information may be obtained in the Office of Student Financial Services.

## Special Prizes and Awards

Each year the university gives a number of prizes and awards to students who have made unique and outstanding achievements. Recipients are selected on the basis of these achievements and not through application.

## Presidential Scholarship ($10,000)

To qualify for the President's Scholarship, students must have both high grade point averages and high ACT/SAT test scores.

ACT—31 or above. The high ACT test score must be supported with at least a 3.5 grade point average.

SAT—1,350 or above on combined mathematical and verbal, supported with a minimum 3.5 GPA.

*National Merit Finalists* will also be considered for the university's Presidential Scholarship.

## Registration Fee Grants-in-Aid

1. Each semester the university awards a number of registration fee grants-in-aid equal to approximately three percent of the university's enrollment. Recipients of these grants-in-aid must be

## Financial Aid Calendar

| *Type* | *Deadline Date* |
|---|---|
| Scholarship applications must be returned to the Office of Student Financial Services by | March 1 |
| Departmental Scholarships | Check deadline with college or department concerned. |
| Regents Grants-in-Aid (tuition and fee waiver applications) | |
| Fall semester | June 1 |
| Spring semester | January 5 |
| Federally Funded Financial Aid (Loans, Grants, Work) | |
| Fall, spring semesters and summer terms | February 15* |
| Stafford Student Loans | Three months prior to time needed. |
| Emergency loans | During semester in which emergency occurs. |
| (Processing time is less than one hour) | |
| University loans | One week minimum to process. |
| Deferred payment of fees, tuition, board and room | Before last day of registration. |
| Student employment | When class schedule is established and you are available. |

*Note: The ACT Family Financial Statement application should be completed and mailed to ACT by this date to allow sufficient processing time so that all forms are received in the Office of Student Financial Services by the April 1 priority funding deadline.

residents of Nevada. Those selected are not required to pay a portion of the registration fee ($15 per credit) for that semester during which they receive the award.

2. Twenty registration fee grants-in-aid may be awarded each semester to American Indian students who are residents of the state of Nevada and certified as Indians by the Bureau of Indian Affairs.

3. Widows of Nevada servicemen killed in action on or after January 1, 1961, may receive registration fee grants-in-aid for a period up to eight semesters.

In general, the granting of these grants-in-aid is based upon sound scholastic achievement, financial need, and the rendering of special service to the university. Application forms may be obtained from the coordinator of scholarships, University of Nevada, Reno. Each award is made for one semester and is renewable only following submission of a new application. Applications for fall semester must be received not later than June 1. Recipients must have an overall GPA of 2.0 or higher at the time of award and must complete 12 or more credits with a GPA of 2.0 or higher each semester to be considered for successive awards. Applications for the spring semester must be received not later than January 5.

### Out-of-State Tuition Grants-in-Aid

Each semester the university awards a number of out-of-state tuition grants-in-aid. These grants-in-aid are available to undergraduate students only; they are not available for graduate student applicants. The value of the out-of-state grant-in-aid is usually $1,250 per semester. Applications should be directed to the coordinator of scholarships. Each award is made for one semester and is renewable only following submission of a new application. Awards are based upon scholarship proficiency, as well as the rendering of special service to the university. A proportion of these awards is also set aside for students from foreign countries. Applications for the fall semester must be received not later than June 1. Recipients must have an overall GPA of 2.0 or higher at the time of award and must complete 12 or more credits with a GPA of 2.0 or higher each semester to be considered for successive awards. Applications for the spring semester must be received not later than January 5.

### Graduate Teaching and Research Awards

To be eligible for a graduate assistantship an individual must first be admitted to the Graduate School and be classified as a graduate standing student in the department or college of study. Application should be made to the dean of the college concerned or the department chair.

1. Graduate Assistant—includes the subcategories of teaching and research assistant, contractual positions for teaching or research services. Stipends may be accompanied by fee and tuition grants-in-aid. The availability of grant-in-aid is clarified with issuance of the contract. A full-time graduate assistantship is based on a 20-hour work week; however, appointments may be offered for less time with salary and grant-in-aid proportional to the commitment of time.

A teaching assistant on appropriated monies is allowed to be on contract for a maximum of three years while pursuing a master's degree and five years while pursuing a doctorate. Maximum time for a teaching assistant is six years for a student obtaining both a master's and doctoral degree at the University of Nevada, Reno.

To insure satisfactory progress toward the degree, graduate teaching assistants are required to pass at least 10 graduate credits per year to maintain eligibility for the assistantship.

International students must score 550 or above on the TOEFL examination, or its equivalent, to be eligible for a teaching assistantship.

Graduate assistant stipends vary among the disciplines and are competitive with other universities in the same fields.

2. Graduate Fellow—designates individuals receiving a stipend that would be treated as a scholarship.

## Veterans Service—Benefits

Veterans services are administered by the Veterans Office staff located in student financial services on the second floor of Thompson Student Services Center. They are available to assist each veteran in achieving his or her academic goal. Referral services for advisement (pertaining to curricula, admission, and other administrative procedures) are available, as well as information on housing, career counseling, and financial aid. The Veterans Office serves in a liaison capacity with the Department of Veterans Affairs Office in Reno.

The University of Nevada, Reno is fully accredited by the Department of Veterans Affairs for educational benefits to qualified veterans under existing applicable public laws. Discharged veterans, or those currently in service, who plan to attend the university must make application for veterans' educational benefits at the time registration fees are paid.

The university is also accredited for War Orphans and Widows under Chapter 35, Title 38, U.S.C. (a program of financial assistance for the education of men and women whose parents or spouses are deceased or completely disabled as a result of injuries or diseases received during their military service).

Every individual receiving benefits under any of the public laws is required personally to complete the Veterans Educational Benefits Application immediately after payment of fees for each semester, summer session, or other instructional period. This can be done in the registration area or at 203 Thompson Student Services Center. Failure to present the Advance Registration Schedule Fee form when completing the application may delay receipt of educational benefits from six to eight weeks.

It is the beneficiary's responsibility to notify Veterans Office personnel immediately if he/she drops or adds a course, withdraws from the university for any reason, or stops attending any or all classes. Failure to do so will delay monthly checks and subject the student veteran to financial liability for an overpayment or incorrect payment made. If changes in the student's program affect his status (from full- to half- or three fourths time, etc.), the effective date will be registration day unless mitigating circumstances are accepted by the Regional Veterans Administration.

Student veterans are subject to the university's normal academic standards and are required to maintain *satisfactory progress* toward the VA certified degree objective to continue receiving Veterans Educational Benefits.

The amount of monthly educational subsistence is determined (except for Vocational Rehabilitation Benefits) by: (l) the number of registered credits as certified by the Veterans Office to the Department of Veterans Affairs and, (2) the number of dependents the student veteran claims. Only courses leading to the certified degree objective apply and those courses repeated or audited are not applicable.

All teaching or graduate assistants must obtain a statement from the Academic Personnel Office verifying their precise status as an assistant before seeking certification if they are registering for less than nine graduate credits and desire full-time subsistence.

Tutorial benefits for qualified veterans are administered through the Veterans Office for up to $76 per month for a maximum of 12 months.

Additional information on veterans services and benefits may be obtained by contacting the campus Veterans Office.

# Careers: Exploration, Evaluation, and Implementation

One of the greatest challenges facing college students is the need to explore careers, evaluate self and work environments, and then to implement appropriate job search and career search skills. The Career Development Office serves as a centralized link between the student and the professional community, giving students an opportunity to find placement in jobs where they can best utilize their talents. The Career Development staff provides individualized career counseling and job search workshops, including resume and cover letter writing, video-taped mock interviews, and application techniques. Students who have not declared a major are encouraged to seek career counseling. Off-campus job listings help students explore employment options and environments, allowing students to develop both professionally and financially.

A career library is maintained in the Career Development Office so that students may familiarize themselves with corporations and institutions in which they may wish to seek employment. Potential employers may place information and advertising for their organizations in the office. Job vacancies may also be posted for student use. Also, career planning and placement services are available to alumni, who provide an additional source of experienced employees to campus recruiters.

The university encourages students to establish placement files. Completion of registration forms and payment of a $10 registration fee establishes the placement file which remains active for one calendar year. This fee entitles the student/alumni to all on-campus recruitment OR to place letters of recommendation in the file for educational or graduate school placement. For those opting to place letters of recommendation in their file, the $10 fee includes two free mailings of the file (subsequent mailings cost an additional $2 per mailing). Reactivation of this file for any additional placement year requires payment of the $10 registration fee. Placement files that have been inactive for 10 continuous years will be destroyed.

Additionally, the Career Development Office now has a phone-in job posting system. Students and alumni who wish to access this service will pay a $15 computer access fee and will have unlimited access to job postings, recruitment schedules, etc. A free level of access will enable all students to access workshop schedules, off-campus job postings, and special events notices.

Special events, such as special workshops, career fairs, and job fairs are scheduled throughout the year to provide students at all levels with opportunities to explore careers and to secure professional employment.

This service is available in Thompson Student Services Center, Room 207, 784-4678.

# Student Government and Organizations

## GSA (Graduate Student Association)

An organization designed for graduate students.
For further information see Graduate School Section.

## ASUN (Associated Students of the University of Nevada)

Student government on the University of Nevada, Reno campus is a strong student voice with delegated authority to assume a responsible leadership role within the university community.

The undergraduate student body of the university is organized into a unified, self-governing body known as the Associated Students of the University of Nevada—the ASUN. This body, an integral part of the university community, acts as a student voice to the faculty, administration, board of regents, and community to ensure student input in policy decisions. ASUN is recognized by the president and the board of regents, and functions under the ASUN Constitution, copies of which are available to all members of the student body at the ASUN office. The ASUN offices are located upstairs in the Jot Travis Student Union.

The areas of responsibility and jurisdiction of ASUN are as follows:

**ASUN President:** The ASUN president is the chief executive officer, serving as the chairman of the executive council and the fiscal allocations board. The president is also a member of all ASUN committees and a member of many university committees and boards, including Faculty Senate and the board of regents.

**Executive Vice President:** The executive vice president serves as chairman of the publications board and grievance board, is treasurer for ASUN, and liaison to clubs and organizations.

The publications board is composed of one-third of the members of the ASUN senate, as selected by the executive council, the editors of the three major publications, the ASUN president (nonvoting), the publications advertising manager (nonvoting), and nonvoting advisers. The board acts as the legal publisher for three publications, the Sagebrush (campus newspaper), the *Artemisia* (campus yearbook), and the *Brushfire* (literary magazine) and allocates the funds for each publication. Student publications provide opportunities for students to develop writing and other skills and provide information services to the university community.

The grievance board is composed of one-third of the senate and acts as a student hearing board for students, faculty and the community. The board hears grievances and then works toward a

solution of them. The ASUN executive vice president also acts as a liaison between student organizations and ASUN.

**Vice President for Programming:** The vice president for programming acts as chairman of the programming board. The board consists of the ASUN speaker of the senate and eight other student members who serve as chairmen of the eight committees and represent a specific area of programming. The programming board sponsors movies, lectures, concerts, major week activities and other special events. The board is also responsible for establishing policies and procedures which affect student activities, as well as encouraging programming by student organizations.

**Fiscal Allocations Board:** This committee is responsible for all control of ASUN funds and the initial allocation at the beginning of the fall semester to all programs and boards. The fiscal allocations board also implements policy decisions relating to the ASUN Bookstore, which is wholly owned and operated by ASUN.

**ASUN Senate:** The ASUN Senate is the final authority of the ASUN. The senate consists of 20 senators elected from each of the ten colleges. All actions taken by the boards and the program and budget committee must be reviewed and approved by the senate. The senate also reviews and approves groups for ASUN recognition.

**ASUN Judicial Council:** The ASUN Judicial Council is composed of a chief justice, an associate chief justice, and three associate justices. A nonvoting member of the university faculty serves as adviser.

The primary purpose of the council is to provide students with a greater voice and responsibility in maintaining high standards of conduct. Its major function is to hear all cases referred to its jurisdiction—to investigate, adjudicate, and assess sanctions for violations of the Student Conduct Code and the *Rules and Disciplinary Procedures for Members of the University Community.*

**Legal Information and Referral Service:** This office provides free consultation and referral for cases in the areas of landlord/tenant relations, domestic relations (marriage, divorce, child support and custody, and paternity rights), traffic violations, consumer complaints, small claims court matters, criminal charges, university-related problems and other legal inquiries.

For more information, contact the ASUN Office, Jot Travis Student Union, (702) 784-6132.

## Student Organizations

Students have an opportunity to participate in or apply for membership in over 100 organizations. These include religious, social, scholastic, honorary, service, and recreational organizations, as well as clubs for students in specific fields of study.

Any student organization which wishes to use on-campus facilities or apply for financial assistance, must petition for ASUN recognition. Information regarding this procedure is available in the ASUN Office through the ASUN executive vice president. Lists of organizations and information regarding these organizations are available in the ASUN Office. All organizations are required to have a faculty or staff adviser. Membership in student organizations is based upon scholarship, college, class, skills, and interests of the individual student, or on any other basis consistent with the aims of the university. Any practice excluding individuals from membership in groups on the basis of race, creed, color, national origin, age, handicap, or sex is inconsistent with university and ASUN policies.

ASUN is located in the Jot Travis Student Union, (702) 784-6589.

**Fraternities and Sororities:** There are ten social fraternities and five social sororities at the university.

| *Social fraternities* | *Date founded locally* |
|---|---|
| Sigma Nu | 1914 |
| Sigma Alpha Epsilon | 1917 |
| Alpha Tau Omega | 1921 |
| Lambda Chi Alpha | 1929 |
| Phi Delta Theta | 1972 |
| Omega Xi | 1978 |
| Tau Kappa Epsilon | 1981 |
| Sigma Pi | 1983 |
| Pi Kappa Alpha | 1986 |
| Delta Chi | 1989 |

| *Social sororities* | *Date founded locally* |
|---|---|
| Delta Delta Delta | 1913 |
| Pi Beta Phi | 1915 |
| Gamma Phi Beta | 1921 |
| Kappa Alpha Theta | 1922 |
| Alpha Chi Omega | 1971 |

The Interfraternity Council and the Panhellenic Council coordinate the activities of their respective groups. Information regarding fraternities and sororities and rushing procedures is available from the Greek adviser, Thompson Student Services Center, Room 103, 784-4306.

# Drug-Free Schools and Communities Act of 1989

The University of Nevada, Reno has joined other colleges and universities across the nation to make a difference by adopting and implementing a program to further the institution's commitment to have a drug-free campus. To this end, the university prohibits the unlawful manufacture, distribution, dispensation, possession, or use of illicit drugs and alcoholic beverages by students and employees on its property or as part of any of its activities. The legal drinking age in Nevada is 21. The *Board of Regents Handbook*, Title 4, Ch. 20, Section 4 carefully defines the university's alcoholic beverage policy. It governs storage, possession, and use of alcoholic beverages by people of legal age. It also mandates a disciplinary action against "any student who exhibits offensive behavior on the university owned or supervised property while under the influence of alcoholic beverages."

The university has adopted a student code of conduct which includes standards involving the use and/or abuse of controlled substances (alcohol and other drugs) on campus. It had also established campus disciplinary sanctions as a response to instances of the violation of any/all of the substance abuse and alcoholic beverage policies. These remedies are applied on a case by case basis, ranging from attendance at a three-hour education seminar for the possession or use of alcohol to suspension and/or expulsion for repeated alcohol abuse and/or possession or use of illegal drugs.

In addition to university disciplinary sanctions, a student will be subjected to all local, state, and federal laws related to substance abuse or the possession/use of alcohol by minors. Legal action provides for sanctions ranging from the imposition of fines to incarceration. These sanctions are imposed after due process is pursued, which is initiated by a police incident report filed with the district attorney's office. Such legal action may be carried out concurrently with campus disciplinary action.

A student involved in violations of campus and/or community standards of conduct, as described above, will be required, unless expelled from the university, to participate in the university substance abuse prevention program or in some other appropriate substance abuse program as a condition of continued association with the institution.

The University of Nevada, Reno recognizes that the unlawful possession or use of drugs, including alcohol, and the abuse of alcohol and any other drug by students constitutes a grave threat

to their physical and mental well-being (and to that of the community in the case of driving impaired/under the influence) and significantly impedes the learning and developmental process. The tragic consequences of substance abuse by students are manifested by the documentation of injury or death, deterioration of social and family relationships, decreased productivity (both academic and vocational), failing to complete academic/vocational programs, an increase in crime and loss of or damage to property.

The University of Nevada, Reno has developed a comprehensive substance abuse counseling program for its students, which includes prevention, education, assessment, intervention, and counseling/rehabilitation services. Students are eligible for on-campus services without cost, and are under the protection of federal and state confidentiality laws. Services are provided through classroom instruction, individual and group counseling, referral to on and off-campus self-help programs (AA, NA, CODA, etc.), and referral to community treatment and rehabilitation programs. Students can receive help through the University Substance Abuse Counselor in the Counseling Center located in Thompson Student Services Center, Room 206, 784-4648.

# Student Conduct

Enrollment in the university carries with it obligations regarding conduct. Not only within but outside the classroom, students are expected to conduct themselves in such a manner as to be a credit both to themselves and to the university. They are accountable to the laws governing the community as well as to the policies and regulations of the university and directions of university officials, and they are expected to observe the standards of conduct approved by the university.

The administration of student conduct follows the procedures outlined in the *Rules and Disciplinary Procedures for Members of the University Community*. Copies of the procedures are available in Thompson Student Services Center, Room 102. The procedures are summarized in the *Student Handbook*.

## University Policies

### I. Use of University Facilities

University facilities, including campus grounds, are provided primarily for the support of the regular educational functions of the university and the activities necessary for the support of these functions. The university's functions take precedence over any other activities in the use of university facilities.

Freedom to speak and to hear is maintained for students, faculty and staff and university policies and procedures are used to provide a full and frank exchange of ideas. An effort is made to allow a balanced program of speakers and ideas.

An invitation to speak at the university does not imply that the university endorses the philosophy or ideas presented by the speaker.

University facilities may not be used for the purpose of raising monies to aid projects not related to some authorized activity of the university or of university groups, and no efforts at conversion and solicitation by uninvited non-campus groups or individuals is permitted on campus.

Regulations concerning the use and scheduling of university facilities are available in the university activities office and the scheduling office.

### II. Search and Seizure

A. The university reserves the right for maintenance personnel or authorized university personnel to make entry and inspection of university premises occupied by students for purposes of health, safety, maintenance or repair. Such entry is normally limited to a visual room inspection of the premises. Entry for reasons other than health, safety, maintenance or repair must conform with Section B of this general policy.

B. The vice president of student services may authorize an actual search of university premises occupied by students. Such search is normally limited to instances where reliable information is submitted to the vice president of student services from which it is reasonable to believe that a designated university facility is being used for an unlawful purpose or in violation of university regulations. Searches without prior authorization must conform with Section 3 of the Search and Seizure Policy Guidelines, available in the office of the vice president of student services.

### III. Firearms—Fireworks

A. Nevada state law expressly prohibits possession of explosive or incendiary devices, switchblades, firearms, and other weapons on university property. The law specifically excepts police officers and security guards from this restriction and also requires the president of the university to give written permission for possession of a weapon.

B. Possession and use of fireworks or pyrotechnics in university buildings, on university grounds, or fraternity and sorority houses are prohibited.

C. Students who bring firearms and ammunition must make provision for proper safeguards.

D. Occupants of university housing, which includes fraternities and sororities, are within the city of Reno and are subject to city ordinances governing the use of firearms within the city limits.

E. Failure to abide by these rules may result in arrest, confiscation of firearms, ammunition and pyrotechnics, and appropriate disciplinary action.

# Student Judicial Code

The University of Nevada, Reno is dedicated to the discovery and dissemination of knowledge. These ends require free inquiry and discussion, which means the willingness and power to agree and disagree without coercion. The regulations and procedures which follow establish conditions necessary to preserve the proper ends of the university, including the rights of all its members to pursue these ends. In addition, it must be recognized that while the university is willing to advise and guide Greek organizations (fraternities and sororities), these organizations are independent corporations, legally distinct from the university, and the university has no legal authority to exercise control over them. Nevertheless, these organizations have established a code of conduct for their members which is referred to in this document for informational pruposes.

The university exists in a continual interaction with a larger community of people, state, and nation. The university must live in harmony not only with itself but with the community at large and, in turn, must enjoy the support of the community it serves if it is to succeed in the pursuit of its proper and distinctive ends.

These regulations are designed not to infringe upon any student's rights to express his or her opinions or demonstrate peacefully, but

rather to ensure that the rights of all members of the university community are preserved.

## Scope of the Document

The procedures and sanctions established in this document are applicable to the resolution and determination of charges against students at the University of Nevada, Reno for allegedly engaging in specified prohibited conduct. Except as otherwise provided in the University of Nevada System Code (UNS Code) and in these regulations, the University of Nevada School of Medicine may also establish written policies, procedures, and sanctions for the discipline of its students which may be used in lieu of the policies, procedures, and sanctions of the UNS Code and these regulations, subject to prior review by the General Counsel of the University System and with the approval of the president of the institution in which the School of Medicine is based.

Students are expected to participate in the University of Nevada, Reno, campus community and its sponsored activities in accordance with local, state, and national law. The enforcement of these laws remains the responsiblity of the legal and judicial authorities duly established to that end.

Student conduct alleged to have violated both university regulations and policies and civil/criminal law may be handled concurrently through university disciplinary proceedings and through the courts. The person filing the complaint of student misconduct may choose to file charges against the student in both arenas: internally, through the university student judicial system, or externally, through the legal system.

## Prohibited Conduct for Students

The University of Nevada, Reno has established regulations for student conduct that augment those established system-wide. The university regulations define which conduct by students is prohibited on the University of Nevada, Reno campus or at university-sponsored events. "University-sponsored" does not mean any event sponsored by a fraternity or sorority.

### Subsection A: University of Nevada, Reno Regulations

The examples of student misconduct described in this section shall result in university disciplinary action and may lead to the procedures and disciplinary sanctions established in the University of Nevada System Code. Students enrolled in the University of Nevada School of Medicine are also subject to the prohibitions contained in the procedures and disciplinary sanctions which may be established by the School of Medicine, as authorized by the University of Nevada System Code.

Students charged with involvement in any of the activities identified in these regulations may be reported to the Office of Student Judicial Affairs for an investigation of the activity in question, and the appropriate disciplinary procedures will be pursued in accordance with this document.

The following prohibited activities apply to the student community at large and to every student at the University of Nevada, Reno.

1. Conduct which endangers the health or safety of any member or guest of the university community.
2. Violation of university policies and regulations governing residence in university-owned or controlled property, including responsibility for the conduct of guests.
3. Failure to comply with the directions of university officials in the performance of their duties.
4. Failure of the student to present proper credentials, such as: student identification card, driver's license, or parking registration, to university officials upon their request.
5. Resisting or obstructing such university or other public officials in the performance of their duties.
6. Gaining access to restricted areas, such as ledges, roofs or any part of a university facility's outside structure. Being on these areas or storing items on them is considered a personal and community safety risk.
7. The unauthorized possession, loan, or distribution of keys; or unauthorized entry into or use of university facilities, including buildings and grounds.
8. The reproduction, manufacture, or duplication of any key or unlocking device for use on university facilities or locks without proper authorization.
9. Setting off a fire alarm for reasons other than actual fire or emergency; tampering with any fire protection equipment or device; involvement in setting or causing any unauthorized fire in or on university property; failure to evacuate a university building when a fire/emergency alarm occurs.
10. False reporting of any emergency situation, including misuse of campus emergency telephone equipment.
11. Carrying, possessing, or using firearms on university-owned or university controlled property, except as required for: (1) educational programs; (2) authorized use in establishing rifle and pistol ranges; and, (3) police and military purposes.
12. Possession and use of fireworks or pyrotechnics in university buildings or on university grounds.
13. Hazing (any action taken or situation created to produce mental or physical discomfort, harassment, or ridicule) made by an individual student or a student group against another student or group of students. These actions/situations would include any which would degrade, endanger, or otherwise compromise the dignity of the student or student(s) involved.
14. The use of, or threat to use, force or violence of a sexual nature, defined as sexual assault, against any member or guest of the university community on university-owned or university-controlled property or at any university-sponsored program.
15. Use or possession of alcoholic beverages without authorization; use or possession of illegal and/or unauthorized drugs and drug paraphernalia; providing alcoholic beverages to a minor while on university property or at university-sponsored activities. Any action which is contrary to the "Alcoholic Beverage Policy" for University of Nevada, Reno student groups or is in violation of Nevada state law.
16. Being under the influence of a controlled substance, including alcohol, while on university property or at a university-sponsored activity; the exhibiting of offensive behavior while under the influence of alcohol or other controlled substances.

### Subsection B: University of Nevada System Student Conduct Code

In addition to regulations for student conduct for the University of Nevada, Reno campus, all students are responsible for following the regulations for the entire university system. The 19 prohibited activities, as found in the University System Code, Section 6.2.2, are listed below:

1. Commission of any acts specified in subsection 2.1.4 of the code: (Subsection 2.1.4 of the code provides as follows: "Acts interfering with academic freedom. Acts of physical force or disruptive acts which interfere with the University of Nevada activities, freedom of movement on the campuses or freedom for students to pursue their studies are the antithesis of academic freedom and responsibility, as are acts which in effect deny freedom of speech, freedom to be heard, and freedom to pursue research of their own choosing to members of the faculty or to invited guests of the University of Nevada.")
2. The use of, or threat to use, force or violence against any member or guest of the system community, except when lawfully permissible.
3. Interference by force, threat or duress with the lawful freedom of movement of persons or vehicles on university premises.

4. The intentional disruption or unauthorized interruption of functions of the system, including but not limited to classes, convocations, lectures, meetings, recruiting interviews and social events, on or off premises of the system.

5. Willful damage, destruction, defacement, theft, or misappropriation of equipment or property belonging to, in the possession of, or on premises occupied by the system.

6. Knowing possession on any premises of the system of any firearms, explosives, dangerous chemicals, or other instruments of destruction, or other dangerous weapons as defined by the laws of the state of Nevada without the written authorization of the president of any system institution or the president's authorized agent, unless such possession reasonably relates to duly recognized system functions by appropriate members of the faculty, other employees, or students.

7. Continued occupation of buildings, structures, grounds, or premises belonging to or occupied by, the system after having been ordered to leave by the president of a system institution or the president's designee.

8. Forgery, alteration, falsification, or destruction of system documents or furnishing false information in documents submitted to the University of Nevada System.

9. Making an accusation which is intentionally false or is made with reckless disregard for the truth against any member of the system community by filing a complaint or charges under this code or under any applicable established grievance procedures in the system.

10. The repeated use of obscene or abusive language in a classroom or public meeting of the system where such usage is beyond the bounds of generally accepted good taste and which, if occurring in a class, is not significantly related to the teaching of the subject matter.

11. Willful incitement of individuals to commit any of the acts herein prohibited.

12. Disorderly, lewd, or indecent conduct occurring on system premises or at a system-sponsored function on or off such premises.

13. Any act prohibited by local, state, or federal law which occurs on system premises or at a system-sponsored function on or off such premises.

14. The use of threats or violence against a faculty member or the faculty member's family in order to secure preferential treatment for grades, loans, employment, or other service or privilege accorded by the system.

15. Any act of unlawful discrimination based on race, creed, color, sex, age, handicap, or national origin.

16. Any act of sexual harassment when submission to a request or demand of a sexual nature is either an explicit or implicit term or condition of employment or of academic grading, or where verbal or physical conduct of a sexual nature has the effect of creating an intimidating, offensive, or hostile work or classroom environment.

17. Acts of academic dishonesty, including, but not limited to, cheating, plagiarism, falsifying research data or results, or assisting others to do the same.

18. Willfully destroying, damaging, tampering, altering, stealing, misappropriating, or using without permission any system, program, or file of the University of Nevada System.

19. Any other conduct which violates applicable stated prohibitions, policies, procedures, rules, regulations, or bylaws of a system institution.

## Subsection C: University of Nevada, Reno Policies

In order to maintain an academic climate conducive to each member's success in the pursuit and transmission of knowledge, the University of Nevada, Reno has established a set of policies and standards for all of its members to adhere. For student members of this community, enrollment at the university carries certain obligations related to activities in the academic setting, including behavior inside and outside of the classroom.

Every student is accountable to the policies and regulations of the university and the directions of university officials. Students are expected to conduct themselves in such a manner as to be a credit to themselves and the university. The student enrolled at the University of Nevada, Reno agrees to abide by, and make every effort to meet, the academic and behavioral standards of the university.

The following policies for student members of the community may also be the same, or similar to, policies affecting all members of the university. These have been included within this student judicial code to allow all students to familiarize themselves with these standards of behavior as well as the rights to which every student is a party.

**Academic Standards:** Specific to the academic pursuits of students, the University of Nevada, Reno believes the maintenance of academic standards is a joint responsibility of the students and faculty of the university. Freedom to teach and to learn are dependent upon individual and collective conduct to permit the pursuit and exchange of knowledge and opinion. Faculty have the responsibility to create an atmosphere in which students may display their knowledge. This atmosphere includes an orderly testing room and sufficient safeguards to inhibit dishonesty. Students have the responsibility to rely on their knowledge and resources in the evaluation process. The trust developed in the maintenance of academic standards is necessary to the fair evaluation of all students.

Academic dishonesty is against university as well as the system community standards. Academic dishonesty is defined as: cheating, plagiarism, or otherwise obtaining grades under false pretenses. Plagiarism is defined as submitting the language, ideas, thoughts, or work of another as one's own; or assisting in the act of plagiarism by allowing one's work to be used in this fashion. Cheating is defined as (1) obtaining or providing unauthorized information during an examination through verbal, visual, or unauthorized use of books, notes, text, and other materials; (2) obtaining or providing information concerning all or part of an examination prior to that examination; (3) taking an examination for another student, or arranging for another person to take an exam in one's place; (4) altering or changing test answers after submittal for grading, grades after grades have been awarded, or other academic records once these are official.

Disciplinary procedures for incidents of academic dishonesty may involve both academic action and administrative action for behavior against the campus regulations for student conduct. The procedures involve the determination by the faculty member pursuing concerns over alleged cheating or plagiarism as to whether administrative action is warranted, in addition to making a determination as to any academic consequence. Academic action may include: (1) cancelling the student's enrollment in the class without a grade; (2) filing a final grade of "F"; (3) awarding a failing mark on the test or paper in question; (4) requiring the student to retake the test or resubmit the paper.

If the student wishes to appeal the academic action of the faculty member a special hearing board will be constituted to investigate the incident and determine whether the student is responsible for dishonesty and, if so, the appropriate academic action as a consequence for this act. The student will be entitled to receive notice of the academic charges and the opportunity to reply to or to rebut the charges before an unbiased board.

**Sexual Harassment:** It is the policy of the University of Nevada, Reno that the sexual harassment of students, employees, and users of university facilities is unacceptable and prohibited. This stance is consistent with the university's efforts to maintain equal educational opportunity; non-discrimination in programs, services, and use of facilities, and the affirmative action program.

Sexual harassment is the introduction of sexual activities or

comments into the work or learning situation. Often sexual harassment involves relationships of unequal power and contains elements of coercion—as when compliance with requests for sexual favors becomes a criterion for granting work, study, or grading benefits. However, sexual harassment may involve relationships among equals, as when repeated advances or demeaning verbal behavior have a harmful effect on a person's ability to study or work.

As described in the regulation against sexual harassment (Subsection A, above), any student involved in acts of sexual harassment will be subject to student disciplinary action. In addition, any student who is the victim of sexual harassment, whether from another student, or from a university faculty/staff member, should report that harassment by contacting the Affirmative Action Office and/or the Office of Student Judicial Affairs and Greek Advisement. Contacts are confidential; formal complaints will be handled as a disciplinary matter.

**Sexual Assault:** The university system has a regulation against the use of violence or force, or threats of the same; the University of Nevada, Reno has established a specific regulation against threatened, attempted, or actual sexual assault by a student against any member of the university community. This policy was established to promote a community free from intimidation and harassment and to protect students from being subject to sexual assault while on university property or at university-sponsored events.

Sexual assault is defined as any sexual contact forced upon a person, including but not limited to: stranger rape, acquaintance rape, attempted rape, and sexual battery (unwanted touching, holding, kissing, and so forth). A sexual encounter is an assault if one person proceeds to have sex with another person without his or her consent to the act. Sexual assault is considered to be committed by force and against another person's will even if that person is: unconscious, asleep, drugged, intoxicated, or mentally unstable; and therefore cannot be agreeing to the act while under the use of his or her full faculties.

Any student found responsible for acts of sexual assault within the university community will be subject to disciplinary action. A victim of sexual assault by another student should report the incident and seek the appropriate attention (medical, emotional support, judicial action) from the campus or community agencies offering resources (health care, counseling center, police department, student judicial affairs, women's center, Reno Crisis Center, and more). A student need not officially report an incident in order to be provided assistance. Reports may be confidential, based upon the student's desires.

**Hazing:** Hazing is not permitted at the University of Nevada, Reno. Hazing is considered an activity which interferes with scholastic and/or work activities, is demeaning, and may also be against fraternal law, ritual, or policies and regulations of national fraternal organizations.

Hazing is defined as: any action taken or situation created to produce mental or physical discomfort, embarrassment, harassment, or ridicule. Such activities and situations include, but are not limited to, paddling in any form; creation of excessive fatigue; physical and psychological shocks; road trips, quests, treasure or scavenger hunts outside of university-owned or university-controlled property; wearing publicly apparel which is conspicuous and not normally considered to be in good taste; engaging in public stunts and buffoonery; morally degrading or humiliating games and activities; or any other activity which would degrade or otherwise compromise the dignity of the individual, including forced use/or abuse of alcohol or drugs.

Any individual or group violating the university's hazing policy will be subject to university and/or criminal charges. Any fraternity or sorority violating this policy may also be subject to disciplinary action within the Greek disciplinary program for violating a standard of the "Greek Code of Conduct." (Refer to the Interfaternity Council and/or Panhellenic Council constitutions for information on the code of conduct and procedures of disciplinary action.)

Any person wishing to report activities of hazing by individuals or groups may contact the Office of Student Judicial Affairs and Greek Advisement. Disciplinary action may be taken through this office under procedures related to the student code of conduct and the Greek code of conduct.

**Alcoholic Beverages:** The University of Nevada, Reno has an alcoholic beverage policy for students which establishes the standards of behavior and the circumstances under which alcoholic beverages are allowed to be possessed, consumed, or distributed by students. Included within this policy are specific policies for students attending athletic events where alcoholic beverages are sold as part of concessions; for students hosting university-sponsored events where alcoholic beverages may be served and/or sold; and for students residing within or visiting the university residence halls.

In compliance with state law, no student may possess or consume alcohol if under 21 years of age; neither may a student offer alcoholic beverages to a minor (under 21 years) or have a minor as a guest in his or her residence hall room while alcoholic beverages are present and/or being consumed by anyone present.

The president has the authority to designate the time and place for special events where alcoholic beverages shall be served on the university campus (for student groups as well as the entire university community and guests). Students who are of legal age may consume alcohol at these events. Except as provided above, and as provided in the alcoholic beverage policy of the residence halls, the storage, possession, or use of alcoholic beverages shall not be permitted on university-owned or university-supervised property.

In addition, any student who exhibits offensive behavior on university-owned or university-supervised property, or while attending a university-sponsored event while under the influence of alcoholic beverages, shall be subject to university action.

For information on the residence hall policy for alcoholic beverages, refer to the Residence Halls Community Living handbook, available in the Office of Residential Life and Housing. For information on the university's "Alcoholic Beverage Policy" and the policy for student-group sponsored events with alcohol, contact the Office of Student Judicial Affairs and Greek Advisement.

# Interdisciplinary and Special Programs

Interdisciplinary and special programs are offered to provide the student with enriched educational opportunities that extend beyond the traditional offerings. Some programs enable students to integrate academic disciplines to study a particular area more directly and effectively. Other programs provide study opportunities in different geographic regions within the U.S. as well as in other countries. Most of the programs are coordinated by faculty advisory boards. The individual designated for each program may be contacted for further information.

## Campus Programs

### Basque Studies

**Minor:** An undergraduate minor in Basque studies is offered through the College of Arts and Science in cooperation with the Basque Studies Program of the University Library. The University of Nevada, Reno provides the only Basque Studies Program in the U.S. and periodically offers courses on Basque topics. In addition, the University Studies Abroad Consortium offers Basque courses in the Basque Country. The present minor provides the student with an introduction and exposure to one of the unique ethnic heritages of the American West.

Requirements include a four-semester (14 credit) course sequence in elementary and intermediate Basque (may also be utilized to satisfy the college foreign language requirement), and nine additional credits in upper-division courses selected from the following list:

| | *Credits* |
|---|---|
| ANTH 499—Special Problems in Anthropology (when offered as Basque and Iberian Culture, or equivalent) | 3 |
| BASQ 405-406—Third-Year Basque | 6 |
| BASQ 451—Introduction to Basque Literature | 3 |
| BASQ 455—Introduction to Basque Linguistics | 3 |
| BASQ 466—Old-World Basque Culture | 3 |
| FLL 101-102—Elementary Basque Language | 8 |
| FLL 203-204—Second-Year Basque Language | 6 |
| FLL 295b—Independent Language Study (maximum of 4 credits) | 4 |
| FLL 496b—Independent Study, Basque Language (maximum of 3 credits) | 3 |
| HIST 428—Basque History | 3 |
| HIST 497—Independent Study in History (when offered as Basque and Iberian Culture, or equivalent) | 3 |
| P SC 497—Independent Study in Political Science (when offered as Political Institutions of the Basques, Spain, and Europe, or equivalent) | 3 |
| RPED 496—Field Studies in Physical Education (when offered as Basque Folk Dance) | 1 |

**Doctor of Philosophy:** An interdisciplinary tutorial Ph.D. program with a major in Basque studies is offered through the coordinated efforts of anthropology, foreign languages and history. The tutorial nature of the program requires the student to complete a plan of study under the direction of a mentor and with the approval of a standing admissions and policy board, a dissertation committee, and the faculty of the academic department concerned. Each student must complete a minimum of one year in residence at the university. There is also the possibility of residence at another American or European university working under the direction of a recognized Basque studies specialist.

Applicants must have completed an M.A. in a relevant academic discipline and satisfy the preapplication screening requirements of the admissions and policy board. The filing date for preapplication screening information to be submitted to the coordinator is February 1 annually. Applicants approved by the screening board must file an official application for admission and supporting documents in admissions and records by April 1. Applicants will be notified by May 15 annually.

A limited number of graduate fellowships may be available.

For further information. contact Dr. William A. Douglass, Coordinator, Basque Studies Program, Getchell Library, Room 274, 784-4854.

### Cellular and Molecular Biology

Cellular and molecular biology is an interdisciplinary program offered by the faculty in the School of Medicine and the Colleges of Agriculture and Arts and Science. It is a highly interactive program which draws together a wide range of areas of study that fall under the purview of contemporary cellular and molecular biology. Programs of study are offered that lead to the master of science and doctor of philosophy degrees. Additionally, medical students may earn a M.D./Ph.D. degree through the program. Students who are admitted to the program are expected to have completed the following courses: calculus, four credits; organic chemistry, eight credits; physics, six credits; biology, eight credits. If a student is admitted with a deficiency in these courses, the deficiency must be corrected within the first year of Graduate School.

Candidates for the master of science degree must satisfy all general requirements of the Graduate School and complete a curriculum consisting of 30 credits which include the following: 18 credits of core curriculum, six credits of research and thesis, and six credits of approved electives. Any substitutions of the core curriculum requirements must be approved by the director of the cellular and molecular biology program. A list of approved electives can be obtained from the program office at Room 146 in the Howard Medical Sciences Building.

| *Master of Science core curriculum:* | *Credits* |
|---|---|
| B CH 613—Macromolecules | 4 |
| B CH 705—Molecular Genetics | 4 |
| CMB 790—Graduate Seminar | 2 |
| CMB 701, 702 or 703—Methods in Molecular Biology | 6 |
| CMB 794—Colloquium | 2 |

Candidates for the doctor of philosophy degree must satisfy all general requirements established by the Graduate School and complete a minimum of 72 credits which include the following: 31 credits of core curriculum, 24 credits of research and dissertation and 17 credits of approved electives. Substitutions in the core curriculum requirements must be approved by the director of the cellular and molecular biology program. All students must have their curricular programs approved by the director of the program, or when appointed, by an advisory committee. A list of approved electives can be obtained from the program office at Room 208 in the Howard Medical Sciences Building.

| *Doctor of Philosophy core curriculum:* | *Credits* |
|---|---|
| B CH 613—Macromolecules | 4 |
| B CH 705—Molecular Genetics | 4 |
| B CH/CMB/MICR/PHAR 794—Colloquium | 6 |
| CMB 701, 702 or 703—Methods in Molecular Biology | 9 |
| CMB 710—Molecular Cell Biology | 4 |
| CMB 790—Graduate Seminar | 2 |

**Additional Program Requirements:** All doctoral students must pass a comprehensive examination in which the student independently proposes a research project in the form of a written research grant proposal. Following acceptance of the proposal by an examining committee, the proposal must be defended orally before the examining committee. All doctoral candidates must present a public seminar of their thesis research and pass an oral defense of the dissertation.

Candidates for the M.D./Ph.D. degree follow the requirements as outlined in the M.D./Ph.D. degree program.

Graduate fellowships are available on a competitive basis. Additional information concerning the program is available by request from Dr. Stephen St. Jeor, director of cellular and molecular biology, 784-6161, Room 146, Howard Building.

## Cellular and Molecular Pharmacology and Physiology

The pharmacology graduate program is an interdisciplinary graduate program in cellular and molecular pharmacology and physiology.

Candidates for admission to the graduate program must meet the criteria for admission to the Graduate School as well as certain additional program criteria. These include two semesters of biology, two semesters of physics, one semester of calculus, five semesters of chemistry including two semesters of organic chemistry and one semester of physical chemistry. Students lacking one or more of the above courses, but who otherwise meet the requirements may be admitted with the understanding that deficiencies will be rectified at an early date.

Twenty-four credits of dissertation work, plus a core curriculum of required courses and the opportunity for a variety of elective courses, form the essential elements of the program. Considerable flexibility is built into the program to accommodate the needs of the students.

Students new in the program participate in a research rotation experience during their first year in the program. As their training progresses, students take part in a teaching practicum and further must pass a comprehensive examination in which the student proposes a research project in the form of a written grant proposal. Following acceptance of the proposal, the proposal must be defended orally before the examining committee.

All candidates present a public seminar on their dissertations research and must pass an oral defense of the dissertation.

For additional information, contact the director, Cellular and Molecular Pharmacology and Physiology, Department of Pharmacology, Howard Building, Room 318, University of Nevada School of Medicine.

## Chemical Physics

Chemical physics is an interdisciplinary program offered by faculty in the College of Arts and Science which provides a unified curriculum spanning a wide range of areas within the scope of contemporary chemical physics. A program of study leading to the doctor of philosophy degree is offered. Students who are admitted to the program must be able to satisfy the admission requirements to the Ph.D. program of either the chemistry or the physics department as well as the general admission requirements of the Graduate School. Inquiries regarding admission to the program should be made to the graduate admission chairman of either the chemistry or the physics department.

Candidates for the doctor of philosophy degree must satisfy all the general requirements established by the Graduate School and complete a minimum of 72 credits which include the following: 18 credits of core curriculum, 24 credits of research and dissertation, and 30 credits of elective courses, of which 12 credits may be "Independent Study." Acceptable elective courses include any 600- or 700-level course in physics, chemistry, or mathematics, or any course approved by the student's graduate advisory committee.

| *Doctor of Philosophy core curriculum* | *Credits* |
|---|---|
| CHEM 752—Chemical Kinetics | 3 |
| CHEM 755—Statistical Thermodynamics | 3 |
| CHEM 757—Quantum Chemistry | 3 |
| PHYS 701—Mathematical Physics | 3 |
| PHYS 702—Classical Mechanics OR | |
| PHYS 730—Modern Optics and Laser Physics | 3 |
| PHYS 722—Quantum Theory II | 3 |

**Additional Requirements:** All students enrolled in the program will be required to pass a comprehensive examination consisting of both written and oral parts and which is based on material covered in the core courses listed above. The written part of the comprehensive exam must be taken within one year of the student's completion of the core curriculum (typically, the written exam will be taken by the end of the second year). The oral part of the comprehensive exam will be taken within one week of the written exam. Unsatisfactory performance on the first comprehensive examination may be rectified by re-taking both parts of the exam within six months of the first exam.

Once the comprehensive examination has been satisfactorily completed, the student is expected to pursue a vigorous research program under the direction of one of the affiliated chemical physics faculty. Research areas supported by the faculty span a broad range of both experimental and theoretical chemical physics topics. The student's research program is to culminate in the writing of a dissertation which must be approved by the student's graduate advisory committee before conferral of the degree.

Additional information concerning the program is available upon request from Dr. John H. Frederick, director, Chemical Physics Program, Room 122, Chemistry Building, 784-1347 or 784-6041.

## Ecology, Evolution, and Conservation Biology

The doctor of philosophy program is an interdisciplinary graduate program in ecology, evolution, and conservation biology. This program is offered by faculty from the College of Arts and Science, College of Agriculture, and the Desert Research Institute. The program is a research-based graduate program leading to a doctor of philosophy degree. Program emphasis is on the ecology, evolution, and conservation biology of organisms of the Great Basin and other arid lands studied through a broad range of biological techniques from field individuals, populations, and species. A student should have a cumulative GPA of 3.0, a combined verbal plus quantitative GRE score of 1,200 (a TOEFL score of 600 for international students), course work in physical sciences (six credits), and biology (24 credits, including genetics, evolution, and ecology); or equivalent evidence of ability to succeed in a Ph.D. program.

Candidates for the Ph.D. degree must satisfy all the general requirements established by the Graduate School and complete a minimum of 72 credits which include the following: 12 credits of core curriculum, two credits of seminar, 16 credits of didactic courses, 18 credits of electives and 24 credits of research and dissertation.

| *Core Curriculum* | *Credits* |
|---|---|
| EECB 701—Research Rotation I | 3 |
| EECB 702—Research Rotation II | 3 |
| EECB 703—Biometry | 3 |
| EECB 704—Presentation of Scientific Data | 3 |

**Additional Requirements:** All students enrolled in the program will be required to pass a qualifying examination consisting of scoring a minimum of 680 on the GRE advanced test in biology or subscores of 70 in population biology, 70 in organismal biology, and 62 in cellular and subcellular biology. Students with lower scores in any of the three areas must complete an undergraduate biology course with a grade of B or better in each of the areas in which a low score was received. All students will be required to pass a comprehensive examination consisting of both written and oral parts. The written part consists of questions in five areas: (1) ecology, (2) evolution, (3) conservation biology, (4) research design and methodology, and (5) student's area of research and organisms of study (the written examination will be taken by the end of the second year). Upon completion of the written examination, the student can request the oral examination to be conducted and evaluated by the student's advisory/examining committee. All

students will spend a minimum of two semesters teaching in an undergraduate laboratory or course. The student's research program is to culminate in the writing of a dissertation which must be presented at a formal seminar (EECB 794) and defended and approved by the student's advisory/examining committee before conferral of the degree.

Graduate fellowships are available on a competitive basis. Additional information concerning the program is available by request from Dr. L. Oring, director of Ecology, Evolution and Conservation Biology, Department of Biology.

## Environmental Studies

The university offers a minor in environmental studies under the direction of the Environmental Studies Board. The board is authorized to develop a curriculum of special courses, listed in course offerings under environment, and related courses in various departments. In addition, the board encourages environmentally oriented graduate research based upon any of the conventional disciplines in the academic and professional departments of the university.

The environmental studies minor addresses problems of the environment and of natural resource and energy use, many of which overlap or affect several disciplines. The minor requires 24 credits, of which at least nine must be in upper-division (300-400) courses.

**Core Courses:** The following courses are required of all students taking minors in environmental studies:

| | *Credits* |
|---|---|
| ENV 101 | 3 |
| One of these: ENV 305 (GEOG 305), GEOG 435 (RWF 435), OR RWF 490 | 3 |

**Additional Environmental Courses:** Students taking minors must select at least two courses from each of the following areas of concentration:

*Ecological and Physical Principles:* AGRO 100, 222; BIOL 100, 111; CHEM 101, 105; PHYS 100, 105; RWF 100 or equivalent courses in the biological, earth or physical sciences or in engineering.

*Economic and Social Principles:* AGEC 202, 364; ANTH 470; EC 101, 459; HIST 316; ENV 294, ENV 494, or equivalent courses in economic or social sciences.

*Environmental Planning and Policy:* ENV 305 (GEOG 305) if not taken as a core course; ENV 457 (P SC 457); P SC 336, GEOG 442, 448, 456; RWF 490 if not taken as a core course, ENV 494 or equivalent courses concerned with environmental and resource planning and policy.

Students are responsible for any prerequisites that are required for any of the above.

A maximum of three credits in ENV 301 and three credits in ENV 401 may be used toward the minor program. Each of these may be substituted for one course in each of two different areas of concentration as listed above.

The specific courses taken are selected with the approval of the Environmental Studies Board and the student's major department; a board adviser works with the student in designing an appropriate program. In keeping with the interdisciplinary goals of the minor, no student minoring in environmental studies may include more than six credits from courses in the major department. Such credits must be in addition to those used to fulfill the requirements for the major.

Additional information may be obtained by contacting Dr. Glenn C. Miller, Biochemistry Department, 784-6031.

## Ethnic Studies

The ethnic studies program offers an opportunity for students to gain an awareness of the varied cultures, experiences, and contributions of black Americans, Spanish-speaking (Chicano, Latino) Americans, and Native Americans by providing a series of interdisciplinary focal points within the six humanities and social sciences. In addition to the core course (E S 307), courses in ethnic studies are offered in the subject areas of anthropology, English, foreign languages and literatures, geography, history, political science, psychology, and sociology. Such courses are open to any student regardless of major, and are invaluable to an understanding of the American past and present, or to an assessment of the future.

Ethnic studies also offers minor programs in three areas of specialization: black American, Spanish-speaking American, and Native American. Students who choose one of these minor programs must complete nine credits of required courses and nine credits of elective courses in one ethnic specialization. Nine of these credits must be upper division. No student minoring in an ethnic studies area may include more than six credits from courses in the major department. Such credits must be in addition to those used to fulfill the requirements for the major.

### Black American

*Required Courses:* E S 307; HIST 455, 456.

*Elective Courses:* ANTH 205, 365; ENGL 345; HIST 447, 448, 449; H EC 438; P SC 205, 453; SHR 372; SOC 205, 379.

### Hispanic American (Chicano, Latino)

*Required Courses:* E S 307; SPAN 222, 441.

*Elective Courses:* ANTH 205, 425; HIST 343, 344,345, 346; P SC 205, 415, 453; SOC 205, 379.

### Native American

*Required Courses:* ANTH 362: E S 307; P SC 453.

*Elective Courses:* ANTH 205, 345, 360, 363, 420, 423; ENGL 345; P SC 205; SOC 205, 379.

The Ethnic Studies Board also sponsors special courses in various departments when possible. These courses may be used as elective courses in the specialty areas. Additional information is available upon request from Dr. James Mikawa, Mack Social Science, Room 206, or phone 784-6668.

## General Studies

The university's Bachelor of General Studies (BGS) degree program provides interdisciplinary study across the academic disciplines and professional fields. It is designed for nontraditional students whose age, place of residence, academic interest or career objectives dictate the need for an individualized university degree. There is no on-campus resident credit requirement. Degree candidates are assigned an academic adviser to assist in the design of an appropriate course of study. Students who intend to pursue graduate education should contact their adviser regarding the degree's applicability to that goal.

The objectives of the program are:

1. to meet the university's mission as a land-grant university to better serve the general educational needs of the state's citizens;
2. to provide nontraditional students an opportunity to earn a bachelor's degree while maintaining their family and/or employment responsibilities;
3. to provide an opportunity for a degree which encompasses and unites several disciplinary and professional areas; and
4. to provide students an opportunity to build upon the associate of arts and the associate in general studies degrees offered by two-year colleges.

**Entrance Requirements:** Must be admitted as a regular student.

**Program Completion Requirements:**

1. A minimum of 124 credits must be earned with 40 or more credits in courses numbered 300 or above. A minimum of 45 credits must be completed in university courses (on-campus, off-campus, teleconference or correspondence). Sixty of the 124 total credits must be earned at four-year colleges and universities. A maximum of four credits applicable to the BGS

may be earned in RPED activity courses (courses numbered 100-199).
2. A 2.0 cumulative GPA or higher for all courses attempted at the university and an overall 2.0 GPA or higher must be earned.
3. Courses in United States and Nevada Constitutions must be satisfactorily completed.
4. The ENGL 102 requirement must be completed.
5. Three credits of mathematics at the 105 level or higher be completed .
6. Sixty credits must be taken and distributed in the following manner:

*Humanities and Fine Arts:* (12 credits) ART 116, 117, 214, 257 (three credits only); ENGL 131, 235, 236, 241, 244, 253, 261, 281, 291, 292, 293; FR 221, 223; GER 221, 223; ITAL 221, 223; SPAN 221, 222, 223; HIST 105, 106; MUS 121, 201-202; PHIL 100, 110, 125, 130, 211, 213; THTR 100.

*Natural Sciences:* (12 credits) ANTH 102; BIOL 100, 101, 201, 202, 208, 212; CHEM 100, 101, 102, 201, 202; ENGR 204; ENV 101; GEOG 103; GEOL 101, 102, 160; HIST 282; MATH 105, 115, 211, 213, 215; PHYS 101, 106, 109, 110, 117, 151-152.

*Social Sciences:* (12 credits) ANTH 101, 201, 205; CJ 110, 120; EC 101, 102; GEOG 106; HIST 101, 102, 111, 281; JOUR 101; P SC 103, 104, 205, 210, 211, 231; PSY 101; SHR 220; SOC 101, 202, 205; SPCM 210; W S 101.

*Communication and English Composition:* (12 credits) ENGL 101, 102, 321; SPCM 113; CIS 201-202, 251, 253, 261; C S 183, 283, 285, 386; foreign languages through the intermediate level (205-209).

*Colleges other than Arts and Science:* (12 credits) Use of upper-division courses to fulfill these requirements must be approved by a student's adviser.

7. All Bachelor of General Studies students must meet the university's core curriculum requirements.

**Degree to be Granted:** Successful candidates are awarded a bachelor of general studies degree. Program information is available from the office of the dean, Division of Continuing Education, Room 335, College Inn.

## Gerontology

An interdisciplinary certificate program in gerontology is administered by the Geriatric and Gerontology Center through the College of Human and Community Sciences. Participating colleges and schools include arts and science, education, human and community sciences, medicine, and nursing. This program provides students with educational and practical experience to increase effectiveness in working with older adults.

The gerontology certificate may be obtained by students in conjunction with any academic major, by community professionals who work with senior citizens, or by nondegree seeking individuals interested in issues pertaining to the elderly. The 24-credit course of study includes 12 credits of required subjects and 12 credits selected from approved electives emphasizing gerontology. Field study, a vital component of the curriculum, can be earned through field experience or field projects that have been approved by the program coordinator.

Students wishing to minor in gerontology need not complete the entire certificate program but must complete a total of 18 credits. Nine of these credits must be selected from the required corecurriculum (excluding field study). The additional nine credits may be selected from any of the remaining courses, including the additional core course, field study, or one of the designated electives.

| *Required core courses (12 credits):* | *Credits* |
|---|---|
| CHS 301—Aging: An Interdisciplinary Approach, OR | 3 |
| HDFS 431e, 631e—Advanced Studies in Human Development and Family | 3 |
| NURS 430, 630—Aging and Health | 3 |
| PSY 446, 646—Psychological Aspects of Aging | 3 |
| Field study | 3 |

| *Electives (12 credits):* | *Credits* |
|---|---|
| CEP 753—Counseling the Older Worker | 3 |
| CEP 400, 600—Introduction to Counseling and Guidance | 3 |
| CHS 300—Communication Skills in Health Care | 3 |
| CHS 420, 620—Health Aspects of Gerontology | 3 |
| CHS 475, 675—Human Values and Professional Ethics | 3 |
| HDFS 437, 637—Death and Dying: Family and Lifespan Perspectives | 3 |
| HDFS 440, 640—Perspectives on Aging | 3 |
| NUTR 422e or f, 622e or f—Nutrition in the Life Cycle | 1 |
| PSY/SOC 276—Aging in Modern American Society (offered through Truckee Meadows Community College and Western Nevada Community College) | 3 |
| RPED 343—Recreation for an Aging Population | 3 |
| S W 430, 630—Social Services in Death and Dying | 3 |
| SOC 410, 610—Sociology of Aging | 3 |
| SPA 421—Communication Problems of the Aged | 3 |

For additional information on the gerontology certificate program and current course offerings, call Betty Dodson, gerontology program coordinator, at 784-1689.

## Historic Preservation

An historic preservation program is offered through the College of Arts and Science. Historic preservation is a rapidly expanding field devoted to the understanding, recording, preservation, restoration or adaptive reuse of significant objects, buildings, sites, neighborhoods, districts or engineering works which reflect or exemplify a portion of the nation's historic and prehistoric cultural heritage. Particular emphasis is placed on the heritage of Nevada and the American West.

Training focuses upon the principles of historic preservation, the structure and purposes of private, municipal, state and federal programs and agencies, historic preservation laws, guidelines and codes, field research projects and internships with local, state and federal historic preservation agencies. Depending upon the student's major program and interests in a particular subfield of historic preservation, related courses taught in other departments and colleges are utilized.

Students enrolled in the Land Use Planning Policy master's degree program may specialize in historic preservation. A program of study, usually 12-15 credit hours of historic preservation coursework, is required.

### Minor

| *Required courses for undergraduate minor:* | *Credits* |
|---|---|
| ANTH, ART, BIOL, HIST, H EC 309—Museology | 3 |
| H P 400—Principles of Historic Preservation | 3 |
| H P 401—Laws and Policies | 3 |
| H P 402—History of American Architecture | 3 |
| H P 405—Historic Preservation Survey and Planning | 3 |
| H P 470—Research Practicum | 3 |
| H P 475, 480, P SC 341 or L SC 107 | 3 |

Additional information is available upon request from Dr. Don D. Fowler, Business Building, Room 501, or phone 784-685 1 .

## Honors Program

The honors program offers talented students additional opportunity for developing their skills and training their powers of observation, thought, and expression. Successful participation in the program gives superior students the personal satisfaction of having met and mastered the most innovative and challenging program the university offers. In accomplishing this, students enjoy a close relationship with their teachers and fellow honors students. Honors students may graduate *cum laude*, *magna cum laude*, or *summa cum laude* from the university. These marks of distinction indicate the ability to complete independent study and exhibit superior scholarship.

Admission to the program for students beginning their college careers in the fall semester 1989 is by application only. Admission is based on high school grades, test scores, admission essay, and teacher recommendations. Application is made directly to the honors program. (Students who enrolled at the university prior to fall semester 1989, and who wish to pursue an honors study

program, should contact Dr. L.C. Hsu, Room 214, Scrugham Engineering-Mines, 784-6691 or 784-6050.)

Honors students complete major and minor fields in addition to their honors courses. The honors course of study is established in consultation with the student's honors faculty adviser. Honors students must maintain a satisfactory grade point average to remain in the program.

Graduation *cum laude* requires a GPA of 3.5 or above; *magna cum laude* a GPA of 3.7 or above with grade of A on the senior thesis or project; *summa cum laude* a GPA of 3.9 or above with grade of A on the senior thesis or project. The GPA requirement must be satisfied by 96 credits or more in courses graded A through F.

The honors program is administered by the Honors Program Board, which evaluates all applications for admission and all applications for graduation with honors.

For additional information contact Dr. Francis X. Hartigan, director of the Honors Program, 101 Lincoln Hall, 784-1455.

## Hydrology and Hydrogeology

Academic guidance is administered by the director and an interdisciplinary faculty board comprised of faculty members with teaching and/or research interests in the areas of hydrology, hydrogeology, and water resources. The programs are structured to stimulate professional development of the graduate student by: (1) providing appropriate channels for specialization, (2) broadening knowledge and competence through basic and applied concepts relative to the field(s) of choice, and (3) providing a learning and/or working climate conducive to subsequent professional careers in teaching, research, consulting, and/or administration.

Entering students should have a bachelor of science degree or the equivalent in agricultural engineering, biology, civil engineering, geology, geological engineering, natural resource ecology, or a related field. The master of science degree can be pursued under either Plan A (thesis) or Plan B (nonthesis), and the Ph.D. degree is available for qualified students who intend to pursue a career in teaching or research. Core courses are established by the Interdisciplinary Faculty Board for both the M.S. and Ph.D. programs. Prerequisites for these programs are: mathematics through differential equations, a year of physics, a year of chemistry and a course in fluid mechanics. The graduate degree may be completed through agriculture, engineering or mines.

Residents of Alaska, Arizona, Colorado, Hawaii, Idaho, Montana, New Mexico, Oregon, Utah, Washington, or Wyoming, who qualify under the Western Interstate Commission for Higher Education (WICHE) western regional graduate programs, may be selected under the WICHE program. This program provides an out-of-state tuition waiver for the first year only. A letter must accompany the application stating that the applicant is going to apply for a university grant-in-aid for the WICHE approved program. The state WICHE office from the state of origin must send a letter to the Office of Admissions and Records certifying that the applicant is eligible for the WICHE regional graduate program.

Applications for the program are processed twice a year. For the fall semester, applications and letters of reference must be received by February 15. Letters of acceptance are mailed by March 15. For the spring semester, applications and letters of reference must be received by October 1. Letters of acceptance are mailed by November 1.

Additional information is available upon request from Dr. W. Berry Lyons, Hydrology/Hydrogeology Interdisciplinary Program, Mackay School of Mines, (702) 784-6465.

## Interior Design Program

*Faculty:* Casebier, Nissen (Coordinator)

The baccalaureate program in interior design combines courses in environmental design, behavioral science, business, art and communications with an interior design core of 49 credits. To obtain the bachelor degree students must complete a total of 128 credits and meet both university and program requirements. A minimum of 50 credits must be completed in upper-division courses.

The curriculum in interior design prepares students for professional careers in residential and/or commercial interior design, education and related fields.

For the course descriptions specific to interior design, see the course offerings at the back of the general catalog. Since many of the courses require completion of prerequisites, students are encouraged to seek academic advisement through the interior design program.

### Major:

*Interior design core requirements* ..... *49 credits*

INTD 151—Foundations for Design
ADT 105—Architectural Drafting I
ADT 107—Architectural Construction
DFT 131—Introduction to Computer Aided Design
TAM 216—Textiles
INTD 256—Interior Design I
INTD 275—Housing
INTD 350—Space, Light & Color
INTD 353—History of Interiors
INTD 354—Interior Presentation Techniques
INTD 355—Materials & Resources
INTD 358—Interior Design II
INTD 452—Contemporary Design Concepts
INTD 456—Professional Practices for Interior Designers
INTD 459—Interior Design III
INTD 470—Internship

*Interdisciplinary expanded field of concentration:* ..... *45 credits*

| | *Credits* |
|---|---|
| *Environmental Design:* | |
| H P 400 or 402[1], plus six credits from PSY 333 | 9 |
| *Behavioral Science:* | |
| SOC 101, 342, 371, 391, 393, 480, 494; PSY 435 | 3 |
| *Business:* | |
| MGRS 101, 270, 325, 353, 373, 462; ACC 201, 202 | 6 |
| *Art:* | |
| ART 100,[1] 116,[1] 117,[1] 121,[1] plus six credits studio art and/or art history | 18 |
| *Communications:* | |
| SPCM 329,[1] and JOUR 303 or 335[1], plus three credits from SPCM 315, 410, 411, 412, 428, 435; or JOUR 331, 333, 334, 431, 435 | 9 |

### Minor:

Students majoring in another field may minor in interior design by completing the following:

| | *Credits* |
|---|---|
| INTD 151 (four credits), 353, 355, 452 | 13 |
| INTD 275, 350, 402 (minimum of two credits), 456 | 5-6 |
| | 18-19 |

Additional information is available upon request from Professor LuAnn Nissen, coordinator, Interior Design Program, 521 Business Building, 784-6577/1780.

## International Affairs

An interdisciplinary major in international affairs is available within the College of Arts and Science. It includes a core liberal arts component which integrates course work from several disciplines and serves as the foundation for a number of specialized options that can lead toward advanced degrees and careers in international business, diplomacy, education, journalism, or public administra-

[1]Required courses.

tion. Such careers normally require proficiency in foreign languages as well as professional degrees beyond the Bachelor of Arts.

Beginning students should take introductory economics during their first year and either begin or continue their study of foreign languages. International students should take courses in modern European and American history and in American politics before beginning coursework in the major. All students would benefit from electives in comparative cultures and religions. A course in statistics should be taken after fulfillment of the university mathematics requirement. Coursework in the major can begin concurrently with the Western Tradition sequence or after part of that sequence has been completed.

The integrated core of the major comprises six courses, including at least one course each in economics and political science, that are approved by the program director. A list of designated options in economics, foreign literature, geography, history, philosophy, and political science that can be used to satisfy the core is available from the director. Each student also selects a specialization and must complete five specialized courses plus a senior research thesis under the close supervision of a faculty member who teaches in the area of specialization. Internships may substitute for one or two specialized courses.

Area study specialization options, which must be supported by study of an appropriate language, are available for East Asia, Latin America, the Soviet Union, and Western Europe. The university provides study abroad opportunities that support each of these specializations. Alternately, students can select as their specialization programs in administration, in diplomacy, in international political economy, or in peace and security. These options do not require selection of a particular foreign language. Every effort should be made to include extended travel or study abroad experience in each student's program.

Programs of study are individually designed in consultation with the director, Dr. Richard Ganzel (784-4601). All programs must include either a minor or a second major, with skill-oriented options such as economics, foreign languages, geography, and journalism strongly recommended. Since international careers are quite demanding, the major in International Affairs is designed to challenge as well as to stimulate serious, capable students.

## Italian Studies

The College of Arts and Science offers an undergraduate minor in Italian Studies under the direction of the Department of Foreign Languages and Literatures. Twenty credits are required of which 11-14 must be taken through the Department of Foreign Languages and Literatures and 6-9 credits of electives in related fields at the 300-400 level to be taken in at least two different departments. The related courses chosen together with an adviser and the required papers in the related courses must treat specifically Italian topics.

| *Core Courses* | *Credits* |
|---|---|
| ITAL 204—Second-Year Italian | 3 |
| ITAL 221—Italy and Its Culture, OR | 3 |
| ITAL 223—Italian Literature in English Translation | 3 |
| ITAL 309—Italian Conversation | 2 |
| ITAL 462—Dante's Divine Comedy | 3 |
| ITAL 464—Petrarch, Boccaccio | 3 |
| | 11-14 |

| *Related Courses* | *Credits* |
|---|---|
| ANTH 469—Peoples and Culture of Europe | 3 |
| ART 315—Italian Renaissance | 3 |
| ART 316—Southern Baroque Art | 3 |
| HIST 384—The Age of the Renaissance | 3 |
| HIST 385—Reformation Europe and the Age of Baroque | 3 |
| P SC 411—Government and Politics in Western Europe | 3 |

## Master of Judicial Studies

The Master of Judicial Studies degree program is offered through a cooperative program of the University of Nevada, Reno, the National Judicial College, and the National Council of Juvenile and Family Court Judges. The two judicial organizations are academic affiliates of the university and are located on the campus. The purpose of the MJS program is to provide sitting judges with a coherent theoretical and practical academic experience aimed at giving them more knowledge and tools to use in their courtrooms.

Sitting judges may apply for admission to the program and, if admitted, may pursue one of two major courses of study: one intended for trial judges, the other intended for juvenile and family court judges. The degree requires the successful completion of 32 semester credits in required and elective courses and the writing of an acceptable thesis. Candidates spend a minimum of two summers in residence at the university. For further information, contact Dr. James Richardson, Department of Sociology, telephone (702) 784-6647.

## Land Use Planning Policy

A master of science degree is offered with a major in land use planning policy. The program is interdisciplinary and is offered through the cooperative efforts of several departments—agricultural economics, anthropology, civil engineering, economics, geography, political science and range, wildlife and forestry. The Land Use Planning Policy Board manages the program under the administration of the College of Arts and Science. Close liaison is maintained with planning and related personnel in government and industry.

The program requires a minimum of 39 credits. Candidates take 21 credits of core requirements, including computer graphics, statistical analysis, environmental law, and seminars in resource and land use policy, in urban and regional planning and in economics of renewable natural resources.

Beyond the core, the student chooses a field of specialization, for example, planning and administration, environmental policy and law, or historic preservation. In this field, the student takes at least 12 credits in lectures, independent research, and seminars, and completes a thesis (six credits). An internship is also highly recommended.

Requirements in addition to those for regular graduate standing admission include a minimum grade-point average of 3.0, introductory work in calculus, computer programming and statistics, and reasonable competency in communication. Applications are submitted through the Office of Admissions and Records for evaluation by the Land Use Planning Policy Board, the participating department and its college. Approved applicants must satisfy the requirements of the land use planning policy program and any additional requirements of the specific department and college.

For additional information, contact the chairman of the Land Use Planning Board, Christopher H. Exline, Department of Geography, Room 225, Mackay Science, telephone 784-6995.

## Medieval and Renaissance Studies

Medieval and Renaissance studies is a minor for students majoring in anthropology, art, criminal justice, English, foreign languages and literatures, history, mathematics, music, philosophy, political science, psychology, sociology, and speech and theatre. The purpose of this interdisciplinary program is to enable students to understand and explore the culture of the Middle Ages and Renaissance so they may better understand the roots of Western civilization.

Students wishing to minor in Medieval and Renaissance studies must complete a total of 18 credits which must include courses from at least two departments. Twelve of these credits must be

earned from courses numbered 300 or above. The courses acceptable toward the minor are listed below in two groups, *Group A* (courses with a predominantly Medieval and/or Renaissance content) and *Group B* (courses of an auxiliary nature). At least 12 credits must be chosen from Group A.

*Group A:* ART 314, 315, 317, 419; ENGL 271, 272, 412, 413, 417, 418, 451, 453, 454, 458, 460, 461, 464, 465; FLL 458; FR 463. 464, 465, 466; GER 458; HIST 373, 384, 393, 473; ITAL 462, 464; MUS 201; PHIL 212; SPAN 353, 462.

*Group B:* ART 116, 117; ENGL 235, 292, 337; FLL 292; FR 221, 313; GER 221 and 459; HIST 105, 281, 371, 372, 377, 385, 421; ITAL 221, 223; PHIL 211, 410, 411; SPAN 221, 464, 466, 469; THTR 471.

In addition, several of these departments have courses treating individual authors, artists, themes, etc., as well as independent studies courses. Where the subject matter of such courses is appropriate, they may be used toward fulfillment of the requirements of this minor.

A student minoring in Medieval and Renaissance studies may include a maximum of six credits from courses in the major department. Such credits must be in addition to those used to fulfill the requirements of the major. To insure cohesiveness in a student's program, courses should be chosen with the help of an adviser and the minor program must be approved by the Medieval and Renaissance Studies Committee.

Additional information is available from Dr. Franco Manca, Frandsen Humanities, Room 205.

## Museology Minor

The interdisciplinary program in museology offers students an opportunity to explore the expanding field of museum work and museum research. The museology minor is designed to provide an introduction to the field, an exposure to some of the skills and techniques required of a career museologist, and an initial apprenticeship experience in a museum setting. Today there are roughly 7,000 public museums in the United States, employing career museologists as well as professional curators, exhibit technicians, educators and others. Students contemplating a career in the museum field, or in a discipline such as anthropology, art, biology, geology, history, historic preservation or textiles and clothing, or one in federal or state agency service, should find the minor particularly useful. Students choosing this minor must complete six credits in required courses as well as 12 credits in elective courses. Because the elective directions can be many and varied, students and their advisers must consult the chairman of the museology committee for a specific program plan (see below). A student minoring in museology may include in the minor a maximum of six credits from courses in the major department. Such credits must be in addition to those used to fulfill the requirements for the major. Nine of the total minor credits must be upper division. For additional information, contact Dr. James R. Firby, Chairman, Museology Committee, 784-6050.

| *Required:* | *Credits* |
|---|---|
| ANTH, ART, BIOL, GEOL, HIST, TAM 309 | 3 |
| ANTH 480, BIOL 310, HIST 310, TAM 470, or ART 490 | 3 |
| *Additional Electives:* ANTH 330, 340, 345, 360, 362, 402, 403, 423, 425; ART 100, 116, 117, 150, 258, 259, 314, 315, 316, 419; BIOL 333, 334, 370, 372, 373, 376, 377, 378; GEOL 101, 102, 160, 211, 212, 461; HIST 281, 282, 315, 371, 372, 384, 403, 404, 473; H P 301, 475; INTD 151, 353; TAM 315 .. | 12 |
| | 12 |

*Suggested Emphases:*
*History Emphasis:* ANTH 340; HIST 281, 282, 309, 310, 315, 371, 372, 384, 403, 404, 473; H P 301, 474.

*Science Emphasis:* ANTH or BIOL 309; ANTH 480 or BIOL 310; ANTH 330, 340, 345, 360, 362, 402, 403, 423, 425; BIOL 333, 334, 370, 372, 373, 376, 377, 378; GEOL 461; HIST 281, 282.

*Exhibits Emphasis:* ANTH 330, 345; ART 100, 116, 117, 150, 258, 259, 309, 319, 419.

## Religious Studies

The purpose of this interdisciplinary program is to allow the student to pursue, as an object of academic inquiry, such aspects of religious experience as are subject to study without regard to sectarian sentiment or affiliation.

### Minor

Students wishing to minor in religious studies must complete a total of 18 credits to include courses from at least two departments and R ST 101, Introduction to Religious Studies. Twelve (12) of these credits must be earned from courses numbered 300 or above. The introductory course (R ST 101) is a prerequisite for 300-level courses unless waived by the religious studies adviser. The courses acceptable toward the minor are listed below in two groups, *Group A* and *Group B*. At least 12 credits must be chosen from Group A; other courses may be selected from Group B.

*Group A:* ANTH 322; ENGL 268, 335, 337; HIST 317, 318; PHIL 112, 323; B V 264; PSY 350; R ST 101; SOC 333.

*Group B:* ANTH 338; ART 116, 314; ENGL 292, 333, 339, 340, 453, 464; HIST 105, 371, 372, 373, 403, 404, 427; PHIL 201, 203, 211, 401; SHR 340.

In addition, several of these departments have courses treating individual authors, artists and themes, as well as courses in independent studies. Where the subject matter of such courses is appropriate, they may be used toward fulfillment of the requirements of this minor. A student minoring in religious studies may include a maximum of six (6) credits from courses in the major department. Such credits must be in addition to those used to fulfill the requirements of the major. To insure cohesiveness in a student's program, courses should be chosen with the help of an adviser and the minor program must be approved by the Religious Studies Committee.

Additional information is available upon request from the chairman of the Religious Studies Committee, Dr. Jane Davidson, Art Department, Church Fine Arts, Room 209, 784-6682.

## Teacher Licensure

Students who successfully complete the professional education requirements of the teacher preparation degree programs at the university, with major and minor teaching fields, simultaneously meet all requirements for licensure by the Nevada State Department of Education. However, proper application must be made to the state office. **New state licensure requirements are met through appropriate courses listed in this catalog under the College of Education.**

Advisement for teacher education programs is offered through the Department of Curriculum and Instruction and the dean of the College of Education, in cooperation with department chairmen and deans of the Colleges of Arts and Science, Business Administration, Human and Community Sciences, and the School of Mines.

The programs for teacher education at the university conform with standards of the National Council for Accreditation of Teacher Education, which are considerably higher than the minimum requirements currently demanded by the Nevada State Department of Education.

Graduates of this or other universities who have not followed the approved teacher education curriculum may obtain information concerning minimum requirements for licensure from the Nevada State Department of Education, 400 West King Street, Carson City, NV 89710. Students who wish to be licensed in another state should obtain a statement of requirements from that state's department of education.

A postbaccalaureate certification program for graduates is offered through the College of Education.

Additional information is available upon request from Dr. Frank D. Meyers, Dean, Education Building, Room 101.

## Teaching English as a Second Language (TESL)

The purpose of this program is to provide a course of study leading to the degree of master of arts with a major in teaching English as a second language. The program is interdisciplinary, requiring courses from both the Department of English in the College of Arts and Science, and the Department of Curriculum and Instruction in the College of Education. Students can choose from two track options: (1) TESL in the elementary school, or (2) general TESL. The first track is designed primarily for elementary-level teachers; the second is geared toward working with adult ESL learners. The tracks are equally grounded in theory, and both expect a high level of practical expertise upon completion of the degree program.

The program requires a minimum of 36 credits. Candidates take 18 credits of core requirements, nine of which must be at the 700 level. Required core courses are: ENGL 610, 636, 639, 739; C I 776 and either C I 744, CAPS 700 or ENGL 711. The remaining 18 credits are taken in the student's area of specialization. Students enrolling in Track 1 take the following courses: C I 631, 645, 646, 698, 726, plus three credits of 700-level options such as: ENGL 712, 740, 750. Students enrolling in Track 2 take these courses: ENGL 638, 640, 712, 740, plus six credits of options such as ENGL 750, 789, C I 698 or 726. Upon completion of the program, students in both tracks are required to take a comprehensive written and oral examination.

For regular graduate standing admission to the program, students must have an undergraduate grade point average of 3.0 or higher over the last two years of undergraduate study. Non-native speakers of English are required to have a TOEFL score of 550 or above. GRE scores are required. Contact adviser for details.

For further information, contact Dr. Christian Faltis, TESL coordinator, 784-4961.

## Women's Studies

The purpose of this interdisciplinary program is to provide a fuller understanding of the nature and role of women through academic study, to discover and evaluate the accomplishments of women, and to consider the special problems of women in a changing world.

The core course (W S 101) is offered each fall semester and occasionally during the summer session, and is open to all students, regardless of major. Related courses are offered by various departments. In addition, suitable courses offered from time to time may be approved by the women's studies coordinator for inclusion in the minor program.

Students wishing to minor in women's studies must complete the introductory course (W S 101) and a program comprising 15 additional credits (nine in 300 or higher level courses) chosen from the following: ANTH 212; ENGL 267; P SC 354; SHR 372; SOC 275, 453, 480; W S 250, 297, 430, 440, 450, 490, 497.

Students must consult with the women's studies adviser to choose courses suitable to their needs and majors. Additional information is available from the women's studies coordinator, 784-1560.

# National Exchange Program

## National Student Exchange

The university is a member of the National Student Exchange (NSE). This program provides qualified undergraduate students with an opportunity to become better acquainted with different social and educational patterns in other areas of the U.S. Governed by the philosophy that participation is essential to education, the NSE encourages students to experience new lifestyles and appreciate various cultural perspectives.

Nevada residents may apply for exchange in the sophomore or junior year to one of several regionally accredited state institutions across the U.S. (currently more than 90 schools participate). A minimum of 2.5 cumulative university grade point average is required and, if accepted, the student pays in-state fees at the school selected.

Information and applications may be obtained from Room 102, Thompson Student Services Center

## Western Interstate Commission for Higher Education (WICHE)

The state of Nevada contributes nearly $1 million *each year* in support funds to Nevadans attending out-of-state schools under the auspices of WICHE. Currently, Nevada provides grants to scholars in the Professional Student Exchange Program in the fields of *law, physical therapy, occupational therapy, veterinary medicine, dentistry, optometry, library science, and pharmacy.*

The recipient selection process is competitive and based upon a composite scoring of grade point averages and admissions test scores. Nevertheless, the application process is quite simple. The only requirement is that the applicant must be a Nevada resident for one year prior to the date of application.

To receive primary consideration, applications must be received by October 30 of the year prior to the year in which enrollment in professional school is planned. Official transcripts must be submitted and the required admissions examinations must be taken before October 30. Applicants who miss the deadline are placed on an alternate waiting list.

Nevada WICHE also has information on Western Regional Graduate Programs which enable Nevadans to pursue graduate studies at out-of-state institutions at resident tuition rates.

Nevada students can now participate in a new tuition reduction program at the undergraduate level. Under WICHE's Western Undergraduate Exchange Program (WUE), Nevada residents can attend 141 participating colleges and universities in 12 western states at in-state tuition plus 50 percent of that amount. There are limitations and restrictions, however. Please call the WICHE office for updates and details.

Applications and brochures may be obtained at the Nevada WICHE Office, located in the Old Gym, Room 107, 784-4900.

# Study Abroad Programs

## Basque, French, Spanish, Italian, Latin American, International Business and Economics Study Abroad

University Studies Abroad is a consortium project of the University of Nevada, Reno and four other universities which offers unique programs on four European campuses and one in Latin America. A special dimension of these programs allows students to fulfill all university foreign language requirements in only one semester. Excursions and fully integrated living opportunities constitute an integral part of these programs.

For further information, contact Dr. Carmelo Urza, Getchell Library, Room 274, or telephone 784-4854.

### Basque/Spanish Studies

Undergraduate and graduate courses in Basque or Spanish language (all levels), anthropology, history, political science, literature, economics, folkdance, art history, and cuisine are available during the summer, fall and spring semesters. These programs are located in the seaside resort city of San Sebastian near the Spanish /French border.

### French Studies

Summer, fall or spring semesters of intensive French language at the elementary, intermediate and advanced levels are offered. Courses in Basque Studies, French literature, geography, history, and political science are also available. This program is located at the University of Pau in the southwestern city of Pau.

### Italian Studies: International Business and Economics

The Turin program introduces students to the economic structure of Italy, the European Common Market, and principles of international business and economics while gaining a working knowledge of the Italian language and a deeper understanding of Italy's culture, history, and arts. This program is located in northwestern Italy in the city of Turin. One or two semesters.

### Spanish/Latin American Studies in Chile

Students can opt to study the language, art history, economics, history and culture of Chile and Latin America during the fall and/or spring semesters. This program is located in Santiago.

## London Study Program

The London Study Program is a unique and challenging overseas experience for University of Nevada, Reno students. Individuals may study at the University of London for a semester as regularly enrolled University of Nevada, Reno students. Students register for all classes prior to departure, pay regular university fees, and earn university credits to apply toward their major and degree. Any financial aid received at the University of Nevada, Reno may be applied toward the cost of the program. Students who have completed 30 semester credits or more with a GPA of 2.0 or higher are eligible to participate. Enrollment is limited.

The American Institute for Foreign Studies (AIFS) provides all the necessary nonacademic support services at reasonable rates to participating students. It is a highly regarded international organization which provides comprehensive overseas study and travel opportunities for students and teachers. AIFS support includes classroom facilities at the University of London, room and board, social activities, cultural events, insurance coverage, and transportation arrangements.

Further information on the London Study Program is available upon request from Dr. Francis X. Hartigan, History Department, 784-6562 or 784-6855.

# Max C. Fleischmann College of Agriculture

Bernard M. Jones, *Dean*
Donald R. Hanks, *Acting Associate Dean*

Agriculture is one of the largest national and international industries. More than 20 percent of our nation's work force is employed by the agricultural food industry. The primary goal of the College of Agriculture is to educate people for professional careers in this industry.

The mission of the College of Agriculture is to build human capacity and capability. Central to this mission is the protection, utilization, and management of the soil, water, air, plant and animal resources, the economic vitality of the agriculture industry, the development and implementation of technologies, and the quality of the environment. Of equal importance is a concern with the utilization of food in health promoting human diets and the social and economic well-being of individuals, families, and society.

The College of Agriculture offers the bachelor of science degree with majors in agribusiness, animal science, biochemistry, resource management, textile and apparel merchandising, and veterinary science.

## Instructional Program

The College of Agriculture offers educational opportunities with emphasis in three areas:

**Natural and Environmental Resources**—Instructional areas include how plants and animals interact under natural conditions, how to restore damaged environments; how to properly manage fish, wildlife, forests and rangelands; how to evaluate the impact of land use; and how to increase crop productivity without harming the environment.

**Agriculture Science**—Areas of study include biochemistry, veterinary science, animal and plant science where projects include genetically transferring plant and animal cells; work on cancer-related projects; investigation of subcellular processes; examination of biochemical reactions important to plant and animal life; and development of laboratory procedures for biochemical analysis.

**Agribusiness**—Interest areas include business management in finance, banking and investments. Course offerings involve economics, budgeting, market analysis, investment strategies, production and price forecasting.

The college provides instructional programs which emphasize practical applications of science, technology, and theory. Excellent field and laboratory facilities are utilized to provide students with realistic educational experiences. Students who participate in the agriculture instructional programs will receive a balanced educational experience which will prepare them for a variety of professional careers in the dynamic agriculture industry or for advanced degree programs.

### Certificates

The College of Agriculture grants certificates for the successful completion of 75 or more credits toward a baccalaureate degree or for duly authorized short courses or travel experiences. The student must apply for a certificate at the office of the associate dean.

## Baccalaureate Programs

The College of Agriculture offers the bachelor of science degree with majors in agribusiness, animal science, biochemistry, resource management, textile and apparel merchandising, and veterinary science. A bachelor of science with a major in agriculture is offered jointly with the College of Education. By selecting appropriate options, students may achieve specialization within the major. Each option includes certain required courses plus electives to be selected by the student in consultation with an adviser.

## Instructional Departments

### Agricultural Economics

*Faculty:* Champney, Garrett, Harris, Lambert, Markee, Pedersen, Narayanan (Ch.), Mooney, Myer, Shane

Undergraduate Degree: bachelor of science
- Major: agribusiness, textile and apparel merchandising
- Minor: agribusiness, textile and apparel merchandising

Graduate Degree: master of science
- Major: agricultural economics
- Areas of Specialization: production economics, ranch and farm management, agricultural marketing, land and water economics, agricultural policy, price analysis and agricultural business

### Animal Science

*Faculty:* Armstrong, Cirelli, Foote, Garner, Holcombe, Jones, Judkins, Krysl, Ringkob

Undergraduate Degree: bachelor of science
- Major: animal science
- Minor: animal science

Graduate Degree: master of science
- Major: animal science
- Areas of Specialization: meat science, nutrition, reproductive physiology, production, management, and general animal science

### Biochemistry

*Faculty:* Ahmad, Ball, Blomquist, Borgeson, Bowman, Condit, Cramer, DeLisle, Dreiling, Harrington, Heisler, Horodyski, Lewis, Miller, Nichol, Pardini, Reitz, Schooley, Seemann (Ch.), Welch, Winicov, Woodin

Undergraduate Degree: bachelor of science
- Major: biochemistry
- Minor: biochemistry

Graduate Degrees: master of science, doctor of philosophy
Major: biochemistry

## Plant Science

*Faculty:* Ball, Bowman, Condit, Cramer, DeLisle, Devitt, Fernandez, Jensen, Johnson, Maxfield, Seemann (Ch.), Sorenson, Thran

Graduate Degree: master of science, doctor of philosophy (through biochemistry or cell and molecular biology)
Major: plant science
Areas of Specialization: physiology, biochemistry, and molecular biology of cell processes, environmental physiology of plants

## Range, Wildlife and Forestry

*Faculty:* Berger, Burkhardt, Elvidge, Gifford (Ch.), Guitjens, Johnson, Miller, Nowak, Oring, Stacey, Swanson, Taylor, Tueller, Walker
*Adjunct Faculty:* Blank, Longland, Tausch, Young

Undergraduate Degree: bachelor of science
Major: resource management
Graduate Degree: master of science
Major: resource management
Areas of Specialization: resource planning and management as they relate to rangeland, forests, wildlife, and hydrology

A master of science and doctor of philosophy is offered in hydrology/hydrogeology as part of an interdisciplinary program with the College of Agriculture, School of Mines, and College of Engineering.

A doctor of philosophy is offered in ecology, evolution, and conservation biology as part of an interdisciplinary program with the College of Agriculture and College of Arts and Science.

## School of Veterinary Medicine

*Faculty:* Hall, Hanks (Ch.), Hudig, Kvasnicka, Nichol, St. Jeor, Taylor
*Adjunct Faculty:* Walther

Undergraduate Degree: bachelor of science
Major: veterinary science
After completion of the three-year, pre-veterinary medicine curriculum and the university core requirements, students must complete and transfer 32 credits from a professional school to receive the bachelor's degree from the University of Nevada, Reno.

# University Requirements

The following are required for all students in the university working toward a baccalaureate degree:

| *University Core Requirements* | *Credits* |
|---|---|
| Writing | 3-6 |
| Mathematics | 3 |
| Natural science | 3 |
| Social science | 3 |
| Fine arts | 3 |
| The western tradition | 9 |
| Capstone courses | 6 |
| | 33-36 |

# AGRIBUSINESS

The agribusiness major is offered through the Agricultural Economics Department and is designed to provide a student a broad background in business and economics. This program offers flexibility so the student can pursue special interests in natural resources, environmental concerns, or production agriculture. The department also offers a minor in agribusiness.

| *University Core Requirements* | *Credits* |
|---|---|
| | 33-36 |

*Agribusiness Curriculum*

| | *Credits* |
|---|---|
| ACC 201, 202 | 6 |
| AGEC 211, 213, 270, 310, 313, 314, 350, 425, 428, 470 | 29 |
| EC 101, 102, 321, 303 or 322 | 12 |
| MATH 211 | 3 |
| MGRS 310, 323, 325, 365 or AGEC 315 | 12 |
| SPCM 113 | 3 |
| Electives | 27 |
| | 92 |

**Minor:** The minor is designed for students who may not want to major in agribusiness but are interested in supplementing their major with a background in economics.

| | *Credits* |
|---|---|
| EC 101, 102 | 6 |
| AGEC 211, 310, 332 | 9 |
| AGEC 315, 322, 411, 425, 428, 466 (choice of two) | 6 |
| | 21 |

# AGRICULTURAL EDUCATION AND COMMUNICATIONS

The College of Agriculture and the College of Education have implemented a cooperative agreement to prepare teachers of agriculture. Students who desire to pursue careers as teachers of agriculture should enroll in the secondary education program in the Curriculum and Instruction Department of the College of Education and complete the professional teaching courses in secondary education and occupational education. Students will be required to take a minimum of 36 credits of approved coursework in the College of Agriculture to achieve a major certification to teach agriculture education and a minimum of 24 credits to receive a teaching minor in agriculture education.

For further information and degree requirements, contact either the associate dean for resident instruction of the College of Agriculture or the coordinator for occupational education in the Curriculum and Instruction Department, College of Education.

# ANIMAL SCIENCE

Students majoring in animal science prepare for careers in livestock production, business, education, research, and services related to livestock. Beef cattle ranching, meat processing and production, livestock extension, university teaching and research, livestock consultants, market livestock analysis, and animal recreationists are examples of some of the professional opportuni-

ties available. All animal science majors must complete the Group II core requirements as listed below:

| *University Core Requirements* | *Credits* |
|---|---|
| | 33-36 |

| Group II Core Requirements | *Credits* |
|---|---|
| A SC 100, 203, 211 | 9 |
| AGEC 213, or equivalent | 3 |
| BIOL 111, or equivalent | 3 |
| CHEM 101, 102, 142 or equivalent | 7 |
| SPCM 113 | 3 |

## Group II Program Requirements

This curriculum is designed to aid students in formulating a plan of study to parallel their specific interests and to provide a sound background in scientific and management principles. Students may follow a course of study emphasizing agribusiness, equine management, livestock production, science, or a combination thereof. **Each program of study must be approved by both the student's adviser and department chairman following completion of 64 credits.**

### Lower-division Requirements

Select 12 credits from the following: A SC 162, 163, 200, 201, 206, 208, 280; AGEC 100, 202, 211, 270; AGED 100, 120, 200; AGRO 100, 222; BIOL 111, 112, 251; CIS 250, 261; EC 101, 102; HORT 164; IPM 100; MATH 211, 213, 214, 215, 216; RWF 100, 201; V M 100.

### Upper-division Requirements

| | *Credits* |
|---|---|
| A SC 307—Physiology of the Domestic Animal | 3 |
| A SC 309—Physiology of Reproduction | 3 |
| A SC 325—Animal Genetics | 3 |
| A SC 400—Seminar | 1 |
| A SC 406—Advanced Nutrition Management | 4 |
| A SC 412, 413, 423, 424 (two out of four courses) | 5-6 |
| BIOL 366 or V M 413—Anatomy | 3-4 |

Select 15 credits from the following: A SC 305, 315, 316, 411, 414, 480; A SC 412, 413, 423, 424 (two out of four not utilized for the upper-division requirements); AGEC 310, 312, 313, 314, 315, 322, 332, 411, 422, 423; AGED 332, 341, 360, 371, 410; AGRO 355, 412; B CH 400, 403, 404, 413; BIOL 313, 314, 370, 404, 480, 481; IPM 422; RWF 341, 345, 351, 482, 493, 494.

**Minor:** The minor is designed for non-majors who desire supplemental courses in animal science.

| | *Credits* |
|---|---|
| A SC 100 | 3 |
| A SC 203 or 211 | 3 |
| A SC 307, 309, 325, or 406 | 9 |
| A SC 412, 413, 423, or 424 | 3 |
| | 18 |

# BIOCHEMISTRY

An undergraduate major is offered in biochemistry through the College of Agriculture and the School of Medicine. This program provides the student with a well-rounded general education that emphasizes the biological and chemical sciences and strong specific training in the major field through a sequence of standard biochemistry courses during the junior and senior years. A senior thesis is required. A minor in biochemistry is also available.

The bachelor of science with a major in biochemistry prepares students for graduate study, civil service positions, industry and professional fields related to life, health, agriculture and the medical sciences.

The curriculum for majors is shown below. Students interested in the program should contact the Biochemistry Department for advisement.

*Biochemistry Curriculum*

*Freshman Year*

| | *Credits* |
|---|---|
| BIOL 111, 112 | 7 |
| CHEM 201, 202 recommended; CHEM 101, 102 accepted | 8 |
| ENGL 101, 102 | 6 |
| MATH 215, 216 | 8 |
| Electives | 3 |
| | 32 |

*Sophomore Year*

| | *Credits* |
|---|---|
| AGEC 270 or equivalent | 3 |
| CHEM 343, 344 | 6 |
| CHEM 347, 348 | 4 |
| PHYS 151, 152 | 6 |
| PHYS 153, 154 | 2 |
| SPCM 113 | 3 |
| W T 201, 202 | 6 |
| Electives | 2 |
| | 32 |

*Junior Year*

| | *Credits* |
|---|---|
| B CH 400 | 4 |
| B CH 417 | 4 |
| B CH 403, 404 | 4 |
| CHEM 330 | 4 |
| CHEM 353, 354 recommended: CHEM 357 accepted | 6 |
| MINE 213 or equivalent | 2 |
| W T 203 | 3 |
| Biological science electives[1] | 4 |
| Electives | 1 |
| | 32 |

*Senior Year*

| | *Credits* |
|---|---|
| B CH 407, 408 | 6 |
| B CH 413 | 4 |
| B CH 420, 421 | 2 |
| Biological science electives[1] | 4 |
| Electives | 10 |
| Fine arts, social science core | 6 |
| | 32 |

## Minor in Biochemistry

Students majoring in another field may minor in biochemistry by completing the following:

| | *Credits* |
|---|---|
| B CH 400, 403, 404 | 8 |
| B CH 413 or 417 | 4 |
| An additional six credits in any course in the physical sciences (including additional biochemistry) | 6 |
| | 18 |

# PLANT SCIENCE

The Plant Science Department does not presently offer an undergraduate major. However, the department does offer a number of undergraduate and graduate-level courses which provide students with the opportunity to become familiar with important areas in modern plant biology. Areas of teaching concentration within the department include plant physiology, plant

[1]Must be a 300-level course or higher.

nutrition, molecular biology, integrated pest management, urban horticulture, soil science, plant genetics, and statistics. The department also provides numerous research and laboratory opportunities for undergraduates. This major has been discontinued. Students in this program must complete all graduation requirements and receive a degree by May 1993.

# RESOURCE MANAGEMENT

The resource management major is offered through the Range, Wildlife and Forestry Department and balances a basic interdisciplinary background with flexibility in career choice. Education for a career in natural resources, forestry, and environmental sciences, or hydrology extends the physical, biological, and social sciences by applying analytical skills to diverse problems.

A student may emphasize natural resources or environmental sciences in general or focus on a specific area within natural resources through selection of courses in:

**Forest Management**—Courses prepare students for careers as managers of forested lands. Emphasis is placed on the socioeconomic and technical forestry principles involved in production and use of the diversified resources of forestlands, including wood, water, wildlife habitat and forage.

**Hydrology**—Courses are designed to provide a basic background in hydrology. Students learn to monitor water quality and quantity and to determine the impact of land and water management activities on surface and groundwater resources. They are taught how to regulate water movement, classify soils, manage snow, recognize the effects of salts, acids, sediments, heavy metals and nutrients on water quality, perceive the effects of landforms on water, assess the influence of soils, geology and vegetation on streamflow and solve various groundwater problems.

**Range Management**—Courses provide the diverse background necessary to manage the natural resources upon which livestock and wildlife depend for food and cover. Rangeland management studies include specialization in range plants and ecology, range evaluation methods, and range management principles and practices.

**Wildlife Ecology/Conservation Biology**—Courses emphasize aspects of wildlife biology and conservation based on ecological principles. Attention is given to habitat management, wildlife populations, and endangered species under multiple-use programs on public and private lands. Applications to the maintenance of biotic diversity, conservation, and management are stressed.

**Environmental Sciences**—Courses may be selected to satisfy an interest in the general area of environmental sciences. Students should be prepared to develop a strong program to include ecology, natural sciences, and mathematics. Specific programs will be developed in consultation with an adviser.

The target areas correspond to recognized professions in the broad fields of natural resources and hydrology with specific professional and civil service requirements. As a rule, electives can be taken to meet special interests of the student. A student may choose a substantial number of courses in related fields such as business, law, agriculture, economics, or public relations.

The resources management curriculum consists of lower-division courses to meet the university and departmental requirements. These courses are normally completed during the freshman and sophomore years. Upper-division core requirements (see below) and professional electives are normally completed during the junior and senior years. The student selects electives in consultation with the adviser.

| *University Core Requirements* | *Credits* |
|---|---|
| | 36 |

*Core Program of Study*
*(Hydrology and Environmental Sciences Excluded)*

| | *Credits* |
|---|---|
| AGEC 213—Microcomputers in Agribusiness | 3 |
| AGEC 270—Introduction to Statistics | 4 |
| AGRO 222—Soils | 4 |
| BIOL 111—Organismal Biology | 4 |
| BIOL 314—Ecology and Population Biology | 3 |
| CHEM 101—General Chemistry | 4 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| SPCM 113—Fundamentals of Speech Communication | 3 |
| RWF 100—Principles of Resource Management | 3 |
| RWF 304—Hydrology for Natural Resources Management | 3 |
| RWF 341—Principles of Range Management | 3 |
| RWF 345—Range and Forest Plants | 5 |
| RWF 347—Plant Ecology | 3 |
| RWF 351—Remote Sensing of Natural Resources | 3 |
| RWF 405—Silviculture and Regional Silviculture | 5 |
| RWF 407—Quantitative Range and Forest Techniques | 5 |
| RWF 427—Wildlife Habitat Management | 3 |
| RWF 493—Range and Forest Ecology | 3 |
| RWF 494—Range and Forest Administration and Policy | 3 |
| RWF 497—Forest and Range Soils | 3 |
| Business or economics | 3 |
| | 78 |

There are 78 credits in the resource management core. Elective courses comprise the balance of credits needed for meeting specific professional and civil service requirements and/or graduation requirements

For students interested in emphasizing **hydrology** the following core requirements apply:

| | *Credits* |
|---|---|
| BIOL 314—Ecology and Population Biology | 3 |
| C E 415—Water Rights | 3 |
| CHEM 201, 202—General Chemistry for Scientists and Engineers | 8 |
| ENGR 201—Engineering Communication or equivalent | 3 |
| MATH 215, 216—Calculus I, II | 8 |
| SPCM 113—Fundamentals of Speech Communication or equivalent | 3 |
| RWF 482—Small Watershed Hydrology | 5 |
| RWF 483—Hydrology of Irrigated Agriculture | 3 |
| Atmospheric processes (AGRO 431 or GEOG 422) | 3 |
| Business and economics | 6 |
| Earth sciences (GEOL 101, AGRO 222) | 8 |
| Hydrologic modeling | 3 |
| Microcomputers (AGEC 213 or C S 182) | 3 |
| Physics (PHYS 151, RWF 422) | 6 |
| Statistics (including AGEC 470) | 6 |
| Subsurface processes (G E 484) | 3 |
| Water quality (C E 497 or BIOL 420) | 3 |
| | 77 |

# TEXTILE AND APPAREL MERCHANDISING

The textile and apparel merchandising major is offered through the Agricultural Economics Department and is designed to prepare students for entry into management positions related to the merchandising of apparel and other textile and/or fashion oriented goods. The department also offers a minor in textile and apparel merchandising.

| *University Core Requirements* | *Credits* |
|---|---|
| | 33-36 |

*Textile and Apparel Merchandising Curriculum*

| | *Credits* |
|---|---|
| ACC 201, 202 | 6 |
| AGEC 211, 213, 270 | 10 |
| EC 101, 102 | 6 |
| MGRS 310, 312, 323, 325, 367 | 15 |

| | |
|---|---|
| SOC 101 | 3 |
| SPCM 113 or 329 | 3 |
| PSY 101 | 3 |
| TAM 210, 212, 216, 270, 310, 311, 312, 315, 414, 416, 419 | 27 |
| AGEC 312, 313, 314, 425, 428, 470; MGRS 314, 422, 462, 470, 489; TAM 470 | 6 |
| Electives | 13 |
| | 92 |

**Minor:** A minimum of 18 credits are required with nine or more in upper-division courses.

| | *Credits* |
|---|---|
| Required courses: TAM 210, 212, 216, 310, 311, 312, 414 | 15 |
| TAM 315, 416, 419 (select one or more) | 9 |
| | 18-24 |

## Veterinary Science

This program is offered by the School of Veterinary Medicine and provides a basic three-year pre-professional curriculum which satisfies the entrance requirements for the four-year professional curriculum at all of the schools of veterinary medicine with which Nevada has a contract as well as several others. Qualified Nevada residents may participate in a program funded through WICHE that allows them access to places reserved for Nevada residents at certain contract schools. The pre-professional program provides intensive advisement, an internship with veterinary practitioners, and scholarships from the Gordon MacMillan endowment. Selection into the professional program is made on the basis of high academic performance, practical experience in some phase of veterinary medicine, references, motivation, personal interview and results of written examinations.

Students who satisfactorily complete the three-year preveterinary curriculum, including the university core and total credit requirements and are accepted into a professional program, may qualify for a bachelor of science from the university after completion of 32 semester credits at the professional school.

*Veterinary Medicine Curriculum*

| | *Credits* |
|---|---|
| AGEC 270 or EC 261 | 3 |
| A SC 211, 325 | 6 |
| B CH 400 | 4 |
| BIOL 111, 112, 251, 480 | 14 |
| CHEM 101, 102, 343, 344, 345 | 16 |
| ENGL 101, 102 | 6 |
| MATH 115 | 5 |
| PHYS 151, 152, 153, 154 | 8 |
| V M 100 | 1 |
| Humanities | 6 |
| Social science | 6 |
| Suggested electives: AGEC 202, 213; A SC 100, 307, 406, 412, 413, 424; BIOL 208, 364, 368, 468; SPCM 113; V M 413 | |

Minimum of 96 credits required.

## Graduate Offerings

Graduate study leading to the master of science degree is offered by each instructional division. Both major-minor and area of concentration programs are available. The master's program includes both Plan A (thesis program requiring 30 credits) and Plan B (nonthesis program requiring 32 credits). A doctor of philosophy degree is offered in biochemistry. The interdisciplinary doctoral program in hydrology and hydrogeology offered through the College of Engineering encompasses study in the departments of plant science and range, wildlife, and forestry.

The plan of study for each student is developed by the student and the advisory committee. The program must meet the minimum graduate school requirements as stated in the Graduate School section. The student must also meet any additional requirements specified by the advisory committee or the department concerned.

The doctor of philosophy degree is primarily a research degree with a course of study determined by the student and an advisory committee. The program must meet the minimum graduate school requirements as stated in the Graduate School section .

Graduate research assistantships are available. Applications for graduate research assistantships should be submitted to the appropriate subject matter department.

## Master's and Doctoral Programs

The College of Agriculture offers nine master of science degree programs. Programs requiring a thesis are available with majors in agricultural economics, animal science, biochemistry, integrated pest management, plant science, resource management, and in the interdisciplinary programs of cellular and molecular biology, land use planning, and hydrology and hydrogeology. Non-thesis programs are available in agricultural economics, animal science, integrated pest management, plant science and resource management. A master of education program in secondary education with emphasis in vocational education is offered jointly with the College of Education. In addition to the above, areas of specialization programs may be developed for the individual student.

The College of Agriculture offers four Ph.D. programs jointly with other colleges including biochemistry (agriculture and medicine), cellular and molecular biology (agriculture, arts and science, and medicine), hydrology and hydrogeology (agriculture, engineering, and mines), and land use planning (agriculture, arts and science, and engineering). Specific information and course requirements are located in the Biochemistry and Interdisciplinary and Special Programs sections of this catalog.

### Agricultural Economics Department

The department offers a master's degree in agricultural economics and cooperates with the College of Business Administration in offering an MBA degree with concentration in agribusiness. Students interested in pursuing an MBA degree that emphasizes agribusiness can contact either the College of Business Administration or the Department of Agricultural Economics.

Graduate study in agricultural economics may be pursued in the following areas of specialization: production economics farm and ranch management, agricultural marketing, land and water economics, agricultural policy, price analysis, and agricultural business.

Two plans are available to the student pursuing the master of science degree. Plan A requires the writing of a thesis. Plan B involves the writing of a professional paper plus additional coursework in lieu of the thesis requirement.

A minor may be selected from any approved area in the university, including among others, business management, economic theory, technical agriculture and renewable natural resources, political science, psychology, and sociology.

Written and oral examinations are required.

The department also participates in the interdisciplinary master of science degree with a major in land use planning policy in cooperation with several other departments. For further information refer to the Interdisciplinary and Special Programs section of this catalog.

## Animal Science Department

A master's degree in animal science is contingent upon fulfilling the requirements of the Graduate School and the student's advisory committee. The number and nature of graduate examinations are determined by the student's advisory committee. A master's degree may be obtained either with or without a thesis requirement. A thesis may be written on research completed in nutrition, physiology, production, management, meats, and general animal science.

A nonthesis degree has the following requirements in addition to those required by the Graduate School. Each candidate must have at least five years' professional experience in agriculture related to animal science or complete an approved professional project. This project is selected by the candidate and adviser for approval by the assigned committee. The project is designed to train the individual for increased proficiency in the livestock industry. It may consist of (1) a field study carried out under the direction of the adviser or other appropriate university staff member or (2) the student may work full time in a progressive agricultural program of a nature that involves the student in the administrative role and other activities of the livestock industry. The duration of this project is at least one semester or three months during the summer. Satisfactory completion of the project and a detailed written report of the nature and results of this experience are required. A student may receive a salary under option 2 above. Each candidate must select an approved topic appropriate to his major and write a professional paper incorporating and interpreting pertinent literature. This paper satisfies three graduate (700) credits. The literature review and the report on the professional project may be incorporated into one paper, if appropriate.

## Biochemistry Department

Both master's and doctorate-level programs are offered in this department. The plan of study may involve either a major-minor or field of concentration type of program.

**Master of Science Degree in Biochemistry:** Graduates with a bachelor's degree in the physical or natural sciences including agriculture, having at least three hours each in biology, and organic chemistry, and meeting the requirements of the Graduate School, may be accepted in biochemistry. Before completing the requirements for the master's degree, the student must have completed the following courses or their equivalents: one year of physics; one year of biology, botany, zoology, or physiology; and CHEM 330, 343, 344, 347, 348, 353, 354, 355. In the major-minor option, minors may be pursued in organic, inorganic, physical, or analytical chemistry; nutrition; physiology; botany; zoology; microbiology; genetics, and statistics. Thesis research is required and may be pursued in many areas of biochemistry. Further information may be obtained from the *Graduate Studies in Biochemistry* publication in the departmental office.

**Doctor of Philosophy Degree in Biochemistry:** The general requirements of the Graduate School must be satisfied by all candidates for the Ph.D. degree. The minimum credit requirements for the major-minor program are:

| | *Credits* |
|---|---|
| Biochemistry coursework and seminar | 24 |
| Biochemistry research and dissertation | 24 |
| Minor courses | 12 |
| Electives | 12 |
| | 72 |

## Plant Science Department

Students wishing to pursue an advanced degree in some area of modern plant biology may work under the guidance of the Plant Science Department faculty members for either a master of science or doctor of philosophy degree. Research interests of faculty currently include ion transport, molecular biology of cell wall proteins, photosynthesis, nitrogen metabolism and nutrition, salinity and drought stress, turfgrass biology and RFLP mapping of plant genomes. Research fellowships are available on a competitive basis.

**Master of Science Degree:** The department offers its own M.S. degree under either Plan A or Plan B. College graduates with some background in the natural and/or physical sciences will be considered for this program. The nature and number of required coursework and examinations will be determined by the student's faculty advisory committee. A student should ordinarily plan two years to complete the master's program.

**Doctor of Philosophy Degree:** The department does not offer its own Ph.D. degree at the present time. However, students wishing to pursue a Ph.D. in the laboratory of the Plant Science Department faculty members may do so under the auspices of either the biochemistry, cell and molecular biology, or environmental biology Ph.D. programs. A student should ordinarily plan four years to complete the Ph.D. program. The general requirements of the Graduate School must be satisfied by all candidates for the Ph.D. degree, as well as as requirements for the specific Ph.D. program selected.

## Range, Wildlife and Forestry Department

The research focus of the department is restoration ecology and hydrology in desert and montane environments. Areas of emphasis include applied animal ecology, surface, vadose zone and shallow groundwater hydrology, and applied plant ecology. Restoration ecology and hydrology includes: the management and repair of riparian areas, water utilization and conservation, mining rehabilitation, water quality enhancement through soilwater interactions, wildlife ecology, range ecology, reforestation, fire rehabilitation, maintenance and restoration of biotic diversity landscape ecology and stabilization, grazing ecology and management, and problems associated with the wildland/agricultural/urban interface. A short description of faculty, their research interest, and current research programs is available from the department chairman.

The master oi science degree in resource management may be pursued under either Plan A or Plan B. An overall GPA of 3.0 or higher will insure consideration of admission into the program.

Both master of science and doctorate-level degrees are available through the University of Nevada, Reno interdisciplinary hydrology/hydrogeology program. For further information, refer to the Interdisciplinary and Special Programs section of this catalog.

A doctorate-level degree is available through the interdisciplinary ecology, evolution, and conservation biology programs. For further information contact the department chairman.

# College of Arts and Science

Ann Ronald, *Dean*

*Departments of Instruction:* anthropology, art, biology, chemistry, criminal justice, English, foreign languages and literatures, geography, history, mathematics, military science, music, philosophy, physics, political science, psychology, sociology, and speech communication and theatre.

## Objectives

The College of Arts and Science, through its undergraduate and graduate programs, offers students the discipline and knowledge of a traditional liberal education. Students are encouraged to develop intellectual curiosity and habits of creative, but disciplined thought.

Through the university core curriculum and other college requirements, the student's education is directed through certain foundational courses in the natural and social sciences, mathematics, the arts, and the humanities. These courses also ensure acquisition of the basic skills necessary to use this knowledge and to carry out orderly investigation. Requirements for a field of concentration (major and minor subjects) are intended to equip the student with a deeper understanding of at least one body of knowledge, sometimes in preparation for a profession or for advanced study.

## Requirements for the Baccalaureate Degree

A candidate for a bachelor's degree in the College of Arts and Science must earn a minimum of 128 credits in required and elective courses. Each candidate must complete:

1. The requirements listed under Prescribed Courses for Arts and Science Majors.
2. Courses totaling 40 credits or more in courses numbered above 300.
3. The requirements for a field of concentration (major and minor subjects), usually total 50 credits. The particular grouping of courses depends on the particular educational goals of the student but must be in accord with departmentally sponsored fields of concentration or cross-disciplinary fields outlined in this catalog.

It is advisable that students plan their work for their junior and senior years as early as the sophomore year, sometimes as early as the freshman year, in order that the studies then elected may fit in with their work later. At the beginning of the junior year, each student, in consultation with the adviser and with the approval of the chairman, should submit to the office of the dean a Field of Concentration form (major and minor subjects); this form requires approval of the chairman of the department sponsoring the field of concentration.

The remaining credits necessary to make a total of 128 in the chosen course of study may be freely elected from any department in the university.

Candidates for graduation must submit an application for graduation to the dean of the College of Arts and Science at the beginning of the final semester before graduation.

**Prescribed Courses for Arts and Science Majors:**

1. Satisfactory completion of the university core curriculum.
2. Bachelor of arts and most bachelor of science degree programs require the successful completion of a fourth semester college course in a foreign language, or evidence of equivalent proficiency as determined by placement examination, or other means, by the department of foreign languages and literatures. A student who successfully completes the fourth year course of a foreign language in high school satisfies the requirement. The foreign language requirement is a departmental option for other bachelor degrees and for the bachelor of science degree with an expanded field of concentration. Information on the few programs with a departmental option may be obtained from those departments or from the office of the dean of the College of Arts and Science.
3. Arts and science majors also must complete (a) a second social science course from the core curriculum list (this course must be from a different department than the student's first social science course), and (b) a course in literary traditions. Specific information about these courses is available in the dean's office and through academic advisers. As in item two above, this requirement is a departmental option for those programs with an expanded field of concentration.

**Major and Minor Programs:** In most cases the college requires that students specialize in at least two areas. This is normally accomplished by completing a major and a minor or a dual major. The same course may not be used in both the major and minor or dual major area. Students who seek a *dual baccalaureate degree* with one or both degrees in the College of Arts and Science are required to fulfill all college requirements. A dual degree requires the completion of a minimum of 32 credits beyond the requirements for the first degree. In Arts and Science it is expected that a student seeking a dual baccalaureate degree will specialize in a minimum of three areas, completing the two majors and at least the equivalent of one minor. By their junior year, students should declare a major by filing a field of concentration form. The field of concentration may consist of a major only, for some departments or programs (see biology, chemistry, criminal justice, geography, mathematics, music, computer science, physics), or a major interest area and a minor interest area for other departments. Majors are offered in each department in the College of Arts and Science, except military science and in prelegal studies. Approved minors exist in most departments within the college, in interdisciplinary programs, and some departments outside the college.

1. The requirements for most fields of concentration consist of major requirements and minor requirements. For departments requiring a major only, the field of concentration includes courses required in the department and specific courses required in other fields.
2. Students have the option of completing a minor program if they wish, even if a minor is not required for completion of the field of concentration.
3. The completion of an approved minor is recorded on the student's permanent record at the time of graduation.
4. Minor programs in the same department as the major are not accepted, except in English, foreign languages and literatures, and speech communication and theatre.
5. With justification, a student may petition the dean through the department to have a special related field substituted for a required minor. The special field, however, is not recorded on the student's transcript as a minor.

**Approved Minors:** Minor interest areas that may be used for the field of concentration, or completed by a student within the college, are listed below. A description of the required courses for each minor may be found under the heading of the appropriate department or interdisciplinary program that offers the minor. Accounting, anthropology (cultural anthropology, archaeology), art, Basque, biology, chemistry, child/family, computer sciences, computer information systems, criminal justice, business administration and economics, English (literature, language and linguistics, dramatic literature, English as a second language, writing) environmental studies, ethnic studies, French, geography, geology, German, historic preservation, history (general history, American history, European history, Third World History), interior design, journalism, mathematics, medieval and renaissance studies, museology, music, nutrition, philosophy, physics, political science (general, foreign affairs, public administration, American government, public policy), psychology, recreation and physical education (recreation and physical education, dance), religious studies, social and health resources, sociology (general sociology, applied sociology), Spanish, speech communication and theatre (speech communication, theatre), women's studies.

**Suggested Curriculum for First Two Years:** In order that these requirements may be used to the best advantage in assuring a well-balanced curriculum and at the same time give the student some freedom of choice in the selection of courses, the following course of study is recommended for the first two years. Because of the variation in the language and additional general education requirements, each lower-division student should consult with the assigned adviser and the appropriate official of the Department of Foreign Languages and Literatures for proper advisement.

*Freshman Year*

| (16 credits per semester) | Credits |
|---|---|
| ENGL 101, 102 | 6 |
| Foreign language, mathematics | 11-13 |
| Other core curriculum courses | 3-6 |
| Electives or major/minor courses | 7-12 |

*Sophomore Year*

| (16 credits per semester) | Credits |
|---|---|
| Foreign language | 4-6 |
| Western tradition | 6-9 |
| Other core curriculum/college requirement courses | 6-9 |
| Electives or major/minor courses | 8-16 |

**General Regulations:** Except as otherwise specified, all students, including transfer students, must fulfill the foregoing requirements before the bachelor's degree may be received from the College of Arts and Science.

In addition to the graduation requirement of the university that every student must have an average of two grade points for each credit registered, the College of Arts and Science requires that each of its students earn a GPA of 2.0 in both the major and minor interest portion of a field of concentration.

The college's policy on S/U courses conforms in every respect to the university policy, but with the restriction that courses taken for S/U credit may not count toward the field of concentration (major and minor subjects) except upon the recommendation of the adviser and department chairman with the approval of the dean.

## Graduate Study

Graduate programs leading to the degrees of master of arts or master of science are offered in anthropology, atmospheric physics, ecology, evolution and conservation biology, chemistry, English, English as a second language, foreign languages and literatures (French, German, Spanish), history, mathematics, music, philosophy, land use planning,[1] physics, political science, psychology, public administration and policy, speech communication, teaching of English, and zoology.

The doctor of philosophy degree is offered in anthropology, Basque studies, biology, cellular and molecular biology,[1] chemical physics,[1] chemistry, English, history, physics, political science, psychology, and social psychology.

Further information on all programs may be obtained from the chairman of the department concerned.

## Program for Adult College Education (PACE)

The College of Arts and Sciences' Program for Adult College Education offers an innovative way to earn an undergraduate degree for students who are unable to do so through the traditional class schedule. Students who work and have family responsibilities can earn a bachelor's degree in four to six years with a curriculum that integrates courses from the humanities and fine arts, social and natural sciences, and schools other than arts and science. PACE offers an alternative scheduling of courses leading to the Bachelor of General Studies degree. PACE blocks, however, are open to students in other major programs who need weekend or evening courses.

Students may register for six or twelve credits in blocks of related courses usually arranged under themes such as "Women's Studies," "Environmental Studies," or "Studies in American History and Culture."

A typical six-credit block consists of a four-hour meeting one night a week for 15 weeks, or four weekend sessions, and an independent study segment requiring an additional 26 hours of outside study per semester. A 12-credit block would consist of two six-credit blocks.

PACE completion requirements are the same as those for the university's Bachelor of General Studies degree (see "General Studies"). For further information, contact Dr. Mary Stewart, director of the PACE program, 631 Business Building, 784-1465.

## Prelegal Curricula in the University

Law schools neither prescribe nor encourage any specific undergraduate major. A broad general education with emphasis on courses that develop clear and systematic thinking is the best preparation for the study of law. Most important for prospective law students is that they develop their command of the English language and their ability to communicate ideas clearly, logically, and critically.

Students should read the catalogs of law schools in which they are interested and the "Preparation for Law School: Prelaw Study" sections in the *Prelaw Handbook* for more detailed discussion of the general education program recommended by legal educators.

In addition to their chosen major, students select approximately 40 credits from a prescribed list of courses. As such, the prelegal program substitutes for a required minor or related subject. Several departments have prelegal advisers. For general information contact the chairman, Political Science Department, 138 Mack Social Science Building.

[1]See Interdisciplinary and Special Programs for further information.

# ANTHROPOLOGY (ANTH)

*Faculty:* d'Azevedo (Emeritus), Boutté, Fliess, C. Fowler, D. Fowler (Ch.), Hardesty, Haynes, Jeanne, Winzeler
*Adjunct Faculty:* Elston, Hattori
*Cooperating Appointments:* Davis, Douglass, Durand, Liljeblad, Livingston, Pippin, Ritter, Rose, Simmons, Wigand

The department offers courses leading to the degrees of bachelor of arts, master of arts, and doctor of philosophy.

## Bachelor of Arts Degree

| *Major Interest Subject* | *Credits* |
|---|---|
| ANTH 101, 102, 200 or 201, 202, 312, 405, 440 | 21 |

In addition, all majors must take at least one course from each of the following four groups (one course must be in a geographical area):

| | *Credits* |
|---|---|
| 1. Archaeology—ANTH 400, 401, 402, 403, 404, 409, 423, 424, 425, 426, 476 | 2-3 |
| 2. Physical Anthropology—ANTH 430, 431, 435, 436 | 3 |
| 3. Linguistics—ANTH 411, 414, 415, 416, 420, 429 | 3 |
| 4. Cultural Anthropology—ANTH 210, 330, 345, 390, 406, 452, 460, 461, 462, 466, 467, 470, 491 | 3 |
| | 32-33 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Anthropology accepts any minor approved by the College of Arts and Science.

Both museology and historic preservation are approved areas of study for anthropology majors. See Interdisciplinary and Special Programs section for description.

## Minor in Anthropology

Students majoring in another field may minor in anthropology by completing the following:

| *Minor Interest Subject (Cultural Anthropology)* | *Credits* |
|---|---|
| ANTH 101, 102, 200 or 201 | 9 |
| At least one of the following geographical area courses: ANTH 461, 462, 466, 467 | 3 |
| Additional courses to be selected from: ANTH 210, 312, 345, 390, 406, 429, 440, 460, 491 | 6 |
| | 18 |

| *Minor Interest Subject (Archaeology)* | *Credits* |
|---|---|
| ANTH 101, 102, 202 | 9 |
| Additional courses selected from: ANTH 400, 401, 402, 404, 409, 423, 424, 425, 426, 476 | 9 |
| | 18 |

## Master of Arts Degree

Applicants for admission to the program must satisfy all admission requirements of the Graduate School.

Two plans are available: Plan A (thesis), or Plan B (nonthesis) as described in the Graduate School requirements. Under the Plan B option, however, submission of a professional paper is required.

The department is closely associated with the Historic Preservation program and participates in the master of science degree in land use planning policy, described elsewhere in this catalog.

A limited number of teaching fellowships and research assistantships are offered. Further details may be obtained from the dean of the graduate school or the chairman of the department.

## Doctor of Philosophy Degree

Applicants for admission to the program must satisfy all Graduate School requirements and the following departmental requirements: (1) have a master's degree in anthropology or a related field, or 25 or more hours of graduate credit in anthropology from an approved anthropology program; (2) provide four letters of recommendation; (3) indicate which of the three areas of emphasis the applicant wishes to pursue; (4) meet other requirements specified by the department's graduate coordinating committee. Application for admission must be made on or before April 1 for admission in the fall semester. Applicants are normally only admitted in the fall term. Only those whose applications indicate a high level of competency, and motivation for doctoral-level work will be admitted. In exceptional cases, applicants with a bachelor's degree may be admitted directly into the doctoral program.

All students entering the program are admitted on a probationary basis, pending satisfactory completion of qualifying examinations. The student must maintain a minimum 3.5 GPA in all courses and be accepted to candidacy at the end of the first year of residency.

The student must demonstrate a current working knowledge of a foreign language that has a substantial scholarly literature. Guidelines for satisfying this requirement are available from the Anthropology Department. The department reserves the right to require a second foreign language if the student's dissertation research and career goals require it.

The doctoral program provides training in three subfields of anthropology: (1) environmental archaeology; (2) historical archaeology, and (3) cultural anthropology (including anthropological linguistics and ethnohistory). The geographic emphasis for dissertation research is restricted to Western North America, including Mexico, although research in certain topical subjects or other world areas may be proposed. The program emphasizes the research strengths of the Anthropology Department, Basque Studies Program, and Desert Research Institute faculties. All questions should be directed to the graduate coordinator at (702) 784-6704.

# ART (ART)

*Faculty:* Davidson, Frueh, Goin, Martinez, McCormick (Ch.), Morrison, Rosenberg, Sarich, Unterseher

The department offers courses leading to the degree of bachelor of arts.

| *Major Interest Subject* | *Credits* |
|---|---|
| ART 100, 121 | 6 |
| ART 221, 222, 321 or 135, 235, 236 or 150, 250, 252 or 163, 263, 264 or 175, 275, 276 or 185, 285, 286 | 9 |
| ART 116, 117 and one additional art history course | 8-9 |
| ART 403 | 2 |
| Art courses numbered 300 or above, chosen with the approval of the adviser and dean | 12 |
| | 37-38 |

It is recommended that art majors with a two-dimensional concentration elect either ART 163 or 175, and those with a three-dimensional concentration elect ART 135 sometime during the early parts of their programs.

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Art accepts any minor approved by the College of Arts and Science.

## Minors in Art

Students majoring in another field may minor in art by completing one of the following:

| *Option: Art Studio* | *Credits* |
|---|---|
| ART 100, 121, 116, 117 | 12 |
| Nine credits from ART 135, 150, 163, 175, 185 | 9 |
| | 21 |

| *Option: Art History* | *Credits* |
|---|---|
| ART 100 | 3 |
| One studio course selected from: ART 121, 135, 150, 163, 175, 185 | 3 |
| ART 116, 117 | 6 |
| Three additional courses selected from ART 314, 315, 316, 317, 318, 417, 418, 419 | 9 |
| | 21 |

| *Option: Photography* | *Credits* |
|---|---|
| ART 100, 150, 250, 251, 350, 355 | 18 |
| One additional upper-division course in photography | 3 |
| | 21 |

| *Option: Ceramics* | *Credits* |
|---|---|
| ART 100, 116, 163, 175, 275, 276 | 18 |
| One additional upper-division course in ceramics | 3 |
| | 21 |

| *Option: Painting* | *Credits* |
|---|---|
| ART 100, 117, 121, 135, 235, 236 | 18 |
| One additional upper-division course in painting | 3 |
| | 21 |

| *Option: Printmaking* | *Credits* |
|---|---|
| ART 100, 121, 185, 285, 286, 384 | 18 |
| One additional upper-division course in printmaking | 3 |
| | 21 |

| *Option: Sculpture* | *Credits* |
|---|---|
| ART 100, 116, 163, 175, 263, 264 | 18 |
| One additional upper-division course in sculpture | 3 |
| | 21 |

For further information, please contact the Department of Art.

**Secondary School Teacher Licensure:** Students in the College of Arts and Science majoring in art may work toward licensure to teach at the secondary level (middle, junior, and senior high schools) by electing required courses offered through the College of Education, approximately 20 credits to include E L 210; CEP 330, 400; C I 401, 457 (student teaching); and ART 346—Art Education: Secondary Schools, in addition to the departmental major.

A teaching minor concentration is available to students engaged in securing a major other than art. It consists of approximately 26 credits, most of which are prescribed.

# BIOLOGY (BIOL)

*Faculty:* Baker, Brussard (Ch.), Gubanich, Jenkins, McCracken, Mead, Oring, Ort, Prusso, Rust, Stacey, Tibbitts, Vig, Vinyard, Weber

## Bachelor of Science Degree

All biology majors complete a common core of required biology courses and required related courses and then select a group of elective courses constituting a field of specialization.

| *Required Biology Core Courses* | *Credits* |
|---|---|
| BIOL 111, 112, 313, 314, 393 or 394, 415 | 19 |

| *Required Related Courses* | *Credits* |
|---|---|
| CHEM 101, 102 and 142, 143 or 343, 344, 345 | 12-16 |
| MATH 115, 213, 214 | 11 |
| PHYS 151, 152, 153, 154 | 8 |
| | 31-35 |

| *Elective Life Science Courses* | *Credits* |
|---|---|
| Selected in consultation with adviser (10 or more must be in upper division) | 15 |
| Programs of study are available in: general biology education, ecology, cell biology, and prehealth. Students may also arrange with their adviser to develop an individualized program of study in other fields of specialization. | |
| TOTAL | 65-69 |

The following courses are required in addition for a "with distinction" degree in biology:

| | Credits |
|---|---|
| BIOL 492—Research | 3 |
| BIOL 495—Seminar | 1 |

Biology majors are required to complete the courses of the University Core Curriculum but are exempt from the College of Arts and Science requirement for foreign language and additional literary traditions and social sciences courses.

## Minor in Biology

Students majoring in another field may minor in biology by completing the required biology core courses (19 credits). Because of prerequisites associated with some of these courses, students taking a minor in biology will also need to complete MATH 115 and CHEM 101, 102, 142.

## Master of Science Degree

The Department of Biology offers graduate programs leading to the master of science degree in biology. Two plans are available: (A) thesis, or (B) nonthesis. Further details may be obtained from the dean of the Graduate School or from the chairman of the department.

## Doctor of Philosophy Degree

The Department of Biology participates in four interdepartmental Ph.D. programs: biochemistry, cellular and molecular biology; cellular and molecular pharmacology and physiology option of the pharmacology Ph.D. program; and ecology, evolution, and conservation biology option of the biology Ph.D. program. Prospective students must meet the requirements established by the university and the Graduate School for admission to these graduate programs.

Further details may be obtained from the dean of the Graduate School or the directors of each of the programs.

# CHEMISTRY (CHEM)

*Faculty:* Baglin, Burkhart, Cline, Corcoran, Ervin, Fickes, Frederick, Kemp (Emeritus), LeMay, Lightner, Nelson, Rose, Scott, Sheridan, Shin, Williams (Emeritus)

The department offers courses leading to the degrees of bachelor of science, master of science, and doctor of philosophy.

## Bachelor of Science Degree

The bachelor of science in chemistry is a professional degree certified by the American Chemical Society; students are prepared for graduate study, civil-service positions, and industry.

The field of concentration in chemistry provides basic training for other professions; graduates usually can enter the chemical profession if the recommended upper division chemistry courses

are taken. Students planning to pursue a career in medicine or dentistry may enroll in this program.

## Bachelor of Science in Chemistry

*Freshman Year*

| | Credits |
|---|---|
| CHEM 201-202 recommended (CHEM 101-102 acceptable) | 8 |
| ENGL 101, 102 | 6 |
| MATH 215-216 | 8 |
| Social science and fine arts core requirements | 6 |
| Electives | 3 |
| | 31 |

*Sophomore Year*

| | Credits |
|---|---|
| CHEM 343-344 | 6 |
| CHEM 347-348 | 4 |
| MATH 217, 320 | 6 |
| PHYS 201-202 recommended (PHYS 151-152 acceptable) | 6 |
| PHYS 204-205 recommended (PHYS 153-154 acceptable) | 2 |
| W T 201, 202 | 6 |
| Electives | 3 |
| | 33 |

*Junior Year*

| | Credits |
|---|---|
| CHEM 330 | 4 |
| CHEM 353-354 | 6 |
| CHEM 355 | 2 |
| CHEM 434 | 3 |
| Related electives (chemistry, mathematics, biochemistry, physics 300/400-level courses; computer programming) | 7 |
| GER 101-102 (or equivalent courses in French or Russian) | 8 |
| W T 203 | 3 |
| | 33 |

*Senior Year*

| | Credits |
|---|---|
| CHEM 387 | 1 |
| CHEM 415 | 3 |
| CHEM 461 | 3 |
| CHEM 497 | 2 |
| Chemistry electives (two of the following courses required: CHEM 442, 443, 450, 456, 462; B CH 400, 403) | 6-7 |
| Related electives | 10-11 |
| Capstone courses | 6 |
| | 33 |

## Bachelor of Science with Field of Concentration in Chemistry

*Freshman Year*

| | Credits |
|---|---|
| CHEM 201-202 recommended (CHEM 101-102 acceptable) | 8 |
| ENGL 101-102 | 6 |
| MATH 215-216 | 8 |
| Core course (social science and fine arts) | 6 |
| Electives | 3 |
| | 31 |

*Sophomore Year*

| | Credits |
|---|---|
| CHEM 343-344 | 6 |
| CHEM 347-348 recommended (CHEM 345, 391 acceptable) | 4 |
| PHYS 151-152 | 6 |
| PHYS 153-154 | 2 |
| W T 201, 202, 203 | 9 |
| Electives | 6 |
| | 33 |

*Junior Year*

| | Credits |
|---|---|
| CHEM 330 | 4 |
| CHEM 353-354 | 6 |
| Chemistry electives (CHEM 355, 434, 443, or B CH 400) | 2-4 |
| GER 101-102 (or equivalent courses in French or Russian) | 8 |
| Literary traditions core course | 3 |
| Social sciences core course | 3 |
| Electives | 4-6 |
| | 32 |

*Senior Year*

| | Credits |
|---|---|
| CHEM 415 | 3 |
| Chemistry electives (three of the following courses required, including one laboratory course: CHEM 355, 434, 442, 443, 450, 456, 461, 462; B CH 400, 403) | 6 |
| Related electives (chemistry or other science and mathematics; 300/400 level courses; courses in computer programming) | 9 |
| Capstone courses | 6 |
| GER 205, 209 (or equivalent courses in French or Russian) | 4 |
| Electives | 7 |
| | 32 |

In addition to the foregoing, all of the general requirements of the College of Arts and Science must be satisfied; this includes 16 credits in humanities and social science courses.

## Minor in Chemistry

Students majoring in another field may minor in chemistry by completing a minimum of 20 credits which must include an organic chemistry laboratory course of two credits and nine upper-division credits in chemistry. A maximum of two credits of CHEM 387 and 391 may be applied to make up the nine upper-division credits.

## Master of Science Degree

Candidates for the master of science degree with a major in chemistry must satisfy the general requirements of the Graduate School. Of the 24 credits required, 12 (including two credits of seminar) are in the major, six are in the minor, and the remaining six are elective. A reading knowledge of a foreign language is required. Options in the Department of Chemistry include organic, inorganic, physical chemistry, and biochemistry.

## Doctor of Philosophy Degree

The general requirements of the Graduate School must be satisfied by all candidates for the Ph.D. degree. The minimum credit requirements are:

| | |
|---|---|
| Total credits | 72 |
| Formal course credits in major | 12 |
| Independent studies | 12 |
| Dissertation | 24 |
| Seminar | 4 |
| Electives | 20 |

The student must demonstrate a reading knowledge of one foreign language as specified by the student's advisory committee.

The major and minor areas available in the Department of Chemistry are chemical physics, inorganic, organic, physical, and biochemistry. The minor may be taken in another department, such as physics or mathematics, if desired. Every student's program is subject to the approval of an advisory committee.

The graduate curriculum, with its research orientation, provides for an advanced study of theoretical concepts, the methods used to establish these concepts, and the means by which basic observations are made. Emphasis is placed on ability to make valid and relevant observations, to correlate the established facts, and to deduce warranted conclusions and generalizations. A problem in laboratory research is used to determine whether or not the student has the capacity to contribute to the advancing knowledge of chemistry. For further information, contact the chairman of the Department of Chemistry.

# CRIMINAL JUSTICE (C J)

*Faculty:* Braunstein, Chaires, Leone, Peak (Ch.), Stitt

The bachelor of arts in criminal justice is a professional program. Students are educated for justice or justice-related positions in both the public and private sectors, graduate study, and law school.

## Bachelor of Arts in Criminal Justice

At least 15 credits of required criminal justice courses must be completed at the University of Nevada, Reno

| *Major Interest Subject* | *Credits* |
|---|---|
| C J 110, 120, 211, 220, 231, 312, 320, 326, 410 | 27 |
| CHS 474 | 3 |
| ENGL 321 | 3 |
| PSY 101 | 3 |
| SOC 101, C J 366 | 6 |
| SPCM 113 | 3 |

## Minor in Criminal Justice

Students majoring in another field may minor in criminal justice by completing one of the following:

| *Option: Corrections* | *Credits* |
|---|---|
| C J 110, 220, 231 | 9 |
| C J 326, 328, 331, or 332 | 6 |
| Criminal justice upper-division elective | 3 |
| | 18 |

| *Option: Law* | *Credits* |
|---|---|
| C J 110, 120, 220 | 9 |
| C J 320, 328, or 420 | 6 |
| Criminal justice upper-division elective | 3 |
| | 18 |

| *Option: Police* | *Credits* |
|---|---|
| C J 110, 211, 220 | 9 |
| C J 312, 324, or 328 | 6 |
| Criminal justice upper-division elective | 3 |
| | 18 |

# ENGLISH (ENGL)

*Faculty:* Baker, Burton, P. Boardman, K. Boardman, Brown, Brownell, Burgess, Calabrese, Cronan, DuPree, Fenimore, Francis, Haddawy, Harvey, Hettich, Hieke, Howard, Jacobsen, Kearns, Merrill (Ch.), Pahmeier-Henry, Reid, Ronald, Stookey, Swingrover, St. Tchudi, Su. Tchudi, Urie, Waldo, Webb, Wilborn

## Bachelor of Arts Degree

In consultation with the adviser, the student elects a program leading to the bachelor's degree with a major in English in one of the following options:

### Literature Option

| | *Credits* |
|---|---|
| ENGL 281, 295, 296, 421, 451, 465 | 18 |
| Additional courses to be selected from ENGL 305-306, 307-308, 405-406, 407-408 (a total of no more than six credits), and other courses numbered above 400—excluding 414, 415, 416, 419, 435, 436, 437, 438, 439 | 18 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. English accepts any minor approved by the College of Arts and Science.

### Language and Linguistics Option

| | *Credits* |
|---|---|
| ENGL 281, 404 or 415 or 416, 410 | 9 |
| ENGL 411 or 414, 413, 417, 451 | 12 |
| Additional courses to be selected from ENGL 295, 296, 293, and any course numbered 400 or above | 11 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. English accepts any minor approved by the College of Arts and Science.

### Secondary Teaching Option

| | *Credits* |
|---|---|
| ENGL 281, 295, 296, 321, 410, 411 or 413, 441 or 444 or 445 or 446, 465 | 24 |
| Additional courses to be selected from courses numbered above 400 | 8 |
| | 32 |

*Requirements for Licensure In Secondary Education:* (18 credits). See "Foundations for Secondary Teaching" in College of Education section.

Students planning to teach in the secondary schools should normally be prepared in a second teaching subject. See "Secondary Teaching Field" under College of Education.

| *Second Teaching Subject (Minor)* | *Credits* |
|---|---|
| (Program for teachers selecting English as a minor teaching subject) | |
| ENGL 281, 295 or 296, 321 or 437, 410 | 12 |
| Two courses to be selected from the 400-level courses, one in both American literature and English literature | 6 |
| | 18 |

Students thinking of majoring in English are strongly advised to take 281, 295, and 296 no later than the second semester after declaring the major.

## Minors in English

Students majoring in another field may minor in English by completing one of the following options:

| *Literature Option* | *Credits* |
|---|---|
| Required: ENGL 295 or 296, 465 | 6 |
| At least 12 credits from ENGL 421, 423, 425, 426, 430, 431, 441, 444, 445, 446, 451, 453, 458, 460, 461, 463, 464, 469, 470, 471, 475, 479, 481, 483, 484, 485, 486, 487, 488, 489 | 12 |
| | 18 |

| *Language and Linguistics Option* | *Credits* |
|---|---|
| Required: ENGL 281, 410 | 6 |
| ENGL 404, ENGL or ANTH 415, 416, 429, FLL 455 or GER 455 | 3 |
| ENGL or ANTH 411, 414, or ANTH 405 | 3 |
| ENGL 413, FLL 458, or GER 458 | 3 |
| ENGL 417 or 451 | 3 |
| | 18 |

| *English as a Second Language Option* | *Credits* |
|---|---|
| ENGL 281, 410 | 6 |
| ENGL or ANTH 411, 415, ANTH 405, or FLL 455 | 3 |
| ENGL 436, 438, 439 | 9 |
| | 18 |

| *Dramatic Literature Option* | *Credits* |
|---|---|
| Required: ENGL 253, 295, 296 | 9 |
| At least nine credits from ENGL 355, 356, 458, 460, 465, 470 and 423, 469 and 489, when the subject matter is drama or dramatists | 9 |
| | 18 |

| *Writing Option* | *Credits* |
|---|---|
| Required: ENGL 281, 295 or 296, 321 | 9 |
| At least nine credits from ENGL 305. 306, 307, 308, 322, 405, 406, 407, 408, 479; JOUR 417, 418 | 9 |
| | 18 |

## The Graduate Programs

The Department of English offers graduate programs leading to the master of arts for the teaching of English, the master of arts, and the doctor of philosophy. For further information, write to the chairman of the Department of English to obtain the bulletin *Graduate Study in English.*

## Master of Arts for the Teaching of English Degree

The master of arts for the teaching of English (MATE) degree is designed primarily to train teachers. The MATE degree encourages broad preparation in language and literature, with special attention to composition, literary appreciation, applied linguistics, ESL, and other subjects needed by teachers in both primary and secondary school. Except for the specialty in ESL, foreign language proficiency is not required for this degree. Students pursuing the MATE degree normally do not expect to continue their studies beyond the master's level.

## Master of Arts Degree

The master of arts degree is intended for students who plan to continue work toward the doctor of philosophy degree, for potential community college teachers, and for individuals who want to acquire overall background in the study of language and literature. The literature program includes extensive reading in English and American literature and language, as well as practice with basic tools and methods of scholarship. Evidence of proficiency in one foreign language, normally French or German, is required. Upon admission to the M.A. program, the student follows either Plan A, the thesis program, or Plan B, the nonthesis program.

The M.A. in English also offers a concentration in writing for those interested in careers in writing, editing, and teaching writing. The program is centered on the craft of writing and offers a choice of course work in writing, composition theory and practice, literature, and language. Thesis and nonthesis options are available. The thesis may be a work of imaginative writing or a study in composition theory and practice.

## Interdisciplinary Master of Arts Degree—TESL

The department also participates in the interdisciplinary master of arts degree with a major in teaching English as a second language in cooperation with the Department of Curriculum and Instruction in the College of Education. For additional information, refer to the Interdisciplinary and Special Programs section of this catalog.

## Doctor of Philosophy Degree

Students who have earned M.A. degrees in English may apply to the doctoral program upon evidence of an overall grade-point of 3.0 or higher in all undergraduate and graduate work, a satisfactory score on the Graduate Record Examination verbal and advanced tests, and a writing sample indicating superior ability when discussing literature. Final acceptance depends upon successful performance on a departmentally administered Ph.D. qualifying examination.

The Ph.D. degree represents an individualized course of study leading to comprehensive examinations and a dissertation over a specialized research project. Students may elect a concentration in one of two areas: English and American literature, or composition and rhetoric. Students electing a specialty in literature will take course work and examinations in subjects chosen, with the help of an advisory committee, from the English and American literary tradition. In this concentration, the dissertation will normally represent the results of a scholarly or critical study of literary works or traditions. Students electing a specialty in composition and rhetoric will do course work in rhetorical history, composition theory and practice, advanced imaginative writing, literature, and language. In this concentration, the dissertation will normally involve a topic in the fields of composition and rhetoric.

In addition to an acceptable dissertation, all candidates for the Ph.D. in English must give evidence of high proficiency in a single foreign language, representing the equivalent of seven semesters of college-level courses.

# FOREIGN LANGUAGES AND LITERATURES (FLL)

*Faculty:* Curry, Ferreira, Hertling, Leneaux, Lindsay, Logan, Macura, Manca, Marvick, Melara, Petersen, Petty, Rojas (Ch.), Sepúlveda-Pulvirenti, Tobin, Wagener, Whitenack, Yu

The objectives of the study of foreign languages and literatures are practical and humanistic: proficiency in the four basic language skills of oral comprehension, speaking, reading comprehension, and writing; knowledge and understanding of the literature, thought, and culture.

The Department of Foreign Languages and Literatures offers courses of study leading to the degree of bachelor of arts with majors in French, German, and Spanish language and literature, and master of arts with a major in foreign language and literature. In addition, students may take courses in Arabic, Basque, Chinese, classical Greek, Hebrew, Italian, Japanese, Latin, Persian, Portuguese, and Russian. Most courses offered help fulfill requirements toward a liberal arts degree, and are also designed to assist in the preparation of language teachers and to help provide training for other careers requiring language skills.

Within the major program, the student has the option of emphasizing language or literature, although neither may exclude the other.

In addition, in Spanish, the student may choose either a peninsular or Spanish-American emphasis.

## Foreign Language Requirement

The College of Arts and Science and a few departments in other colleges have a foreign language requirement. In the College of Arts and Science, students may meet the requirement by completing course 204 or 209 or equivalents in any language. Students have a choice of a total skills sequence (listening comprehension, speaking, reading, writing) or a sequence which stresses reading.

Successful completion of two college semesters of Latin and two college semesters of classical Greek also fulfills this requirement.

## Secondary School Teacher Licensure

Students in the College of Arts and Science who are majoring in a foreign language may be licensed to teach in junior high, middle, and high schools by taking a prescribed number of courses in the College of Education, usually about 32 credits. These include 10 credits of supervised teaching in the public schools, and specialized courses in methods.

The teaching *major* consists of 30 credits in one language, all of which must be upper-division except for required courses in culture and civilization. French majors must take FR 221, 301, 305-306, 309 (two credits), 313, 314, and FLL 455 or approved equivalents. German majors must take GER 221, 301, 305-306, 309 (two credits), 311, and 455 or approved equivalents. Spanish majors must take SPAN 221 or 222, 301, 305-306, 309 (two credits), 351, 352, 410, and FLL 455. The student must also have a teaching minor. The department strongly recommends a teaching minor in a second foreign language.

The teaching *minor* in a foreign language is available to students who are working for a teaching major in another foreign language

or in another subject. It consists of 20 credits in the language of the minor, of which no less than 10 credits must be upper-division work, most of which are prescribed.

For further information, contact the Department of Foreign Languages and Literatures.

## Laboratory Facilities

The Learning Laboratory, located in Room 109 of the Getchell Library, has a language practice laboratory whose records and tapes of different languages are used to improve the command of the spoken language. Laboratory practice is required as part of homework in specified courses.

## Bachelor of Arts Degree Requirements for a Field of Concentration in French, German or Spanish

For the bachelor of arts degree, a minimum of 48 credits are required in the field of concentration, distributed as follows:

*Major Interest Subject*

In the major interest subject (French, German, or Spanish) 30 credits are required, all of which must be upper-division except for required courses in culture and civilization. French majors must take FR 221, 305-306, 309 (two credits), and 313, 314. German majors must take GER 221, 305-306, 309 (two credits), and 311. Spanish majors must take SPAN 221 or 222, 305-306, 309 (two credits), 351, 352, 410.

*Additional Required courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Foreign languages and literatures accepts any minor approved by the College of Arts and Science.

## Minor in Foreign Languages and Literatures (Basque, French, German, Italian, Spanish)

Students majoring in foreign languages and literatures and other fields may minor in foreign languages and literatures by completing one of the following:

For a minor, 20 credits are required of which 14 must be numbered above 300. French minor: 204, 221, 305, 306, 309 (two credits) and two other three-credit French courses numbered above 300. (FR 313 is recommended.) German minor: 204, 221, 305, 306, 309 (two credits) and two other three-credit German courses numbered above 300. (GER 311 is recommended.) Spanish minor: 204, 221 or 222, 305, 306, 309 (two credits) and two other three-credit Spanish courses numbered above 300.

For a minor in Basque and Italian studies, see Interdisciplinary and Special Programs.

**Secondary School Teaching:** to include all the courses in education required by the College of Education, usually 20 credits. The teaching major must include an approved course in linguistics. A teaching minor in a second foreign language is strongly recommended, consisting of from 20 to 26 credits (at least 10 must be at the upper-division level), and must include courses 305-306.

## Master of Arts Degree

The Department of Foreign Languages and Literatures offers a program of graduate study leading to the degree of master of arts with a major in foreign languages and literature and specializations in French, German or Spanish. The student must meet the general university requirements for admission to graduate standing. In addition, each student must have acquired a degree of proficiency in a major language acceptable to the department, and must have generally no less than a 3.0 GPA, on a scale of 4, in the undergraduate language major.

Plan A requires 30 graduate credits. No less than 18 credits, including six thesis credits, must be in courses numbered 700 or above. If a minor is approved, no less than six graduate credits are required in the minor area.

Plan B requires 32 graduate credits, of which no less than 15 must be in courses numbered 700 or above. No thesis is required. If a minor is approved, a minimum of eight graduate credits are required in the minor area.

Further details of the programs may be obtained from the department.

# GEOGRAPHY (GEOG)

*Faculty:* Exline (Ch.), Hausladen, James, Knapp, Kramer
*Adjunct Faculty:* Eigenheer, Klieforth

## Bachelor of Science in Geography

The department offers courses leading to the degree of bachelor of science in geography.

Students of modern geography develop an unusual combination of knowledge, techniques and theory that can be applied to an almost limitless variety of problems. This versatility is the product of the geographer's concern with both the natural and cultural features of the earth's surface and the manner in which they are bound together in a web of intricate relationships. Today's geographer focuses on two kinds of inquiry—locational patterns and processes and understanding the cultural and environmental systems found on the earth.

The geography student completes a core of 16 credits and then works with a departmental adviser to develop an area of concentration suited to the individual's needs. Examples may be found in areas such as physical geography (including environmental impact analysis), cultural and international studies, urban and regional planning (including the analysis and management of growth), cartography and computer mapping, and climatology.

Students may obtain the Bachelor of Science in Geography using the following options: Option 1—students must complete a minimum of 36 credits in geography. Option 2—students will follow an expanded field of concentration. Because of the necessity of tailoring programs to the students' needs and desires to graduate all students must meet with their assigned departmental adviser every semester.

| *Major Interest Subject* | *Credits* |
|---|---|
| GEOG 103—Geography of Man's Environment | 4 |
| GEOG 106—Cultural Geography | 3 |
| GEOG 212—Cartography | 4 |
| GEOG 416—Spatial Analysis | 3 |
| GEOG 418—Geography Thought | 2 |
| | 16 |
| Additional geography courses are determined in conjunction with an adviser. Nine credits will be from outside the geography department | 29 |
| | 45 |

*OPTION 1—Standard Field of Concentration*

| *OPTION 2—Expanded Field of Concentration* | *Credits* |
|---|---|
| *Natural science, mathematics and engineering* | |
| *Students will not be allowed to use Option 2 without prior approval of the department committee.* | |
| GEOG 103 | 4 |
| GEOG 212 | 4 |
| Additional courses outside of department determined in conjunction with adviser | 15 |
| Electives | 7 |
| | 30 |

| *Social Science* | *Credits* |
|---|---|
| GEOG 106 | 3 |
| GEOG 418 | 2 |
| Additional courses outside of department determined in conjunction with adviser | 6 |
| Electives | 4 |
| | 15 |

| *Communication, computation, cultural and area analysis* | *Credits* |
|---|---|
| Courses outside of department determined in conjunction with adviser | 6 |
| Electives | 4 |
| | 10 |

| *Advisement* | *Credits* |
|---|---|
| Courses outside of department determined in conjunction with adviser | 3 |
| Electives | 6 |
| | 9 |
| TOTAL | 64 |

Please contact the Department of Geography for specific instructions and a list of courses for Option 2.

## Minor in Geography

Students majoring in another field may minor in geography by completing the following:

| *Minor Interest Subject* | *Credits* |
|---|---|
| GEOG 103 (laboratory required) | 4 |
| GEOG 106 | 3 |
| An additional 11 credits, nine of which must be upper division, are determined in conjunction with a departmental adviser | 11 |
| | 18 |

## Land Use Planning Policy

The department also participates in the interdisciplinary master of science degree with a major in land use planning policy in cooperation with several other departments. For further information refer to the Interdisciplinary and Special Programs section of this catalog.

# HISTORY (HIST)

*Faculty:* Coray, Davies, Edwards, Ferguson, Hartigan, Hildreth, Hulse, Marschall, Moran, Raymond, Rowley, Shepperson (Ch.), Stevens, Tigner
*Adjunct Faculty:* Bandurraga

The Department of History offers courses of study leading to the degrees of bachelor of arts, master of arts, and doctor of philosophy.

## Bachelor of Arts Degree

| *Major Interest Subject* | *Credits* |
|---|---|
| HIST 101-102 | 6 |
| HIST 105-106 (three credits each) | 6 |
| Additional credits in history courses numbered 200 and above to be selected in consultation with adviser. From among these credits a total of at least six credits must be selected from the following non-American and non-European courses: HIST 343, 344, 345, 346, 351, 352, 353, 361, 362, 371, 372, 447, 448, 449. A total of 30 credits exclusive of HIST 101 and 102 are required | 24 |
| | 36 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. History accepts any minor approved by the College of Arts and Science.

## Minor in History

Students majoring in another field may minor in history by completing one of the following:

| *Minor Interest Subject (General History)* | *Credits* |
|---|---|
| To be chosen from HIST 101, 102, 105, 106 | 6 |
| From 300-level or above American history courses | 6 |
| From 300-level or above European history courses | 6 |
| From 300-level or above Third World history courses | 3 |
| | 21 |

| *Minor Interest Subject (American History)* | *Credits* |
|---|---|
| HIST 101 and 102 | 6 |
| plus 12 additional credits in European history courses numbered 200 and above (nine credits of which must be 300 and above) | 12 |
| | 18 |

| *Minor Interest Subject (European History)* | *Credits* |
|---|---|
| HIST 105 and 106 | 6 |
| plus 12 additional credits in European history courses numbered 200 and above (nine of which must be 300 and above) | 12 |
| | 18 |

| *Minor Interest Subject (Third World History)* | *Credits* |
|---|---|
| HIST 105 | 3 |
| plus 15 upper-division credits from African, Latin American, Far Eastern, Middle Eastern history or Ancient History 371 | 15 |
| | 18 |

## Master of Arts Degree

Students wishing to work toward the master of arts degree in history should read the section relating to graduate study and obtain from the department a brochure on *Graduate Study in History*. The department requires that applicants hold a baccalaureate degree with a major (or 24-semester-credit minor) in history, have a cumulative undergraduate GPA of 2.75, and achieve a satisfactory score on the Graduate Record Examination. There are optional programs for the Master of Arts degree. The Option A program requires a written comprehensive examination (after completion of 20 credits of graduate work), reading knowledge of one foreign language, 24 semester credits, a six-credit thesis, and a final oral examination. The Option B program requires a written comprehensive examination (in the semester in which 30 credits of graduate study are completed), reading knowledge of one foreign language, 32 semester credits, and a final oral examination. Further details may be obtained from the dean of the Graduate School and from the chairman of the department.

## Doctor of Philosophy Degree

Students wishing to pursue a Ph.D. degree with a major in history should read the section relating to graduate study and obtain from the department a brochure on *Graduate Study in History*. The department requires that applicants have a master of arts degree, have a cumulative GPA in all undergraduate and graduate work of 3.0 or higher, and achieve a satisfactory score on the Graduate Record Examination. The Ph.D. degree program requires an oral qualifying examination, 54 graduate credits past the M.A., of which at least 30 must be in approved courses, a current working knowledge of one foreign language and meeting of the university language requirement, written and oral comprehensive examinations in three fields, a dissertation, and a final oral examination.

As subjects for special research and for the required dissertation are limited to areas in which the department has particular strengths, applicants should plan to specialize in history of Nevada, Western North America, or American studies. Exceptions to this emphasis may be made with departmental approval, on the basis of adequate library resources and committed faculty involvement. Further details may be obtained from the Office of the Dean of the Graduate School and from the chairman of the department.

For general information, contact the chairman of the department.

# LIBRARY SCIENCE (L SC)

Library Science is not a department; however, information on courses is available from the director of libraries.

# MATHEMATICS (MATH)

*Faculty:* Alber, Bagchi, Blackadar, Colbert, Davis, Hooper, Kumjian, Lambert, Macauley, McMinn, Olmstead, Pinsky, Pfaff, Tompson (Ch.), Wagner

The department offers courses leading to the degrees of bachelor of science or bachelor of arts with a major in mathematics, master of science with a major in mathematics, and master of arts for the teaching of mathematics.

## Bachelor's Degrees

### Mathematics

| *Required courses* | *Credits* |
|---|---|
| MATH 215,[1] 216, 217, 311, 320, 330, 331, 341, 352 | 30 |
| Courses selected from the following: | |
| mathematics courses numbered above 300 | 9 |
| | 39 |

Students who are preparing for secondary school teaching may substitute two of the three courses: MATH 373, 474, 475 for MATH 311 and 320.

*Additional Required Courses:* The total number of credits in the field of concentration must be at least 57. In addition to credits for the major, students must complete 18-21 credits in a minor or else selected program of study chosen with the adviser and approved by the department chairman. This Program usually consists of courses from other departments which support the student's mathematical interest or which comprise a substantial program in a single area. Mathematics accepts any minor approved by the College of Arts and Science.

## Minor in Mathematics

A student in any college who completes 21 credits in mathematics courses in the Department of Mathematics at the 200 level or above including nine credits at upper-division (300-400) level satisfies the requirement for a minor in mathematics.

## Master of Science Degree

The Department of Mathematics offers a graduate program leading to the master of science degree. For further information, contact the department chairman.

## Master of Arts for the Teaching of Mathematics Degree

The Department of Mathematics offers a graduate program leading to the master of arts for the teaching of mathematics (MATM) degree. The MATM program is designed to upgrade the mathematical and educational expertise of practicing secondary teachers. For further information, contact the department chairman.

# MILITARY SCIENCE (MIL)

*Faculty:* Czech, Eldredge, Fitzgerald, Lewis, McCloskey, Woodfill

The Army Reserve Officers Training Corps (ROTC) is the only military commissioning program of any armed service within the University of Nevada System. ROTC is available at university request and represents a contractual agreement between the army and the university. The ROTC program in the Military Science Department is administered by career army officers, carefully nominated by the Department of the Army and subject to approval by the university president.

| *Major interest subjects required for commissioning* | *Credits* |
|---|---|
| **Basic course requirement** | |
| Option I—MIL 101, 102, 201, 205 | 8 |
| Option II—MIL 204—Basic Summer Camp | 2 |
| Option III—Students with three or four years of JROTC or 12 or more months continuous federal service may bypass basic courses | 0 |
| **Advance course requirement** | |
| MIL 301, 302, 303, 401, 402 | 14 |
| **Additional elective hours for credit** | |
| MIL 203, 304, RPED 18 | 14-10 |
| | 20-34 |

## Program Objective

The overall objective of the ROTC program is to develop in the student/cadet—through both classroom theory and practical application—the necessary traits, knowledge, proficiency and experience for a commission in the United States Army. This includes a broad educational base including, in addition to those subjects integral to the degree field, certain academic subjects of particular value in both civilian and military pursuits; a general knowledge of the historical development of the United States Army and of its role in support of national objectives; a working knowledge of the general organizational structure and of how the various components operate as a team in the fulfillment of overall objectives; a strong sense of personal integrity, honor, and individual responsibility; knowledge of the human relationships involved and an understanding of the responsibilities inherent in assignments within the military service, the ability to communicate effectively both orally and in writing; sufficient knowledge of military life to insure a smooth transition from the normal civilian environment. The curriculum is designed to prepare the student for either career service or reserve service.

## Program Description

The Military Science Department offers an academically challenging and practical curriculum which can be accomplished in eight semesters or a compressed program of either six or four semesters. The military science curriculum is intended to enrich the student and supplement baccalaureate or postgraduate studies with the degree-producing departments. The army recognizes the need for officers with varied academic credentials and is prepared to award a commission to any deserving student based on ROTC achievement upon graduation.

The scope of the military science curriculum is oriented toward developing the best possible all-around student who demonstrates leadership and managerial skill; reacts well under pressure; and understands general military subjects. This goal is accomplished by classroom conferences and a leadership laboratory program.

The leadership laboratory program provides academic credit and is an essential gauge in evaluating the student as a prospective second lieutenant. The leadership laboratory for the freshman and sophomore years is an introduction to the skills required in the army. Practical exercise and hands-on training are emphasized. Subject areas include but are not limited to map reading, unarmed defense, weapons familiarization and firing, and familiarization

[1] MATH 215 satisfies the university core mathematics requirement.

with army tactical vehicles and army aircraft. Junior year leadership laboratory consists of individual leadership training, parade and combat drill, and field exercises. During the senior year students perform actual military duties within the Military Science Department.

### Basic Program

*Freshmen (MIL 101-102):* Introduction to the organization, mission, history, and functions of each of the armed services the Reserves, National Guard, and the ROTC, multiple options available for military service; the combat and support role of squad-size units; basic individual weaponry; the objectives and instruments of national power, strategy, and security.

*Sophomores (MIL 201-205):* Provision of a sound foundation in the principles of small unit leadership with an emphasis on map reading, tactics and management at the squad level.

### Advanced Program

*Juniors or selected graduate students (MIL 301-302):* Development of individual qualities and capabilities inherent in a successful leader and manager by illustrating effective leadership traits; instruction in methods of instruction; development of an appreciation of the principles of combat at platoon and company levels, techniques of command, control, and management at all levels; attendance at any army-paid, six-week, advanced summer camp (usually between the student's junior and senior years) immediately after spring semester .

*Senior or selected graduate students (MIL 401-402):* Seminar on the organization, mission, functions, and capabilities of battalion and larger units and the interrelationships of the combined arms team; the numerous administrative and logistical problems which confront leaders at platoon and company level; the role of the United States as a world power to include military alliances and global commitments; introduction to military law.

The advanced course is open to undergraduate and graduate students with at least four remaining semesters as full-time students. Students who successfully complete the basic program or the six-week ROTC basic summer camp (usually held at Fort Knox, Kentucky), may apply for admission into the advanced program. The basic summer camp is normally scheduled after the student's sophomore year or during the summer preceding the four remaining semesters at the university. The basic summer camp substitutes for the basic program and is geared to students who join the ROTC program late and wish to accomplish the curriculum in four semesters (two years).

The advanced program differs from the basic program in that the student enters into a contract with the army whereby the individual agrees, contingent upon continued university enrollment, to complete the ROTC program (including advanced summer camp) and to accept a commission, if offered, upon termination of the degree program. To be eligible for commissioning, each student must have earned at least a baccalaureate degree.

For acceptance into the advanced program a student must:

1. Be a citizen of the United States and be regularly enrolled as a full-time student at the university.
2. Be able to complete the course, graduate, and be commissioned prior to the thirtieth birthday.
3. Have successfully completed such survey and screening tests as may be prescribed.
4. Have successfully passed a prescribed physical examination.
5. Be selected by the professor of military science.
6. Have executed a written contract with the United States government.

## Volunteer Extracurricular Activities

*Rangers*—A highly competitive organization that provides additional military training for students who are interested in getting the ultimate preparation for success as future Combat Arms Officers. The *Wolf Pack* Ranger Challenge team is an element of the organization and competes annually against teams from 58 other colleges and universities in the Western United States.

*Sierra Guard*—The personal honor guard of the governor of Nevada. The Sierra Guard is well regarded for its professional competence and esprit de corps. The Sierra Guard presents the national and state colors at all Wolf Pack football games as well as other formal university functions. Additionally, the Sierra Guard provides the cannon firing detachment for the ROTC Department and is the formal escort for the Fremont Cannon.

*Wolf Pack Rifle and Pistol Teams*—Precision shooting teams that compete locally and against teams from other colleges and universities in the Western United States.

## Career Opportunities

Advanced program students who demonstrate outstanding academic, military, and leadership proficiency may be selected as distinguished military students (DMS) at the beginning of their senior years. As a DMS, a student may apply for a commission in the regular Army. A commission in the regular Army gives the student the same status and benefits as a graduate from the United States Military Academy. The student is not required to make the army a career but simply agrees to serve the minimum time of three years before deciding whether or not to remain. The vast majority of career officers and numerous generals are ROTC graduates from the nearly 300 colleges and universities in the United States which offer ROTC.

## Active Duty and Reserve Obligations

Students commissioned from the ROTC program normally serve on active duty in the army as reserve officers for a period of up to three years upon graduation from the university. After completion of this active duty they are assigned to reserve units for an additional five years, if a vacancy exists in a unit within a reasonable distance from their homes, or are integrated into the regular Army upon request.

## Reserve Forces Duty

Students commissioned from the ROTC program may also request to serve with the U.S. Army Reserve or the Army National Guard. This consists of three to six months' active duty, and an eight-year obligation with the reserve forces, either in units or in the individual ready reserve.

## Financial Assistance

Students taking the basic course receive no pay unless they have ROTC scholarships. Students awarded Department of the Army two-, three-, and four-year ROTC scholarships receive $100 per month subsistence pay while enrolled in school (ten months per year maximum) and payment for books, tuition, and fees. All other students formally enrolled in the advanced course are paid subsistence at a rate of $100 per month while enrolled in school, not to exceed a total of 20 months. Students are paid one-half of the base pay of a second lieutenant while attending the six-week summer camp training plus travel pay to and from summer camp. The Military Science Department has a limited number of in-state and out-of-state fee waivers available each semester for students requiring financial assistance.

Additionally, the Nevada National Guard pays one-half of the credit costs for students who elect to serve simultaneously in the Nevada National Guard and in Advanced ROTC. This is a particu-

larly valuable option which can be worth over $10,000 for veterans and students with junior ROTC experience.

## Textbooks, Uniforms, and Equipment

The United States government provides each basic course student with the necessary textbooks, uniform, and equipment.

Students in the advanced course, in addition to receiving the $100 monthly stipend, texts, and instructional equipment at the expense of the United States government, are provided an officer-type uniform. The United States government provides the university with a uniform allowance for each student enrolling in the advanced course and this allowance is used to purchase the officer-type uniform, which the student may buy upon commissioning.

# MUSIC (MUS)

*Faculty:* Cleveland (Ch.), Ehrke, Engstrom, Haimowitz, Jones, Lang, A. Lenz, J. Lenz, Mayhall, McGrannahan, Puffer, Smith, Williams

The department offers courses leading to the degrees of bachelor of arts with a major in music, bachelor of music with majors in applied music or music education, and master of arts or master of music.

Courses in the areas of music theory, music history, applied music, and methods of music teaching are offered for cultural benefit and for professional preparation of performing musicians and/or music teachers.

All students in the university may participate in one or more of the performance organizations. These include university band, concert choir, symphonic choir, opera theater, university-community symphony, and chamber music ensembles. Solo performance is possible in class recitals or in connection with the performance organizations.

## Bachelor of Arts with Field of Concentration in Music

For the bachelor of arts degree, a minimum of 38 credits is required, distributed as follows:

| *Major Interest Subject* | *Credits* |
|---|---|
| MUS 100—Concert Class (satisfactory completion of six semesters) | 0 |
| Applied individual instruction in a single area of study | 6 |
| Music Theory—MUS 207-208, 209-210, 301-302, 307-308 | 16 |
| Music History—MUS 201-203 | 6 |
| Ensemble | 6 |
| To be chosen from theory or history and literature courses 300 or above | 4 |
| | 38 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Music accepts any minor approved by the College of Arts and Science.

The bachelor of arts is a liberal arts degree.

## Bachelor of Music

The bachelor of music, with a major in music education, is a professional degree which meets present state of Nevada music licensure requirements.

| *Major Interest Subject* | *Credits* |
|---|---|
| MUS 100—Concert Class (satisfactory completion of eight semesters) | 0 |
| Applied major instrument or voice (a senior recital of 25 minutes is required) | 8 |
| Piano competency (Piano Proficiency Examination must be passed) | |
| Music Theory—MUS 207-208, 209-210, 301-302, 307-308 | 16 |
| Music History—MUS 201, 202, 203, Orchestration—MUS 310, Form and Analysis—MUS 408 | 15 |
| Ensemble | 7 |
| Methods courses in the department—MUS 103, 104, 113, 123, 124, 323, 352, 354 | 18 |
| Conducting—MUS 322 | 2 |
| Senior Recital—MUS 499b | 0 |
| | 66 |

The requirement of a minor in an area outside the music department is waived.

| | |
|---|---|
| Professional Education: requirements for licensure as Music Special K-12 in Nevada | 34-39 |
| | 99 |

The bachelor of music degree with a major in applied music is available only to students approved by the entire faculty as showing professional promise in their applied performance areas.

| *Major Interest Subject* | *Credits* |
|---|---|
| MUS 100—Concert Class (satisfactory completion of eight semesters) | 0 |
| Applied major, four[1] credits per semester | |
| 100 level (entrance audition required) | 16 |
| 300 level (upper-division audition required) | 16 |
| Minor instrument: one credit per semester (non-keyboard majors enroll in piano until the piano proficiency examination is passed; remaining credits are taken in a single applied area) | 2 |
| Music Theory—MUS 207-208, 209-210, 301-302, 307-308 | 16 |
| MUS 201, 202, 203, 322 | 11 |
| MUS 310, 408 | 6 |
| Ensembles: major eight credits, secondary five credits | 13 |
| Literature electives to include four credits in MUS 418 for vocal majors, and four credits in MUS 483 for piano majors | 4 |
| Senior Recital—MUS 499a | 0 |
| | 84 |

The requirement of a minor in an area outside the music department is waived.

## Minor in Music

Students majoring in subject areas other than music in the College of Arts and Science may minor in music by completing one of the following:

| *Minor Interest Subject* | *Credits* |
|---|---|
| MUS 100—Concert Class (satisfactory completion of three semesters) | 0 |
| MUS 207-208 | 6 |
| MUS 201, 202 or 203 | 3 |
| Major ensembles | 3 |
| Instrumental or vocal instruction | 3 |
| Electives numbered 300 or above | 5 |
| | 20 |

| *Music Industry Option* | *Credits* |
|---|---|
| MUS 100—Concert Class (satisfactory completion of three semesters) | 3 |
| MUS 181-182 | 2 |
| MUS 207-208 | 6 |
| MUS 222-223 | 4 |
| MUS 317, 319, 325 or 430 | 2 |
| MUS 485 (audio production or music management) | 3 |
| MUS 495 (music literature/history) | 3 |
| | 20 |

## Applied Music

A special fee of $125 per half-hour lesson is required for all applied individual instruction. All university students may take applied music, although music majors and minors are given first priority for available space. Students taking applied music must also enroll in a major ensemble: symphonic choir, concert choir, orchestra, marching and concert band, or symphonic band and wind ensemble. A maximum of 13 credits in ensembles is allowed toward graduation. Students receive one half-hour individual applied lesson for one credit, and one hour lesson for two, three, or

[1]Vocal students for the first four semesters register for three credits with concurrent registration in MUS 218, one credit each semester, to a total of four credits. MUS 218, Vocal Repertory Coaching, is devoted to the study of diction in English, French, Italian and German.

four credits. A Jury Examination is required at the end of the semester for all undergraduate and graduate students enrolled in applied music. One hour of daily preparation is required for each credit. A maximum of eight credits of applied instruction at each level may be applied to the B.A. A maximum of four credits of applied instruction at the 700 level may apply toward a graduate degree. All students entering the B.M. applied program must satisfactorily complete an entrance audition; an upper-division audition must be completed after 16 lower-division credits. Any student seeking upper-division or graduate status in applied music must satisfactorily complete an audition (MUS 749, Secondary Instrument or Voice does not require an audition).

## Ensemble Requirements

All music majors and minors taking private lessons must coregister for an appropriate major ensemble until they have completed the required number of major ensemble credits applicable to their degree; majors and minors who have completed the required major ensemble credits may subsequently coregister for either a major or minor ensemble as long as they take private lessons. All nonmajors must coregister for either a major or minor ensemble as long as they are taking private lessons. Students may count only one major ensemble credit per semester toward the ensemble requirement. Enrollment in all ensembles is subject to the ensemble instructor's approval. Music education students are not required to enroll in any of the university ensembles during the semester in which they are student teaching.

### Appropriate Major Ensembles for Music Majors:

a. Voice students are required to be in Symphonic Choir or Concert Choir.

b. String students are required to be in University Orchestra.

c. Wind and percussion students are required to be in a major instrumental ensemble.

d. Keyboard and guitar students are required to be in a major ensemble. Keyboard students may substitute up to 50 percent (four semesters) of their major ensemble requirement by enrolling in Techniques of Piano Accompaniment (MUS 225, 429, 629.)

## Masterclass Attendance Requirements

All undergraduate music majors and minors must fulfill masterclass/concert attendance requirement by enrolling in and completing MUS 100, Concert Class, a minimum number of times indicated as follows:

a. Bachelor of Music majors: minimum of eight "satisfactory" semesters.

b. Bachelor of Arts music majors: minimum of six "satisfactory" semesters.

c. Music minors: minimum of three "satisfactory" semesters.

Satisfactory completion of MUS 100, Concert Class, involves attendance of a minimum of eight departmentally approved concerts, three appropriate masterclasses and three noon recitals each semester. Check with the Music Department for procedures of verifying attendance.

## Foreign Language Requirements for Music Majors

a. Bachelor of arts degree candidates: must complete the regular college requirement.

b. Bachelor of music degree candidates: music education majors are exempt from the foreign language requirement. Applied music majors (excluding those in the vocal area) are exempt from the foreign language requirement.

Those in the applied music vocal area must satisfy a departmental foreign language requirement by either completing two years in a single foreign language, one year each of two different foreign languages, or one semester each of four different foreign languages.

## Departmental Requirements

Candidates for all bachelor's degrees in music should consult the current Music Department *Student/Faculty Handbook* for information on any additional departmental requirements. Contact the music department for a copy of the handbook.

## Master of Arts and Master of Music Degrees

The master of arts degree (Plan A) requires a written and a minimum of 31 credits distributed as follows:

| *Major Interest Subject* | *Credits* |
|---|---|
| Required core: MUS 709, 730, 731-732 | 12 |
| Thesis and related course work | 10 |
| Related studies or minor (two credits of an ensemble is required) | 9 |
| | 31 |

The master of music degree in performance (Plan A) is available to students by audition. Recital performances be auditioned before the department faculty.

| *Major Interest Subject* | *Credits* |
|---|---|
| Required core: MUS 709, 730, 731-732 | 12 |
| Area of prindpal interest: Applied study and recital performances | 10 |
| Related studies or minor (two credits of an ensemble is required) | 9 |
| | 31 |

The master of music degree in music education (Plan B) requires a professional paper and is offered for candidates who are active music teachers.

| *Major Interest Subjects* | *Credits* |
|---|---|
| Required core: MUS 709, 730, 731-732 | 12 |
| Music education core: MUS 740, 741, and professional paper | 9 |
| Related studies or minor (two credits of an ensemble is required) | 12 |
| | 33 |

Candidates for all master's degrees in music should consult the current Music Department *Student/Faculty Handbook* for information concerning auditions and placement, comprehensive, oral and piano proficiency examinations. Candidates must complete all requirements for the master's degree as published in the Graduate School section of this catalog.

# PHILOSOPHY (PHIL)

*Faculty:* Achtenberg, Hoffman, Kelly, Lucash, Nickles (Ch.)

The department offers courses leading to the degrees of bachelor of arts and master of arts.

## Bachelor of Arts Degree

Philosophy as a field of concentration is designed for those students interested in acquiring a comprehensive understanding of the various areas of philosophy, either for their cultural enrichment or as a basis for advanced study and teaching of philosophy. It is an appropriate field of concentration for those planning to enter such fields as law or theology. The department also offers sequences of courses which may constitute secondary fields of concentration for students in most academic areas.

| *Major Interest Subject* | *Credits* |
|---|---|
| PHIL 211, 213, and either PHIL 114 or 326 (required) | 9 |

| | |
|---|---|
| At least six credits in each of the following three groups with at least three credits at the 400 level in each group: | |
| Group A—History of Philosophy: PHIL 212, 314, 315, 316, 410, 411, 413, 414, 415 | 6 |
| Group B—Metaphysics and Epistemology: PHIL 130, 224, 403, 404, 405, 406 | 6 |
| Group C—Ethics and Value Theory: PHIL 125, 202, 203, 207, 323, 325, 401, 402, 407 | 6 |
| Additional credits in philosophy | 9 |
| | 36 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Philosophy accepts any minor approved by the College of Arts and Science.

## Minor in Philosophy

Students majoring in another field may minor in philosophy by completing the following:

| *Minor Interest Subjects* | *Credits* |
|---|---|
| PHIL 211 and 213 | 6 |
| At least six credits from Group A and three credits from Group B | |
| Group A—PHIL 314, 315, 316, 403, 404, 405, 406, 410, 411, 413, 414, 415 | 6 |
| Group B—PHIL 323, 325, 401, 402, 407 | 3 |
| Additional credits in philosophy | 3 |
| | 18 |

## Master of Arts Degree

The candidate for the master of arts degree must complete a minimum of 18 credits in 700-level philosophy courses. A total of 30 graduate credits is required for Plan A or thesis program. Six to nine of these credits must be taken outside the department in an area approved by the department. A total of 33 graduate credits is required for Plan B or nonthesis program. Nine to 12 of these credits must be taken outside the department in an area approved by the department. While not required, a reading knowledge in at least one foreign language is highly recommended, especially if the candidate wishes to pursue further graduate studies beyond the master's level.

Each candidate for the master of arts degree is required to pass a comprehensive written examination.

# PHYSICS (PHYS)

*Faculty:* Altick, Bennum, Bruch, Cathey, Kliwer, Moore (Ch.), Neill, Winkler

*Cooperating DRI Faculty:* Chai, Gertler, Hallett, Hoffer, Hudson, Pitter, Telford, Warburton

The department offers courses leading to the degrees of bachelor of science, master of science, and doctor of philosophy.

## Bachelor of Science Program

The bachelor of science program provides a foundation in basic science that qualifies the recipient for technical positions in industry, government laboratories, or for graduate studies in physics, as well as a variety of related fields.

| *Major Interest Subject* | *Credits* |
|---|---|
| PHYS 201, 202, 203, 204, 205, 206 | 12 |
| PHYS 351, 352 | 6 |
| PHYS 473-474 or 421-422 | 6 |
| Credits at the 300-level or above including a minimum of three laboratory credits | 6 |
| | 30 |

*Additional Required Courses (22 credits):* CHEM 201, 202 (eight credits) recommended or CHEM 101, 102 (eight credits). MATH 215, 216, 217, 320 (14 credits). Either German or Russian is recommended to fulfill the foreign language requirement.

The above requirements are considered minimum. A student who wishes to enter the field of physics is advised to take PHYS 421-422, 425-426, and 473-474 as well as PHYS 361-362, 363-364, 355, and 466.

## Bachelor of Science Programs in Engineering Physics and Geophysics

A bachelor of science degree in engineering physics is offered by the College of Engineering (see Engineering Physics). This program is for the student who desires a strong emphasis on technical and applied courses. The bachelor of science in geophysics offered by the School of Mines also includes a good background in physics. Either of these degrees can be used as preparation for graduate work in physics.

## Minor in Physics

Students majoring in another field may minor in physics by completing the following:

| *Minor Interest Subject* | *Credits* |
|---|---|
| PHYS 201, 202, 203 | 9 |
| (By petition to the department chairman, PHYS 151-152 may be substituted for PHYS 201, 202) | |
| PHYS 351 | 3 |
| Six credits in courses numbered 300 or above, including at least one credit of laboratory | 6 |
| | 18 |

## Advanced Degrees

Consult regulations of the Graduate School for general admission requirements. Requirements for admission to graduate standing in physics are:

1. A bachelor's degree from an institution offering an approved major in physics (as defined by the American Institute of Physics).
2. Completion of regular junior-senior courses in mechanics, optics, electricity and magnetism, heat and thermodynamics, and modern physics.
3. An average grade of B or better in all physics and mathematics courses, and an overall average of B or better in all undergraduate courses.

Applicants whose records indicate a deficiency in any of the requirements listed above may be admitted on a probationary basis and may be required to take certain undergraduate courses (which do not carry graduate credit). All new graduate students are required to take a preliminary examination in general physics during the first year of graduate study. Graduate students who hold half-time assistantships are not permitted to enroll for more than 10 credits in graduate courses in any one semester. The general requirements of the Graduate School must be followed by each student in physics working for an advanced degree.

## Master of Science Degrees

Master of science degrees are offered with majors in physics or atmospheric physics. The physics courses should include PHYS 701, 702, 712, 721-722, 790. The atmospheric physics courses should include PHYS 701, 704, 740, 741, 742, 743, 749, and 790. Additional credits may be in a minor, usually mathematics. A student who needs laboratory experience is advised to register for experimental work. The program of courses is planned in consultation with a graduate adviser and is subject to approval by the student's advisory committee.

To be admitted to candidacy, the student must complete 10 graduate credits with a grade of B or better, and achieve a satisfactory

score on the Graduate Record Examination, including the advanced physics portion. Subject to the approval of the committee, a student may elect a master's degree program with or without thesis. The requirements for the master of science degree with thesis include the completion of 30 semester credits, of which six credits must be in thesis research; the thesis should demonstrate the student's ability to carry out independent research. For the master's program without thesis, 32 credits are required, with no more than six credits in special problems courses, and a written comprehensive examination must be passed. All M.S. candidates must pass a final oral examination administered by the student's advisory committee. The emphasis in the examination will be on the thesis when one is presented; otherwise, it will be on mastery of the graduate-level course work.

## Doctor of Philosophy Degree

A Ph.D. program is offered with a major in physics. In addition, a specialization in atmospheric science is also offered. The purpose of the formal course work is twofold: to give the student a broad background in classical and modern physics, and to prepare for the research work which will form the subject of the dissertation.

Before becoming a candidate for the doctor of philosophy degree, a student ordinarily is expected to earn the master of science degree. The following courses or their equivalents must be satisfactorily completed for the doctor's degree in physics:

| | *Credits* |
|---|---|
| PHYS 701—Mathematical Physics | 3 |
| PHYS 702—Classical Mechanics | 3 |
| PHYS 712—Electromagnetic Theory | 3 |
| PHYS 721-722—Quantum Theory I and II | 6 |
| PHYS 732—Statistical Mechanics | 3 |
| PHYS 761—Atomic and Molecular Physics | 3 |
| PHYS 795—Comprehensive Examination | 0 |
| At least three credits of PHYS 790 | 3 |
| Credits selected from other 700-level physics and/or mathematic courses | 15 |
| Credits of approved electives | 9 |
| | 48 |

For the specialization in atmospheric science, PHYS 706, 740, 745, 748 may be substituted for 721, 722, 732, 761. If there is a substitution for 721-722, a modern physics competence equivalent to PHYS 421-422 is necessary. Before being accepted as a candidate, the student must pass a comprehensive examination on graduate-level material in physics.

# POLITICAL SCIENCE (P SC)

*Faculty:* Armstead, Chang, Crowley, Eubank, Fox, Ganzel, Hauptmann, Herzik, Marini, Siegel (Ch.), Weinberg, Wilcox, Wilds

The department offers courses leading to the degrees of bachelor of arts, master of arts, master of public administration, and doctor of philosophy. The department also administers the major in international affairs.

## Bachelor of Arts Degree

*Major Interest Subject (30 credits)*

P SC 101 or 103 and at least one additional course in each of the following five fields: (1) American government, (2) public administration and public policy, (3) political theory (must be 300/400 level), (4) comparative government, and (5) international relations.

Eighteen of the 30 credits must be in courses numbered above 300. Only six credits of internship courses may be used to fulfill the 30-credit major requirement.

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Political science accepts any minor approved by the College of Arts and Science.

History and Social theory is an approved area of study for political science majors. See Interdisciplinary and Special Programs section for description.

## Minor in Political Science

Students majoring in another field may minor in political science by completing one of the following:

| *Minor Interest Subject (General)* | *Credits* |
|---|---|
| P SC 101 or 103 | 3 |
| Three courses from the following: 104, 210, 211, 231 and 341 | 9 |
| plus three additional upper-division courses | 9 |
| | 21 |

| *Minor Interest Subject (Foreign Affairs)* | *Credits* |
|---|---|
| P SC 101 or 103, plus 211 and 231 | 9 |
| plus four upper-division courses in the areas of comparative politics (410-418, 438, 444) and of international relations (336, 410, 430-439) including at least one course from each area | 12 |
| | 21 |

| *Minor Interest Subject (Public Administration and Public Policy)* | *Credits* |
|---|---|
| P SC 101 or 103, plus 210 and 341 | 9 |
| plus four additional courses selected from the following: 354, 400, 406, 421, 441, 442, 443, 444, 445, 446, 447, 450, 456, 457, 458 | 12 |
| | 21 |

| *Minor Interest Subject (American Government)* | *Credits* |
|---|---|
| P SC 103, 304, 305, 309 | 12 |
| plus three additional courses selected from the followig: 308, 353, 354, 400, 404, 406, 407, 409, 447, 451 and 452 | 9 |
| | 21 |

## Congressional Intern Program

A program in which the student spends one semester in a senator's office in Washington, D.C. For details and application forms, contact the chairman of the Political Science Department.

## Master of Arts Degree

The Department of Political Science offers a graduate program leading to the degree of master of arts that includes course work in political theory, American politics, public administration, public policy, international relations, and comparative politics. One of three areas of study may be in another academic discipline. Further details may be obtained from the office of the dean of the Graduate School or from the department graduate adviser.

## Master of Public Administration and Policy Degree

An interdisciplinary master of public administration and policy degree is offered through the Department of Political Science. The program is designed to prepare students for careers in public service and to increase the administrative and policy analysis skills of people presently employed in government service. The program involves three areas of study: public administration, public policy, and a third area which may be another academic discipline or an interdisciplinary grouping of courses. For more detailed information contact the M.P.A. adviser in the Department of Political Science.

The department also participates in the interdisciplinary master of science degree in land use planning in cooperation with several other departments. For further information refer to the Interdisciplinary and Special Programs section of this catalog.

## Doctor of Philosophy Degree

The department offers major and minor areas of specialization in American politics, public administration, public policy, interna-

tional relations, and comparative politics. A minor field may also be selected from another department. Applicants should have a GPA of 3.25 or higher and submit scores on the Graduate Record Examination as well as letters of reference. The Ph.D. degree program requires 48 course credits plus 24 dissertation credits. Credits may be transferable from master's programs. Foreign language requirements are at the discretion of the candidate's faculty committee. For further information, contact the department's graduate adviser.

## International Affairs Major

For information, see the Interdisciplinary and Special Programs section of this catalog or contact the director of the international affairs major in the Department of Political Science.

# PSYCHOLOGY (PSY)

*Faculty: Davis, V. Follette, W. Follette, B. Gardner, R. Gardner, Ginsburg (Ch.), Hayes, Hutchinson, Mikawa, Peterson, Solso, Varble, Wallace*

The department offers courses leading to the degrees of bachelor of arts, master of arts, and doctor of philosophy.

## Bachelor of Arts Program

The general psychology major includes training in all the major areas of psychology; social psychology is a broader major that also includes areas in sociology and anthropology.

## General Psychology

| *Major Interest Subject* | *Credits* |
|---|---|
| PSY 101, 210, 301, 408 | 15 |
| Additional credits in psychology | 18 |
| | 33 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Psychology accepts any minor approved by the College of Arts and Science. The department follows the policy of the college regarding the foreign language requirement.

## Social Psychology

| *Major Interest Subject* | *Credits* |
|---|---|
| ANTH 101 | 3 |
| PSY 101, 210, 261, 362, 392 | 16 |
| SOC 101 | 3 |
| Additional credits in psychology | 12 |
| | 34 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Social psychology accepts any minor approved by the College of Arts and Science. The department follows the policy of the college regarding the foreign language requirement.

## Minor in Psychology

Students majoring in another field may minor in psychology by completing the following:

*Minor Interest Subject*

For a minor in psychology, the department recommends a total of 24 credits in psychology courses. However, an acceptable minor may be completed by taking a minimum of 18 credits (nine of which must be upper-division credits in psychology) and including:

1. PSY 101 (3 credits).
2. At least three of the following courses 210, 233, 261, 301, 403, 405, 408, 421, 431, 435, 441, 446, 447, 448, 480 or 481.

Electives from additional course offerings in psychology (which may also include additional courses from #2 above).

## Advanced Degrees: Master of Arts Program

The master of arts degree program in general psychology attempts to give the student a broad knowledge of the field.

## Doctor of Philosophy Program in General Psychology

The student in this program must meet all the requirements for admission to the Graduate School and the general requirements for obtaining a doctoral degree at the university, with a minimum of 12 credits of dissertation and a minimum of 72 total graduate credits. The student is required to complete six credits of graduate-level work in either a related field *or* completion of a fourth semester of foreign language. Also required is one full year in teaching or research which may be satisfied by spending a suitable fraction of time in teaching or research concurrently with graduate study.

Students in this program may elect a concentration in either experimental psychology or clinical psychology. Details may be obtained by writing to the Department of Psychology.

## Doctor of Philosophy Program in Social Psychology

This is an interdisciplinary program offered jointly by the departments of psychology and sociology leading to a doctor of philosophy degree with a major in social psychology.

The student in this program must meet all the requirements for admission to Graduate School and the general requirements for obtaining a doctoral degree at the university. The student is required to complete six credits of graduate-level work in either a related field or completion of a fourth semester of foreign language. Also required is one full year in teaching or research which may be satisfied by spending a suitable fraction of time in teaching or research concurrently with graduate study.

## Admission Information

To be accepted as a graduate student requires the earning of the bachelor's degree from an accredited college or university. To be accepted in full standing, a minimum of 18 credits of undergraduate work in psychology is required. The student must also meet the following requirements:

1. Credit in a laboratory course in experimental psychology and a course in statistics. In addition, students in a program emphasizing clinical psychology must have a course in abnormal psychology and a course in theories of personality.
2. A GPA of 3.0 for the four years of undergraduate work.
3. Recommendations from former instructors to the effect that the student is capable of doing graduate work at an acceptable level of performance.

In some instances in which a student is deficient in the above requirements, it is feasible to make up such deficiencies before entering the degree program. The department advises students with deficiencies whether they are likely to be considered as graduate students in full standing after such deficiencies have been made up.

The student interested in the social psychology program may substitute 18 credits of undergraduate work in sociology. The laboratory course in experimental psychology is not required for admission if the student's undergraduate work is in sociology, but it is highly desirable.

### Preliminary Screening

Individuals wishing to attend as graduate students should write to the chairman, Department of Psychology, at the earliest

possible date stating the degree program desired and whether or not financial assistance is needed. Preliminary information forms are provided for completion and return with a transcript of all undergraduate work.

Applicants should make arrangements at the nearest college or university to take the Graduate Record Examination (Aptitude and Advanced) as soon as possible on one of several test dates each year. The scores are to be forwarded to the department for consideration.

Selected applicants are encouraged to make formal application for admission to the university (refer to section on Admission Information).

## Financial Assistance

A variety of graduate assistantships, fellowships, and traineeships are available to well-qualified students. Stipends begin at $7,650 plus exemption from most of the tuition and registration fees. *If the student is applying for financial assistance, the application should be completed no later than February 1.* Normally the candidate receives notification by April 1 and has until April 15 to accept or reject the offer. In some instances, financial awards become available after this date and late applications are considered.

# SOCIOLOGY (SOC)

*Faculty:* Berberoglu, Harvey, Richardson, Warner (Ch.)
*Adjunct/Affiliate:* Backman, Enarson, Koh, Stewart, Teirumniks

## Bachelor of Arts Degree

| *Major Interest Subject* | *Credits* |
|---|---|
| SOC 101 (three credits); 210 (four credits); 392, and 491 or 207; and one of 342, 371, 373, 391, 393; and one of 333, 376, 463, 480, 485 | 19 |
| Additional courses in sociology | 12 |
| | 31 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Sociology accepts any minor approved by the College of Arts and Science.

History and social theory is an approved area of study for sociology majors. See Interdisciplinary and Special Programs section for description.

## Social Psychology

| *Major Interest Subjects:* | *Credits* |
|---|---|
| SOC 101 (three credits), 210 (four credits), 261, 362, 392 (three credits each) | 16 |
| PSY 101 | 3 |
| ANTH 101 | 3 |
| Additional credits in sociology | 12 |
| | 34 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Social psychology accepts any minor approved by the College of Arts and Science.

## Minor in Sociology

Students majoring in another field may minor in sociology by completing one of the following:

| *Minor Interest Subject (General)* | *Credits* |
|---|---|
| Required: SOC 101 and 207 | 6 |
| Two courses from the followng: SOC 342, 371, 373, 391, 393 | 6 |
| Two courses from the following: SOC 333, 376, 480, 485 | 6 |
| | 18 |

| *Minor Interest Subject (Applied)* | *Credits* |
|---|---|
| Required: SOC 101 and 379 | 6 |
| A choice of SOC 102 or 202; one course from SOC 352, 366, 464; SOC 275 or 480; SOC 376 or 342 | 12 |
| | 18 |

## Advanced Degrees

The Department of Sociology offers a graduate program leading to a master of arts degree with a major in sociology, and in conjunction with the Department of Psychology, a program leading to a doctor of philosophy degree with a major in social psychology. Further details may be obtained from the dean of the Graduate School or from the chairman of the department.

The program of graduate studies in sociology is designed to prepare sociologists for careers in the academic world and in areas of policy-related research. Strong emphasis is given to theory, classical and modern, traditional and critical, but always within a context which actively translates that theory into concrete research activity. Firm foundations in both theory and research technique are emphasized, but only as tools developed to study modern social relations in their historical and comparative perspectives.

Emphasis in the graduate program is placed upon scholarship.

## Master of Arts Program

Master of arts degrees may be taken with emphasis in sociology or social psychology. The program in social psychology is interdisciplinary, with the student taking work in psychology as well as sociology.

A master's degree is granted when the student (1) satisfactorily completes 30 semester credits in graduate-level courses, including SOC 601-602—Advanced General Sociology (6 credits), SOC 706-707—Intermediate Statistics (6 credits), and two of the following: SOC 627—Computer Applications in the Social Sciences (3 credits), SOC 718—Research Methods in Social Psychology (3 credits), SOC 737—Survey Research Methods (3 credits), or SOC 738—Methods and Innovations in Assessments (3 credits); (2) earns a minimum of 21 graduate credits while in residence; (3) passes a comprehensive examination; (4) produces a thesis under the supervision of three faculty members; and (5) passes an oral examination given by the department faculty.

An alternative method of earning an M.A. degree is the nonthesis approach. This method includes items (1) through (3) above, in addition to the completion of a professional paper under the supervision of three faculty members and the passing of an oral examination given by the graduate advisory committee. A student choosing this approach is required to complete 32 semester credits.

## Doctor of Philosophy Program in Social Psychology

The Department of Sociology, in cooperation with the Department of Psychology, offers a graduate program leading to the Ph.D. degree in social psychology.

This is an interdisciplinary program which is administered by a social psychology committee. The student may register and receive credits in either the sociology or psychology department. Students who complete this program receive a Ph.D. degree with a major in social psychology.

The student in this program must meet all the requirements for admission to graduate school and the general requirements for obtaining a doctoral degree at the university. One full year in teaching or research is also required which may be satisfied by spending a suitable fraction of time in teaching or research concurrently with graduate study.

For additional information, contact the director of the Interdisciplinary Social Psychology Doctorate Program.

## Admissions Information

To be accepted as a graduate student requires a bachelor's degree from an accredited college or university. To be accepted in full standing, a minimum of 18 credits of undergraduate work in sociology is required. The student must also meet the following requirements:

1. Credit in a theory course in sociology and a course in statistics.
2. A GPA of 3.0 or higher for the four years of undergraduate work.
3. Recommendations from former instructors that the student is capable of doing graduate work at an acceptable level of performance.

In some instances in which a student is deficient in the above requirements, it is feasible to make up such deficiencies before entering the degree program. The department advises students with deficiencies whether they are likely to be considered as graduate students in full standing after such deficiencies have been made up.

The student interested in the social psychology program may substitute credits of undergraduate work in psychology.

## Preliminary Screening

Individuals wishing to attend as graduate students should write the chairman, Department of Sociology, at the earliest possible date stating the degree program desired and whether or not financial assistance is needed. Preliminary information forms are provided for completion and return with a transcript of all undergraduate work.

Applicants should make arrangements at the nearest college or university to take the Graduate Record Examination (Aptitude and Advanced) as soon as possible on one of several test dates each year. The scores are to be forwarded to the department for consideration.

Selected applicants are encouraged to make formal application for admission to the university. (Refer to the section on Admission Information.)

## Financial Assistance

A variety of graduate assistantships, fellowships, and traineeships are available to well-qualified students. Stipends begin at $7,250, plus partial exemption of tuition and registration fees. *If the student is applying for financial assistance, the application should be completed prior to February 1.* Normally the candidate receives notification by April 1 and has until April 15 to accept or reject the offer. In some instances financial awards become available after this date, and late applications are considered.

# SPEECH COMMUNICATION AND THEATRE (SPCM, THTR)

*Faculty:* Ballard-Reisch, Bernardi, Dillard, Liggett, Owen, Page, Seibert (Ch.), Vogel, Walters, Zimmerman
*Adjunct Faculty:* Stumpf

The department offers the bachelor of arts degree with a major in speech communication or in theatre and the bachelor of fine arts with a major in theatre. A master of arts degree is offered in speech communication. The master of arts degree in theatre was placed on inactive status effective July 1, 1983.

## Bachelor of Arts Degree

### Speech Communication Major

| | Credits |
|---|---|
| Required: SPCM 113, 210, 212 | 9 |
| Electives (A minimum of 18 credits must be taken at the 300-400 level) | 24 |
| | 33 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Speech communication and theatre accepts any minor approved by the College of Arts and Science.

### Theatre Major

| | Credits |
|---|---|
| Required: THTR 100,[1] 118, 119, and 221 | 12 |
| To be selected from THTR 203, 403[2] | 9 |
| To be selected from THTR 471, 472, 473, 474 | 6 |
| To be selected from other theatre courses | 6 |
| | 33 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor. Speech communication and theatre accepts any minor approved by the College of Arts and Science.

### Minors in Speech Communication and Theatre

Students majoring in another field may minor in speech communication or theatre by completing one of the following:

| *Speech Communication Minor* | Credits |
|---|---|
| SPCM 210 | 3 |
| To be selected from 113, 213, 319, 329, 480, 490 | 6 |
| To be selected from 212, 315, 410, 411, 412, 427, 428, 433, 434, 435 | 9 |
| A minimum of nine credits must be taken at the 300-400 level | |
| | 18 |

| *Theatre Minor* | Credits |
|---|---|
| THTR 100, 118, 119 | 9 |
| To be selected from all upper-division courses in theatre | 9 |
| | 18 |

(After completion of the three required courses, the student may select an area of specialization: history of the theatre, acting, technical theatre, etc.)

## Bachelor of Fine Arts Program

### Theatre

Requirements for the BFA include:

(a) Acceptance to the major is determined by application to the theatre faculty after completion of 60 credits. Individuals once accepted into the bachelor of fine arts program must complete four semesters (not counting summers) as full-time students.

(b) Candidates must have a 3.0 GPA or higher in theatre courses for acceptance to the major or continuation in the program.

(c) Candidates must have completed THTR 100, 118, 119, 221 and 9 credits of 203, 403 prior to application.

(d) Candidates are subject to continuing review by theatre faculty and may be returned to the BA program if they fail to maintain 3.0 GPA in theatre courses or to demonstrate requisite aptitude for professional training.

[1]THTR 100 should be taken prior to or concurrently with all other theatre courses.
[2]May be repeated for a maximum of nine credits each.

| *Departmental Core* | *Credits* |
|---|---|
| Required: THTR 10, 118, 119 and 221 | 12 |
| To be selected from THTR 203, 403[2] | 9 |
| To be selected from THTR 471, 472, 473, 474 | 6 |
| | 27 |

In addition to the above requirements, the BFA candidate must specialize in one of two options:

| *Performance Option* | *Credits* |
|---|---|
| To be selected from THTR 121, 250-251, 350-351 | 15 |
| To be selected from THTR 203, 403[1] | 9 |
| To be selected from THTR 260, 321, 360, 370, 421, 431-432, 450, 454-455 | 15 |
| | 39 |

| *Design/Technology Option* | *Credits* |
|---|---|
| To be selected from THTR 203, 219-220, 230, 240, 330, 339, 340, 349, 360, 370, 403, 409, 419, 431-432, 440 | 36 |
| Required: THTR 495 | 3 |
| | 39 |
| TOTAL | 66 |

The bachelor of fine arts degree with a theatre major does not require a minor or satisfaction of a foreign language.

## Master of Arts Degree

The department offers a graduate program leading to the M.A. degree with a major in speech communication. Two plans are available: A with a thesis, or B without a thesis.

Internships in such areas as advertising, biomedical communication, conference management, organizational administration, and negotiation may be included as part of the candidate's program.

Requirements for admission to graduate standing in the speech communication major include:

1. An undergraduate GPA of 3.0 (B average, or higher);
2. A 900 (or higher) composite score on verbal and quantitative sections of Graduate Record Examination;
3. At least 18 undergraduate credits in speech communication with grades of B or better (graduate faculty may approve nine upper-division credits in speech communication and nine upper-division credits in a related field, all 18 credits B or better).

Applicants must take the Graduate Record Examination (GRE) before applying for admission to graduate-level courses as a "Graduate Special" while awaiting admission to regular standing; up to nine credits of graduate special courses may apply toward the M.A. degree.

Graduate teaching fellowships are available to qualified applicants. Stipends begin at approximately $7,000 per year. Applications for graduate fellowships should be received by the director

[1]May be repeated for a maximum of nine credits each.

# College of Business Administration

Laurie G. Larwood, *Dean*

*Departments of Instruction:* accounting and computer information systems, economics, and managerial sciences.

## Accreditation

The baccalaureate and the master of business administration programs of the College of Business Administration are fully accredited by the American Assembly of Collegiate Schools of Business.

## Objectives

The College of Business Administration strives to maintain a proper balance between general education and professional preparation for careers in the business world, in government, for research, and for teaching.

The Advisement Center provides official advisory for prebusiness, undergraduates and graduates in the college. The primary function of the center is to help students define their academic goals and select a major field of study in accordance with their abilities and interests. Students who are interested in pursuing a business degree or a Master of Business degree are encouraged to visit the center. For further information, call 784-4912.

The Bureau of Business and Economic Research is the official research unit of the college. It focuses on providing opportunities for faculty and students to engage in research studies of business and economic issues of special concern to Nevada.

The college has instituted a Career Placement Office to assist graduating seniors and MBAs with career placement and internship programs. Located in the Business Building, Room 408F, this department offers students a variety of services.

The Internship Program offered by the college provides an opportunity for business students to gain knowledge of the practical aspects of business operations while earning college credits and income.

The Institute for the Study of Gambling and Commercial Gaming is devoted to the stimulation of research and educational efforts related to studies about gambling behavior and commercial gaming industries, and economic, business, social, and political effects of gambling on society.

The Nevada Small Business Development Center is a cooperative program of the U.S. Small Business Administration and the college. The purpose is to provide professional management assistance to existing and new small businesses throughout the state. There are currently four statewide offices.

## Programs

The College of Business Administration offers the following programs:

**Baccalaureate Degrees:** (a) bachelor of science in business administration with majors in accounting, computer information systems, economics, finance, logistics management, management, and marketing; (b) bachelor of arts with a major in economics.

**Master's Degrees:** (a) master of business administration; (b) master of science with a major in economics, and (c) master of arts in economics.

## Premajor Admission

New undergraduate applicants to the College of Business Administration are admitted to premajor status rather than to a specific major. Premajor students may not enroll in College of Business Administration courses numbered 300 or above.

### Sample Schedule for Premajor Students

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| EC 101 or 102 (does not satisfy social science requirement) | 3 |
| ENGL 101 | 3 |
| MATH 115 | 5 |
| PSY 101 | 3 |
| Fine arts course | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| EC 101 or 102 (does not satisfy social science requirement) | 3 |
| ENGL 102 | 3 |
| GEOG 103 (prerequisite: mathematics requirement) | 3 |
| MATH 211 | 3 |
| SOC 101 | 3 |
| Elective—nonbusiness | 1 |
| | 16 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| ACC 201 | 3 |
| EC 261 | 3 |
| WT 201 (prerequisite: ENGL 102) | 3 |
| Elective—nonbusiness | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| ACC 202 | 3 |
| CIS 201, 202 | 4 |
| EC 262 | 3 |
| WT 202 (may be corequisite with WT 203) | 3 |
| Elective—nonbusiness | 3 |
| | 16 |

## Academic Standards

Students enrolled in the College of Business Administration either as a premajor or accepted to a major must have their courses reviewed by a faculty adviser before registering. Students placed on college or university probation are not eligible to progress from premajor to a major program. A student may remain on probationary status in the college for a maximum of two consecutive semesters. After that period, the student must appear before the college's Academic Standards Committee before registering for any additional courses in the college.

### Acceptance of Transfer Students Into Business Administration

An overall GPA of 2.75 or higher in bachelor's-level courses is required for a student to be approved for transfer, or be admitted, to a prebusiness or major program in the College of Business Administration. This requirement does not apply to new freshmen applicants.

### Requirements for Acceptance to a Major

1. Completion of 60 credits or more with an overall GPA of 2.75 or higher.

2. Completion of the lower-division business core with an overall GPA of 2.75 or higher. The following courses presently constitute the lower-division core: ACC 201, 202; CIS 201, 202; EC 101, 102, 261, 262; MATH 211. A grade of C or better is required for all lower-division business core courses, exclusive of general electives.

These requirements are minimum standards which all students are encouraged to surpass. Success in a major program is dependent upon a student possessing strong quantitative and English usage skills.

### Application

Students must formally apply to the College of Business Advisement Center, Business Building, Room 409, for acceptance to a major program. The fall acceptance deadline is April 1. The spring acceptance deadline is November 1. Forms are available in the office of the associate dean.

### Program of Study

Upon acceptance to a major program in the College of Business Administration, the student is assigned a department adviser. The student, in consultation with the adviser, must complete a major program of study form for approval prior to the end of the *first semester.*

### Requirements for Graduation in a Major

1. Complete 128 credits or more with an overall GPA of 2.0 or higher.

2. Complete lower-division business core with a GPA of 2.75 or higher to be accepted to a major.

3. Complete all College of Business Administration courses with a GPA of 2.50 or higher.

4. Complete all courses in the major field with a GPA of 2.75 or higher.

# Baccalaureate Degree Requirements

## Bachelor of Arts (See Economics)

## Bachelor of Science in Business Administration

### Basic Curriculum for All Majors

Upon completion of any one of the following four-year curricula with satisfactory grades and upon the recommendation of the faculty and the dean, the bachelor of science in business administration is granted. An economics major may elect a program leading to the bachelor of arts degree.

Candidates for graduation must submit an application for graduation to the Dean's Office in the College of Business Administration at the beginning of the final semester before graduation.

A student may elect to graduate under the degree requirements of the year of admission and registration, the year of acceptance to the major in which the student is graduating, the year of reentry to the university if not enrolled for a period of five years or more or the year of graduation. In the case of reentry after five years, a student may use the requirements of the years of reentry or graduation only. Students transferring into business administration may elect only the year of transfer, acceptance to a major, or graduation. Adjustments of the individual curricula to fit the needs of individual students may be made with the consent of the adviser and the dean of the college. No changes are considered that bring the curriculum into conflict with any of the following requirements which must be met by every student:

1. The requirements of the university for admission to regular standing and residence credit as well as general university graduation requirements.

2. A minimum of 128 credits is required for graduation.

3. Of the total 128 credits presented for graduation, each student must successfully complete:

a) A minimum of 40 credits in courses numbered 300 or above.

b) A minimum of 51 credits in nonbusiness (of which 48 must be academic credits) which include the following:

### Nonbusiness Requirements[1]

| | *Credits* |
|---|---|
| ENGL 101, 102, 321[2] | 9 |
| GEOG 103 | 3 |
| MATH 115, 211 | 8 |
| PSY 101 | 3 |
| SOC 101 | 3 |
| SPCM 213 or 217 or 329 | 3 |
| WT 201, 202, 203 | 9 |
| Elective—nonbusiness | 7 |
| Fine arts core course | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100) | 3 |

### Limitations

1. MATH 101, Intermediate Algebra, three credits, is excluded from the 128 credits required for graduation.

2. A maximum of four 100- and 200-level credits in recreation, physical education, dance, and military science courses may be applied toward the 128 credits required for a bachelor's degree.

c) A minimum of 51 credits in business and economics subjects which include the following courses:

| | *Credits* |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| CIS 201—Introduction to Computer Information Systems | 3 |
| CIS 202—Computer Information Systems Lab | 1 |
| EC 101-102—Principles of Macroeconomics and Microeconomics | 6 |
| EC 261-262—Principles of Statistics I, II | 6 |
| EC 300 (or above)—theory course[3] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 325—Legal Environment or MGRS 373, 374—Business Law I, II[3] | 3-6 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 488—Strategic Management and Policy | 3 |
| International Business[3] | 3 |
| Must be selected from the following: | |
| ACC 420—International Accounting | |
| EC 301—Comparative Economic Systems | |
| EC 367—Comparative Labor Movements | |
| EC 410—Seminar in Social Economics (course content varies and does not always satisfy the international business requirement. Check with Economics Department for details) | |
| EC 458—International Economics | |
| EC 459—Future Development | |
| MGRS 420—International Finance | |
| MGRS 452—Comparative Management | |
| MGRS 458—International Logistics | |
| MGRS 470—International Marketing | |

[1]Completion of nonbusiness requirements satisfy the university core curriculum.
[2]Or an approved equivalent.
[3]Managerial sciences department majors check department section for specific course requirements.

| | |
|---|---|
| Other College of Business Administration courses to an overall total of | 51 |

d) Completion of course requirements for the selected major.

## Upper-Division Courses

Courses numbered 300 or above in business are open only to:

1) business students who have been accepted to a major;

2) nonbusiness majors with the approval of the instructor, department chairman and dean.

## Satisfactory/Unsatisfactory Courses

Students in the College of Business Administration may apply a maximum of 15 S/U credits, including CLEP (physical education and military science excluded), toward the baccalaureate degree. Premajor or major students may not register for courses in business administration or MATH 211, 213 or 215 on an S/U basis, except for thesis or internship.

# ACCOUNTING AND COMPUTER INFORMATION SYSTEMS (ACC, CIS)

*Faculty:* Birk, Blatz, Bowman, Burch, Carslaw, Edberg, Fuller (Acting Ch.), Gilbert, Grupe, Kilari, Mills, Simkin, Smilanick, Strefeler.

The department offers the majors of accounting and computer information systems. A student may also take an option that includes both accounting and computer information systems. These majors and the option are outlined in detail below. Upon choosing a major, the student must meet course requirements established by the department, the college, and the university.

## Accounting and Computer Information Systems

Accounting, by its nature, operates within a broad socioeconomic environment. Therefore, great emphasis is placed upon conceptual knowledge; that is, the student must not only know, but understand.

The accounting major is provided with the theories and procedures which prepare the student for the many facets of the accounting profession, such as public, industrial, managerial, tax, and governmental accounting.

The computer information systems major is offered for those who wish to specialize in business-oriented electronic data processing. The curriculum provides a broad overview of computer-based information systems, with special emphasis on business applications and managerial control.

The programs of study for the accounting major, the computer information systems major, and the accounting/ computer information systems option:

*Freshman Year*
*(ACC, CIS and ACC/CIS)*

| | Credits |
|---|---|
| EC 101, 102—Principles of Macroeconomics, Microeconomics | 6 |
| ENGL 101-102—Composition I and II[1] | 6 |
| GEOG 103—Geography of Man's Environment | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| MATH 211—Elements of Calculus | 3 |
| PSY 101—Introductory Psychology | 3 |
| SOC 101—Principles of Sociology | 3 |
| Elective—nonbusiness | 1 |
| Fine arts core course | 3 |
| | 33 |

## Accounting Major

*Sophomore Year*

| | Credits |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| CIS 203—Microcomputers in Business | 3 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| W T 201, 202, 203[2] | 9 |
| Elective—nonbusiness | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| | 34 |

*Junior Year*

| | Credits |
|---|---|
| ACC 303, 304—Intermediate Accounting I, II | 6 |
| ACC 309—Management Accounting I | 3 |
| ACC 313—Federal Tax Accounting I | 3 |
| ENGL 321—Expository Writing[3] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Accounting elective—ACC 307 or 410 or 414 or 490 or 494 | 3 |
| Elective—nonbusiness | 3 |
| | 30 |

*Senior Year*

| | Credits |
|---|---|
| ACC 311—Auditing I | 3 |
| ACC 405—Advanced Accounting | 3 |
| ACC 480—Accounting Systems and Automation | 3 |
| MGRS 325—Legal Environment or MGRS 373-374—Business Law I and II | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Accounting elective—ACC 307 or 410 or 412 or 414 or 420 or 424 or 470 or 490 or 493 or 494 | 3 |
| Economic theory—300- or 400-level course | 3 |
| International business course | 3 |
| | 33 |

Accounting majors who plan to take the CPA Examination upon graduation must take MGRS 373 and 374 in place of MGRS 325.

## Computer Information Systems Major

*Sophomore Year*

| | Credits |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| CIS 203—Microcomputers in Business | 3 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| W T 201, 202, 203[2] | 9 |
| | 31 |

*Junior Year*

| | Credits |
|---|---|
| CIS 251—Introduction to Computer Information Systems Development | 3 |
| CIS 451—Advanced Computer Information Systems Development | 3 |
| CIS 461—Information Systems Analysis | 3 |
| ENGL 321—Expository Writing[3] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Electives—nonbusiness | 6 |
| | 33 |

[1]University requirement. (ACT scores may also require a student to take ENGL 101 as a prerequisite for ENGL 102.)

[2]W T 202 may be corequisite with W T 203.

[3]Or an approved equivalent.

*Senior Year*

| | Credits |
|---|---|
| CIS 484—Data Base Management and Operating Systems | 3 |
| CIS 485—Information Systems Design and Implementation | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Computer information systems electives—Consult department for elective courses | 6 |
| Economic theory—300- or 400-level course | 3 |
| Electives—nonbusiness | 4 |
| International business course | 3 |
| | 31 |

## Accounting and Computer Information Systems Option

*Sophomore Year*

| | Credits |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| CIS 203—Microcomputers in Business | 3 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| W T 201, 202, 203[1] | 9 |
| Elective—nonbusiness | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| | 34 |

*Junior Year*

| | Credits |
|---|---|
| ACC 303, 304—Intermediate Accounting I, II | 6 |
| ACC 309—Management Accounting I | 3 |
| ACC 313—Federal Tax Accounting I | 3 |
| CIS 251—Introduction to Computer Information Systems Development | 3 |
| CIS 451—Advanced Computer Information Systems Development | 3 |
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 3 |
| | 33 |

*Senior Year*

| | Credits |
|---|---|
| ACC 311—Auditing I | 3 |
| ACC 405—Advanced Accounting | 3 |
| ACC 424—Computer Based Auditing | 3 |
| ACC 480—Accounting Systems and Automation | 3 |
| CIS 461—Information Systems Analysis | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Economic theory—300- or 400-level course | 3 |
| International business course | 3 |
| | 36 |

Accounting/computer information systems majors who plan to take the CPA Examination upon graduation must take MGRS 373 and 374 in place of MGRS 325.

## Accounting Minor

| | Credits |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| ACC 303—Intermediate Accounting I | 3 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| CIS 203—Microcomputers in Business | 3 |
| Plus upper-division courses in accounting except ACC 395, 396, 491 | 6 |
| | 22 |

## Computer Information Systems Minor

| | Credits |
|---|---|
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| CIS 203—Microcomputers in Business | 3 |
| CIS 251—Introduction to Computer Information Systems Development | 3 |
| CIS 451—Advanced Computer Information Systems Development | 3 |
| CIS 461—Information Systems Analysis | 3 |
| Computer information systems elective—consult department for elective courses | 3 |
| | 19 |

# ECONOMICS (EC)

*Faculty:* Atkinson, Cargill, Chu, Dobra, Eadington, Fanchon, Metts, Mitchell, Pingle, Raffiee, Reed (Ch.), Wendel

The economics major is designed to prepare students for positions as economic and statistical analysts in business, government and nonprofit organizations, and for the teaching profession. In addition, it provides a strong foundation for graduate study and research in the fields of economics, business, public policy and law.

Two economics degree programs are offered. One leads to the bachelor of science in business administration and complies with all the requirements of the American Assembly of Collegiate Schools of Business, as administered through the College of Business. The other program leads to the bachelor of arts with a major in economics and follows the traditional liberal arts approach.

The department also offers a minor or related area program in economics (see Minor or Related Area).

## Bachelor of Science in Business Administration

This program is intended for economics majors desiring a curriculum which includes a foundation in the functional areas of business administration. Candidates for this degree are not required to present credits in a foreign language.

### Bachelor of Science in Business Administration
### Economics

*Freshman Year*

| | Credits |
|---|---|
| EC 101, 102—Principles of Macroeconomics, Microeconomics | 6 |
| ENGL 101, 102—Composition I, II[3] | 6 |
| GEOG 103—Geography of Man's Environment | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| MATH 211—Elements of Calculus | 3 |
| PSY 101—Introductory Psychology | 3 |
| SOC 101—Principles of Sociology | 3 |
| Fine arts core course | 3 |
| | 32 |

*Sophomore Year*

| | Credits |
|---|---|
| ACC 201, 202, Introcutory Accounting I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| W T 201, 202, 203[1] | 9 |
| Elective—nonbusiness | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| | 31 |

*Junior Year*

| | Credits |
|---|---|
| EC 303—Money and Banking | 3 |
| EC 321—Intermediate Price Theory | 3 |
| EC 322—Intermediate Income Theory | 3 |
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organizational and Interpersonal Behavior | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |

[1]W T 202 may be corequisite with W T 203.

[2]Or an approved equivalent.

[3]University requirement. (ACT scores may also require a student to take ENGL 101 as a prerequisite for ENGL 102.)

| | |
|---|---|
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 3 |
| | 33 |

*Senior Year*

| | Credits |
|---|---|
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| EC 481 (Capstone) OR 463 OR 464 | 3 |
| Economics courses (300 or above) | 12 |
| Electives—business and nonbusiness | 12 |
| International business[1] | 3 |
| | 33 |

## Bachelor of Arts

This program is intended for economics majors desiring a curriculum which emphasizes a foundation in the social sciences. Candidates for this degree are required to successfully complete a fourth semester college course in a foreign language or evidence of equivalent proficiency. They are also required to complete a minimum of 38 credits in economics courses.

*Freshman Year*

| | Credits |
|---|---|
| EC 101, 102—Principles of Macroeconomics, Microeconomics | 6 |
| ENGL 102—Composition II[2] | 3 |
| MATH 211—Elements of Calculus I | 3 |
| SOC 101—Principles of Sociology | 3 |
| Elective | 4 |
| Fine arts core course | 3 |
| Foreign language[3] | 8 |
| | 30 |

*Sophomore Year*

| | Credits |
|---|---|
| Foreign language[3] | 6 |
| GEOG 103—Geography of Man's Environment | 3 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| W T 201, 202, 203[4] | 9 |
| Elective | 2 |
| | 30 |

*Junior Year*

| | Credits |
|---|---|
| PSY 101—General Psychology | 3 |
| EC 303—Money and Banking | 3 |
| EC 321-322—Intermediate Economic Theory | 6 |
| ENGL 321—Expository Writing[5] | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective | 12 |
| Natural science laboratory course | 4 |
| | 34 |

*Senior Year*

| | Credits |
|---|---|
| EC 431—Introduction to Mathematical Economics or EC 441—Introduction to Economics | 3 |
| EC 481—History of Economic Doctrines (Capstone) | 3 |
| EC 463 OR 464 (Capstone) | 3 |
| Electives | 17 |
| Other economic courses (300 or above) | 8 |
| | 34 |

## Minor or Related Area

The minor or related area program in economics is designed for those who do not want to major in economics, but would like a background in economics to complement their own major programs.

| | Credits |
|---|---|
| EC 101, 102—Principles of Macroeconomics, Microeconomics | 6 |
| EC 321—Intermediate Price Theory | 3 |
| EC 322—Intermediate Income Theory | 3 |
| Other economics courses (300 or above) | 6 |
| | 18 |

# MANAGERIAL SCIENCES (MGRS)

*Faculty:* Amato, Ansari, Austin, Barnes, Beekun, DeMaskey, Doherty, Ghymn, Gillette, Kunkel, Lund, Mitchell, Rogers, Sandilya, Sekiguchi (Ch.), Spraggins, Stedham, Winne, Wright

The Managerial Sciences Department offers major fields of study in finance, logistics, management and marketing. The department also offers courses in business law.

The following program outline is suggested for freshmen and sophomores planning to major in finance, logistics, management, or marketing:

*Freshman Year*

| | Credits |
|---|---|
| EC 101, 102—Principles of Macroeconomics, Microeconomics | 6 |
| ENGL 101, 102— Composition I, II[2] | 6 |
| GEOG 103—Geography of Man's Environment | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| MATH 211—Elements of Calculus I | 3 |
| PSY 101—Introductory Psychology | 3 |
| SOC 101—Principles of Sociology | 3 |
| Elective—nonbusiness | 1 |
| Fine arts core course | 3 |
| | 33 |

*Sophomore Year*

| | Credits |
|---|---|
| ACC 201, 202—Introductory Accounting I, II | 6 |
| CIS 201, 202—Introduction to Computer Information Systems, Lab | 4 |
| EC 261, 262—Principles of Statistics I, II | 6 |
| W T 201, 202, 203[4] | 9 |
| Elective—nonbusiness | 3 |
| Natural science (recommend BIOL 100, CHEM 105 or PHYS 100; prerequisite: mathematics requirement) | 3 |
| | 31 |

## Finance Major

Students with career objectives in financial management, banking and other financial institutions, investments or insurance may choose to major in finance. Course requirements for the finance major include:

1. Satisfaction of the basic curriculum requirements for all business students. As part of those requirements, finance majors must complete:

| | |
|---|---|
| EC 303—Money and Banking | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 420—International Finance | 3 |

2. Nine credits required for all finance majors:

| | |
|---|---|
| MGRS 370—Investments | 3 |
| MGRS 404—Problems in Business Finance | 3 |
| MGRS 462—Business and Society | 3 |

[1]May not include upper-division courses needed to meet the 12 credit requirements in the senior year.

[2]University requirement. (ACT scores may also require a student to take ENGL 101 as a prerequisite for ENGL 102.)

[3]Students may meet the foreign language requirement by completing course 204 or 209 in any language.

[4]W T 202 may be corequisite with W T 203.

[5]Or an approved equivalent.

3. Twelve credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | |
|---|---|
| ACC 309—Management Accounting I | 3 |
| ACC 313—Federal Tax Accounting I | 3 |
| B A 480—Small Business Institute[1] | 3 |
| EC 321—Intermediate Price Theory | 3 |
| EC 322—Intermediate Income Theory | 3 |
| EC 403—Monetary Institutions and Policy | 3 |
| EC 441—Introduction to Econometrics | 3 |
| EC 451—Public Finance | 3 |
| MGRS 353—Risk and Insurance | 3 |
| MGRS 415—Commercial Bank Management | 3 |
| MGRS 481—Intercollegiate Business Games[1] | 3 |
| MGRS 482—Internship[1] | 2 to 3 |
| MGRS 490—Independent Study[1] | 1 to 3 |
| MGRS 493—Advanced Seminar in Finance | 3 |

The following program outline is suggested for finance majors during their junior and senior years:

*Junior Year*

| | Credits |
|---|---|
| EC 303—Money and Banking | 3 |
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 370—Investments | 3 |
| MGRS 325—Legal Environment | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 6 |
| | 33 |

*Senior Year*

| | Credits |
|---|---|
| MGRS 404—Problems in Business Finance | 3 |
| MGRS 420—International Finance | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Electives—business and nonbusiness | 7 |
| Finance courses (with written approval) | 12 |
| | 31 |

## Logistics Major

Students with career objectives in logistics, warehousing, transportation or manufacturing services may choose a logistics major. Course requirements for the logistics major include:

1. Satisfaction of the basic curriculum requirements for all business students. As part of those requirements, logistics majors must complete:

| | Credits |
|---|---|
| MGRS 325—Legal Environment | 3 |
| MGRS 458—International Logistics | 3 |

2. Eighteen credits required for all logistics majors.

| | Credits |
|---|---|
| MGRS 351—Transportation | 3 |
| MGRS 455—Business Logistics | 3 |
| MGRS 457—Research Methods for Logistics | 3 |
| MGRS 459—Analysis and Design of Logistical Systems | 3 |
| MGRS 461—Advanced Operations Management | 3 |
| MGRS 462—Business and Society | 3 |

3. Twelve credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | Credits |
|---|---|
| ACC 309—Management Accounting | 3 |
| B A 480—Small Business Institute[1] | 3 |
| CIS 203—Microcomputers in Business | 3 |
| CIS 487—Decision Support Systems | 3 |
| MGRS 314—Market Structures and Channels | 3 |
| MGRS 316—Business Marketing Management | 3 |
| MGRS 345—Purchasing Management | 3 |
| MGRS 482—Internship[1] | 3 |
| MGRS 490—Independent Study[1] | 3 |
| MGRS 494—Advanced Seminar in Logistics | 3 |

The following course outline is suggested for logistics majors during their junior and senior years:

*Junior Year*

| | Credits |
|---|---|
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 351—Transportation | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 457—Research Methods for Logistics | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 6 |
| | 33 |

*Senior Year*

| | Credits |
|---|---|
| MGRS 455—Logistics Management | 3 |
| MGRS 458—International Logistics | 3 |
| MGRS 459—Analysis and Design of Logistics Systems | 3 |
| MGRS 461—Advanced Operations Management | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Elective—nonbusiness | 3 |
| Major electives (with written approval) | 12 |
| | 33 |

## Management Major

Students with career objectives in general management, human resource management, or entrepreneurship major choose one of three tracks in management:

1. Satisfaction of the basic curriculum requirements for all business students. As part of those requirements, management majors must complete:

| | Credits |
|---|---|
| EC 365—Labor Economics | 3 |
| MGRS 452—Comparative Management | 3 |

2. Twelve credits required for all management majors:

| | Credits |
|---|---|
| MGRS 367—Personnel Administration | 3 |
| MGRS 460—Management: Theory and Practice | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| Select one course from any of the following options or obtain approval from the department chairman | 3 |

3. **Human Resource Option:** Nine credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | Credits |
|---|---|
| MGRS 453—Organizational Change and Development | 3 |
| MGRS 467—Employee Staffing and Selection | 3 |
| MGRS 468—Compensation Management | 3 |
| MGRS 471—Marketing Research | 3 |
| MGRS 491—Advanced Seminar in Management | 3 |

4. **Entrepreneurship Option:** Nine credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | Credits |
|---|---|
| ACC 309—Cost Accounting | 3 |
| ACC 313—Federal Tax Accounting I | 3 |
| B A 480—Small Business Institute[1] or MGRS 482—Internship[1] | 3 |
| MGRS 316—Business Marketing Management | 3 |
| MGRS 487—Entrepreneurship | 3 |

[1]A maximum of three credits may be applied to major requirements from these courses.
[2]Or an approved equivalent.

5. **General Management Option:** Nine credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | Credits |
|---|---|
| ACC 309—Cost Accounting or 313—Federal Tax Accounting I | 3 |
| B A 480—Small Business Institute[1] or MGRS 482—Internship[1] or MGRS 487—Entrepreneurship | 3 |
| MGRS 312—Consumer Behavior or 316—Business Marketing Management or 471—Marketing Research | 3 |
| MGRS 404—Problems in Business Finance | 3 |
| MGRS 481—Intercollegiate Business Games[1] | 3 |
| MGRS 490—Independent Study[1] | 3 |
| MGRS 491—Advanced Seminar in Management | 3 |

The following course outline is suggested for management majors during their junior and senior years:

*Junior Year*

| | Credits |
|---|---|
| EC 365—Labor Economics | 3 |
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| MGRS 367—Personnel Administration | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 2 |
| Select course from major field options | 3 |
| | 32 |

*Senior Year*

| | Credits |
|---|---|
| MGRS 452—Comparative Management | 3 |
| MGRS 460—Management: Theory and Practice | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 488—Strategic Management and Policy (Capstone) | 3 |
| Electives—business and nonbusiness | 11 |
| Human resource or entreneurship or general management options | 9 |
| | 32 |

## Marketing Major

Marketing embraces those economic activities directed toward and incident to the flow of goods from the producer to the consumer or user. The marketing major may be appropriate for students with career objectives in advertising management, consumer behavior, general marketing, international marketing, marketing research, quantitative marketing, and retailing and distribution. Course requirements for the marketing major include:

1. Satisfaction of the basic curriculum requirements for all business students. As part of those requirements, marketing majors must complete:

| | |
|---|---|
| EC 321—Intermediate Price Theory | 3 |
| MGRS 470—International Marketing | 3 |

2. Twelve credits required for all marketing majors:

| | |
|---|---|
| MGRS 316—Business Marketing Management or MGRS 312—Consumer Behavior | 3 |
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 471—Marketing Research | 3 |
| MGRS 489—Marketing Management | 3 |

3. Nine credits chosen from the following list. Course selection requires the written approval of the adviser and department chairman.

| | |
|---|---|
| B A 480—Small Business Institute[1] | 3 |
| JOUR 335—Corporate Communications | 3 |
| MGRS 312—Consumer Behavior or MGRS 316—Business Marketing Management | 3 |
| MGRS 314—Marketing Structure and Channels | 3 |
| MGRS 422—Promotional Management | 3 |
| MGRS 424—Sales and Negotiation Management | 3 |
| MGRS 455—Business Logistics | 3 |
| MGRS 481—Intercollegiate Business Games[1] | 3 |
| MGRS 482—Internship[1] | 2 to 3 |
| MGRS 490—Independent Study[1] | 1 to 3 |
| MGRS 492—Advanced Seminar in Marketing | 3 |
| PSY 362—Social Psychology II: Group Structure and Process | 3 |

The following course outline is suggested for marketing majors during their junior and senior years:

*Junior Year*

| | Credits |
|---|---|
| EC 321—Intermediate Price Theory | 3 |
| ENGL 321—Expository Writing[2] | 3 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 316—Business Marketing Management or MGRS 312—Consumer Behavior | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 325—Legal Environment | 3 |
| MGRS 352—Operations Management | 3 |
| MGRS 365—Corporation Finance | 3 |
| SPCM 213 or 217 or 329 | 3 |
| Elective—nonbusiness | 2 |
| Electives—business and nonbusiness | 3 |
| | 32 |

*Senior Year*

| | Credits |
|---|---|
| MGRS 462—Business and Society (Capstone) | 3 |
| MGRS 470—International Marketing | 3 |
| MGRS 471—Marketing Research | 3 |
| MGRS 488—Policy Formulation and Administration (Capstone) | 3 |
| MGRS 489—Marketing Management | 3 |
| Electives—business or nonbusiness | 8 |
| Marketing courses (with written approval) | 9 |
| | 32 |

## Undergraduate Minor in Business Administration

This minor program is for non-College of Business Administration students only who desire a background in general business to complement their own major program.

| | Credits |
|---|---|
| EC 101, 102—Macroeconomics, Microeconomics | 6 |
| ACC 201, 202—Introductory Accounting I, II | 6 |
| MGRS 310—Marketing Principles | 3 |
| MGRS 323—Organization and Interpersonal Behavior | 3 |
| MGRS 365—Corporation Finance | 3 |
| | 21 |

### International Business Minor

The purpose of this minor program is to provide business students with a broad base background in international business. The minor in international business should be considered as a complement to a major program in the College of Business Administration. This minor program is open only to College of Business Administration students.

*Program*

| | Credits |
|---|---|
| ACC 420—International Accounting | 3 |
| EC 458—International Economics | 3 |
| MGRS 420—International Finance | 3 |
| MGRS 452—Comparative Management | 3 |
| MGRS 470—International Marketing | 3 |
| Electives (refer to the following list of electives) | 3 |
| | 18 |

[1]A maximum of three credits may be appliedto major requirements from these courses.

[2]Or an approved equivalent.

*Electives*

| | Credits |
|---|---|
| EC 301—Comparative Economics Systems | 3 |
| EC 367—Comparative Labor Movements | 3 |
| EC 410—Seminar in Social Economics (Multinational Corporations) | 3 |
| EC 459—Future Development | 3 |

## Prelegal Education in the College of Business Administration

Information regarding the prelegal curricula is referred to in the College of Arts and Science section of this catalog. For those interested in obtaining an undergraduate degree in business in preparation for admission to a law school, information regarding prelegal advisement may be obtained from the associate dean, Business Building, Room 409.

# Graduate Programs

## Graduate Student Classifications

### Graduate Special

Graduate special classification is for students who (1) do not wish to pursue a program leading to an advanced degree, (2) wish to pursue a program leading to an advanced degree but need to complete additional undergraduate course work or take an examination in order to meet the admission requirements for graduate standing, or (3) can demonstrate that they meet the requirements for admission to graduate standing but are unable to complete the application for admission prior to registration.

Admission to graduate special status requires filing official documents showing that the applicant has a baccalaureate degree from a fully accredited four-year college or university.

With graduate special classification a student may enroll for undergraduate credit in the College of Business Administration. *Advanced written approval of the director of graduate programs is required prior to registration for graduate special students to enroll in graduate-level courses in the college.*

International students who are on a student visa are not eligible for admission to the graduate special classification.

Graduate special students may not enroll in 700-level MBA core courses without prior approval of the office of the associate dean.

### Graduate Standing

Graduate standing classification is for those students who wish to pursue a program leading to an advanced degree.

In addition to meeting the requirements of the Graduate School, the following are the *minimum standards normally required for admission to graduate standing* in the College of Business Administration. (See the "Prescribed Program" section under Graduate School of this catalog for those students who do not meet the minimum requirements.)

**For Master of Business Administration:** A baccalaureate (or an advanced) degree from an accredited four-year institution with a satisfactory combination of undergraduate grade-point average and scores on the Graduate Management Admission Test (GMAT). The Graduate Record Examination (GRE) is not acceptable for admission to the MBA program.

**For master's degree in economics:**

1. A baccalaureate degree from an accredited institution with an overall GPA of at least 2.75 on a scale of 4.0.
2. Satisfactory scores on the GMAT or GRE Aptitude and Advanced Economics tests. Scores must be submitted prior to admission.
3. Previous completion of at least 18 semester credits of undergraduate course work in economics. Undergraduate prerequisites may be completed while enrolled at the university as a graduate special student (see "Graduate Special classification").

*The GMAT and GRE tests are administered at many locations by the Educational Testing Service. Information and application forms may be obtained by writing directly to Educational Testing Service, Box 966, Princeton, NJ 08540.*

## Application Procedures

To apply to the MBA program, submit the following to the Office of Admissions and Records: (1) a completed and signed Application for Admission form, (2) a $20.00 nonrefundable application fee, (3) two official transcripts from each college or university where work has been completed or is in progress, and (4) the official report of the Graduate Management Admission Test (GMAT).

The following is to be submitted to the Office of Graduate programs, College of Business Administration: (1) current detailed resume, and (2) a letter(s) of recommendation from someone who is familiar with the applicant's fitness for graduate study and promise of effective business performance.

## Application Period

All admission applications and credentials must be received in the Office of Admissions and Records by August 1 to be considered for the fall semester, and January 2 for the spring semester.

If the student is applying for financial assistance or a graduate assistantship, the application should be completed and returned no later than February 1.

## International Students

Applications from international students are evaluated on an individual basis.

The minimum TOEFL score required for admission to advanced degree programs in business administration is 550.

International applicants must satisfy the medical examination and financial responsibility requirements prior to admission.

## Advisement

The MBA is a college-wide program. Advisement is provided by the office of the associate dean and director of graduate programs. Upon completion of the core and the required advance courses in the breadth area, the student may tailor the program through elective courses and/or an individualized advanced field project or thesis. These specialized courses, along with any substitutions of advanced courses require permission from the office of the associate dean.

The department of economics advises all students enrolled in the master of arts or master of science programs in economics.

Students are cautioned that most graduate courses in the college are offered only one semester per academic year and program conflicts may result if proper advisement is neglected.

**It is the policy of the college that all graduate standing students should meet with the director of graduate programs prior to initial registration to develop their program of study.**

A student is permitted to alter the program of study during the program after consultation with the office of the director.

## Limitations on Transfer and S/U Courses and Courses Taken as Graduate Special

Subject to the approval of the graduate director, **a maximum of nine appropriate graduate transfer credits may be accepted.**

**S/U graded courses are not acceptable** for 600- or 700-level graduate credit in the MBA (except by examination in core courses) or economics programs.

**A maximum of nine graduate credits earned as a graduate special** student may be used in satisfying requirements for any advanced degree.

## Academic Standards and Probation

Graduate students in the College of Business Administration who do not maintain an overall GPA of at least 3.0 in all graduate courses are placed on probation. Those on probation may be prohibited from further enrollment if they fail to raise their overall GPA to at least 3.0 by the end of the first probationary semester. Exceptions are made only at the discretion of the director of graduate programs and the graduate school dean and may then be for a single additional semester should circumstances warrant. Additional information on the graduate academic standards requirements is included in the Graduate School section of this catalog.

## Continuous Matriculation

**A graduate student who discontinues enrollment for more than one year may be required by the director of graduate programs to apply for readmission.** Enrollment is defined as registration in one or more courses for credit relevant to the student's degree program. (See "approved leave" under "Academic Requirements" in the Graduate School section.) Enrollment commences upon registering for the first course for credit.

In addition, a student who discontinues enrollment for more than one year must meet the requirements of the current catalog.

## Degrees

The College of Business Administration offers the following advanced degrees:

1. Master of Business Administration (MBA)
2. Master of Science in Economics
3. Master of Arts in Economics

The college also offers minors in many of the primary fields within the business administration discipline.

The master of science and master of arts degrees require the successful completion and defense of a thesis (Plan A). A nonthesis option (designated Plan B) is available to candidates for the Master of Business Administration degree.

## Master of Business Administration (MBA)

The program is designed for managers and executives, or those with at least two years of equivalent experience, and can be completed by most in three years or less of part-time study. Full-time students are encouraged as well, but must have obtained a minimum of two years of meaningful experience in a business, government or nonprofit sector.

This program is distinguished by four following characteristics: (1) the program allows specializations such as logistics and gaming, and flexibility to focus on specific industry and professional needs; (2) all appropriate courses have international and computer components; (3) responds to those presently in managerial and professional positions and is flexible to their needs; and (4) is accredited by AACSB.

The program has been designed to promote understanding of the basic tools and techniques needed to manage effectively and efficiently in the changing global marketplace. An MBA from the University of Nevada, Reno will enable a manager or executive to perform a wide range of managerial functions, including: (1) managing human and material resources in a culturally diverse and rapidly changing technological world; (2) making decisions based on complex accounting and financial information; (3) using state-of-the-art computer data bases and information systems for analysis and interpretation; (4) understanding the implications of an increasingly global economy and the changing legal, ethical, cultural and political environments of business; and (5) developing business policies and strategies that are responsibe to rapid change.

### Admission Requirements

The graduate programs are open to those who hold a bachelor's degree from an accredited college or university, or its equivalent, and managerial or executive experience. Any major is acceptable for most programs and a person with a nonbusiness degree may find the program particularly worthwhile. The college is primarily concerned with the candidate's fitness for graduate study and promise of effective business performance. A judgement of these qualities is made from the undergraduate record, performance on the Graduate Management Admission Test (GMAT), letters of recommendation, a written statement indicating the candidate's educational and career objectives, business or military experience, and personal interview with the director of the graduate programs.

At the time of the interview, the applicant will be expected to demonstrate proficiency in oral and written communication. The written communication requirements are fulfilled by submitting the written statement indicating the candidate's educational and career objectives and such other examples of writing as the applicant may wish to have considered.

Applicants also need to have a working knowledge of microcomputers and be able to use them for word processing and spreadsheets and to have the ability to solve the type of quantitative problems what are important to the analysis of problems in business.

If the applicant needs to improve in any of the three areas mentioned above, counseling in how to develop the necessary proficiencies will be provided by the office of graduate programs.

### Waiver Policy

Individual common body of knowledge or core courses may generally be waived by permission of the associate dean if they were completed at an AACSB accredited or equivalent institution with a B or better within a reasonable time. Waivers of core courses may also be made upon examination.

### Course Requirements

The following courses are required unless waived.

*The Common Body of Knowledge (Core)*

| | Credits |
|---|---|
| B A 700—Statistics for Decision Making | 3 |
| B A 701—Production/Operation Management | 3 |
| B A 710—Financial and Managerial Accounting | 3 |
| B A 720—Management and Organizational Science | 3 |
| B A 730—Economics of the Firm | 3 |
| B A 741—Financial Management | 3 |
| B A 750—Managing Computer Decision Systems | 3 |
| B A 760—Marketing Management | 3 |

*Breadth*

| | Credits |
|---|---|
| B A 772—Changing Environments of Business (required) | 3 |
| And four of the following eight: | |
| B A 706—Seminar in Quantitative Research Methods[1] | 3 |
| B A 711—Seminar in Control Issues | 3 |
| B A 729—Seminar in Managerial and Human Resource Issues | 3 |
| B A 740—Seminar in Monetary and Financial Economics | 3 |
| B A 749—Seminar in Financial Issues | 3 |
| B A 759—Seminar in Information Resource Management Issues | 3 |

[1]An equivalent graduate-level quantitative course may be substituted.

| | |
|---|---|
| B A 769—Seminar in Marketing Issues | 3 |
| B A 780—Business and Public Policy | 3 |

### Specialization

Nine elective credits which may have an industry or functional specialization such as, but not limited to, an industry introduction in logistics, gaming and tourism, entrepreneurship and professional business management, and technology management, and two related courses.

If taken outside of the College of Business Administration, the courses must be approved by the associate dean as a high quality business-related sequence, or two electives, plus your choice of three credits of thesis (B A 797), independent study (B A 793), or field project (B A 792).[1]

*Integration (Required)*

| | Credits |
|---|---|
| B A 781—Strategic Management for Executives | 3 |
| | 51 |

## Master of Science or Master of Arts in Economics

The master of arts and master of science degree programs are designed to be terminal degree programs for individuals aspiring to careers in applied economics. The programs are also valuable for individuals considering careers in finance, banking, or law, as well as other professions that require analytical and quantitative skills. The M.A. and M.S. programs also provide excellent preparation for those who are considering a Ph.D. in economics, public policy or in a related field.

Applied economists are employed in both the private and public sectors, and are often involved in forecasting, market analysis, policy analysis and advisory activities.

Specific course requirements for degrees in economics include EC 721 and 722, along with nine additional credits taken at the 700 level, a total of at least 24 credits of graduate-level courses, and six credits of thesis. The master of arts and master of science degrees both require a thesis, and the course work and thesis must be approved by a student's faculty advisory/examining committee. Each candidate's program of study must be approved by the student's departmental adviser and the director of graduate programs for the college. Students must also meet all university and college requirements for the master's degree.

For full admission into the M.A. or M.S. program in economics, a student should complete 18 credits in economics, including intermediate microeconomics, intermediate macroeconomics, and money and banking. Students may enter the graduate programs in economics in either the fall or spring semesters.

The master's program may be completed in three or four semesters if the student is full time in the program. A typical schedule is:

*First Semester*

| | Credits |
|---|---|
| EC 721 | 3 |
| Electives | 6 |
| 700-level elective | 3 |

*Second Semester*

| | Credits |
|---|---|
| EC 722 | 3 |
| Elective | 3 |
| 700-level elective | 3 |

*Third Semester*

| | Credits |
|---|---|
| Thesis | 6 |
| 700-level elective | 3 |

## Graduate Minor in Business Administration

Graduate students with majors outside the College of Business Administration who wish to minor in business administration should complete at least three courses that are relevant to their business interests (subject to the approval of the director of graduate programs) as well as any preparatory courses which may be necessary for prerequisites. For a minor in economics, a student at the graduate level must take at least 12 units in economics, including EC 721 and 722.

## Inactive Graduate Programs

The master of science degree with majors in accounting, finance, management, and marketing is inactive.

## Public Service

### Advisory Board

There is an advisory board to the College of Business Administration, appointed by the board of regents. This board addresses itself to program issues, student needs, faculty recruiting, and community needs and interests. The following members served during the 1990-91 academic year: Michonne Ascuaga, vice president, administration and marketing, John Ascuaga's Nugget; John M. Bancroft, management consultant-adjunct faculty; Frank Bender, chief executive officer, Bender Warehouse Co.; Fianna Dickson Combs, Saddlehorn Development Co.; Joseph N. Crowley, president, University of Nevada, Reno; Kevin T. Day, vice president-corporate affairs, First Interstate Bank of Nevada; Bill Dickerson, Vice President-Division Director, R.R. Donnelley & Sons Company, Reno Manufacturing Division; Michael J. Doyle, president, Nevada Mining Association; Valerie Glenn, Rose Glenn Advertising; Phil Griffith, President, Fitzgerald Group; Ronald S. Jeffrey, senior vice president and general manager, Harrah's; Richard Kudrna, chairman of board, Harvey's Resort Hotel; Gregg Lambert, vice president, Bender Records Services; Laurie Larwood, dean, College of Business, University of Nevada, Reno; David Line, branch manager, IBM Corporation; Ken Lynn, Executive Director, EDAWN; Luther Mack, proprietor, McDonald's Central; Donald McGhie, owner, McGhie Consulting Services; Curtis Orgill, partner, Deloitte and Touche; G. Andrew Pearl, shareholder, Anderson & Pearl; Patsy Redmond, Executive Vice President, Nevada Association of Realtors; Gary Simons, plant manager, General Motors Parts Operations; Frederic Schwab, executive vice president, finance and administration, Porsche Cars of North America, Inc.; Kenneth W. Suess, regional vice president, Northern Trust Region Valley Bank of Nevada; Diane Torrey, Executive Vice President, Northern Nevada Banking, Security Pacific Bank of Nevada; Ron Watson, Executive Vice President, Reno-Sparks Chamber of Commerce; Ron Zidek, managing partner, Grant Thornton.

[1]Field projects are guided consulting projects with fees accruing to the supervising department for discretionary use.

# College of Education

Frank D. Meyers, *Dean*

*Departments of Instruction:* counseling and educational psychology, curriculum and instruction, and educational leadership.

The main goal of the College of Education is to prepare professional personnel to function effectively as teachers, guidance personnel, and administrators in the challenging and demanding field of education.

A second major goal of the college is to stimulate in the education profession and the public a deeper interest in the promotion of good teaching practices and sound educational policies.

A third major goal is to contribute directly to the redefinition of educational goals and policies through research and development.

Support for maintaining these objectives is provided through the college departments of instruction, the Center for Learning and Literacy, the Learning and Resource Center, Simulation-Demonstration Facility, Early Learning Center (grades 1-3), and the Research and Educational Planning Center.

## Degrees Offered

The college offers two undergraduate degrees—the bachelor of arts in education and the bachelor of science in education. Master's degrees are offered with majors in: counseling and educational psychology, educational leadership, and elementary, secondary, and special education. Education specialist degrees are offered in counseling and educational psychology, curriculum and instruction, and educational leadership. Doctoral degrees are offered in counseling and educational psychology, curriculum and instruction (reading and special education options only) and educational leadership.

## Accreditation

The College of Education is accredited by the Northwest Association of Secondary and Higher Schools and Colleges for all teacher education, undergraduate, graduate curricula. It is also accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary teachers and school service personnel, with the doctoral degree as the highest degree approved. These two accrediting bodies are recognized by the Council on Postsecondary Accreditation.

## Licensure

By law all licenses in Nevada are granted by the Nevada State Board of Education. Students in the College of Education enrolled in the integrated five-year course of study are at the same time meeting the specific licensure requirements of the state board of education.

## Admission to Teacher Education Program

Effective July 1, 1988, students accepted into a teacher education program are required to complete an integrated five-year course of study which begins in the freshman year and continues through the fifth year. **The present four-year teacher preparation program will be phased out in May 1992.** Successful completion of the five-year program leads to a bachelor's degree at the end of four years and a Nevada teaching license at the end of the fifth year. This program includes a combination of undergraduate and graduate coursework.

Also effective July 1, 1988, students are subject to new GPA requirements. Students must contact an adviser in the Department of Curriculum and Instruction regarding the course of study in the new program.

Students who plan on pursuing a program leading to initial licensure must be formally admitted to pre-professional standing in a specific teacher education program prior to enrollment in specific upper-division professional education courses and supervised internship. Students must meet these requirements:

1. Complete the pre-professional standing admission criteria and approval form and return it to the dean's office, Education Building, Room 101.
2. Pass the Pre-Professional Skills Test in reading, writing, and mathematics at or higher than cut-off scores established by the Nevada Department of Education. Students may attempt the PPST a maximum of three times. Students failing to pass all portions of the PPST **are removed from the teacher education program.** Students who do not pass the first administration of the PPST may retake the failed portion(s) at the next offering of the exam. After the second failure, the student must wait an academic year before taking the test for the third **and final** time. Students must take the PPST before the end of the sophomore year.
3. Attainment of pre-professional standing is required prior to admission to methods courses.
4. Students seeking admission to elementary, special, elementary/special education, or secondary programs must have a 2.5 GPA or higher in all courses taken prior to receiving advanced standing. Those seeking admission to secondary education programs must earn a minimum 2.5 GPA or higher in the major teaching field and a minimum 2.3 GPA or higher in the minor teaching field.
5. Pass the speech and hearing test.
6. Be qualified in the professional judgment of the faculty.

Students from colleges other than education seeking teacher licensure must comply with the above requirements. They must also complete the requirements for supervised internship.

Students entering the College of Education with a baccalaureate degree should see a curriculum and instruction adviser immediately.

## Program Completion Requirements

Candidates for the bachelor's degree in education and teacher licensure must satisfy these requirements:

1. Be admitted to the teacher education program.
2. Earn 128 credits or more in required and elective courses.
3. Complete 40 credits or more in courses numbered 300 or above.
4. Earn a 2.5 GPA or higher in the major teaching field, and a 2.3 GPA or higher in the minor teaching field (secondary education).
5. Earn a 2.75 GPA or higher in courses taken in the College of Education and a minimum 2.50 GPA overall.
6. Successfully pass exit examination(s) in the professional

knowledge and subject matter areas of the National Teachers' Examination (NTE).

7. Meet all university core requirements, total credits, GPA, and resident credit.

8. Meet requirement for instruction in Nevada school law. This requirement usually is met through E L 101.

A maximum of 30 semester credits may be earned with S/U grades subject to the approval of the assigned education adviser.

## Elementary/Special Education Teaching Curricula

| Liberal Studies[1] | Credits |
|---|---|
| ENGL 101, 102, 321 | 9 |
| Approved literature course | 3 |
| SPCM 113 or THTR 221 | 3 |
| Art history/appreciation or music history/appreciation | 3 |
| MUS 324 | 3 |
| ART 342 | 3 |
| | 24 |

| Science and Mathematics[1] | Credits |
|---|---|
| MATH 115 or 105, 173, 174 | 9 |
| GEOG 103 or GEOL 101 | 3 |
| CHEM 105 or PHYS 100 | 3 |
| BIOL 100 | 3 |
| | 18 |

| Social Science[1] | Credits |
|---|---|
| W T 201, 202, 203 | 9 |
| EC 101, 102 or 103 | 3 |
| SOC 101, 102, 202, 204, 205 or 207 | 3 |
| PHIL 100, 110, 112, 130, 203, 301 or 302 | 3 |
| GEOG 106, 200, 202 or ANTH 101 | 3 |
| | 21 |

| Health and Physical Education | Credits |
|---|---|
| NUTR 121 or CHS 471 | 3 |
| RPED 350 or RPED 451 | 3 |
| | 6 |

| Capstone Courses | Credits |
|---|---|
| (See adviser for details) | 6 |
| | 6 |

| Education Core | Credits |
|---|---|
| C I 270-271, 300, 310, 393, 431, 432, 464, 468 or 469, 471, 550, 620, 634 | 36 |
| CEP 330, 601 | 6 |
| E L 101 | 3 |
| | 45 |

| Elementary Major | Credits |
|---|---|
| C I 463, 465, 551a, 605 | 22 |
| ENGL 431 | 3 |
| Electives | 6 |
| | 31 |

| Special Education Major | Credits |
|---|---|
| C I 311, 312, 415, 417, 418, 551b, 613 | 29 |
| | 29 |

| Dual Elementary/Special Education Major | Credits |
|---|---|
| C I 311, 312, 415, 417, 418, 463, 465, 551d, 605, 613 | 43 |
| ENGL 431 | 3 |
| | 46 |

| Area of Concentration | Credits |
|---|---|
| (NOT REQUIRED for dual elementary/special education majors) | 12 |
| Bachelor's degree (minimum required) | 128 |
| Bachelor's degree, plus certification | 157-166 |

## Secondary Education (Bachelor of Arts Degree)

| Communication Skills and Humanities | Credits |
|---|---|
| ENGL 101, 102, 321 | 9 |
| ENGL 235, 236, 281, 291, 292, 293 | 3 |
| PHIL 211 or 213 | 3 |
| SPCM 113 | 3 |
| Fine arts elective from core curriculum | 3 |
| | 21 |

| Foreign Language | Credits |
|---|---|
| FLL 203, 204 | 6 |
| | 6 |

| Mathematics and Science | Credits |
|---|---|
| Biological science | 3 |
| Educational computing | 3 |
| MATH 105 | 3 |
| Physical science | 3 |
| | 12 |

| Professional Education—Undergraduate | Credits |
|---|---|
| C I 350, 409, 450 | 9 |
| CEP 330, 400 | 6 |
| E L 101 | 3 |
| | 18 |

| Social Sciences | Credits |
|---|---|
| Social science elective from core curriculum | 3 |
| W T 201, 202, 203 | 9 |
| | 12 |

## Secondary Education (Bachelor of Science Degree

| Communication Skills and Humanities | Credits |
|---|---|
| ENGL 101, 102, 321 | 9 |
| PHIL 213 or 224 | 3 |
| SPCM 113 | 3 |
| Fine arts elective from core curriculum | 3 |
| | 18 |

| Mathematics and Science | Credits |
|---|---|
| Biological science | 7 |
| Educational computing course (approved) | 3 |
| MATH 115 or higher | 5 |
| Physical science | 7 |
| | 22 |

| Professional Education—Undergraduate | Credits |
|---|---|
| C I 350, 409, 450 | 9 |
| CEP 330, 400 | 6 |
| E L 101 | 3 |
| | 18 |

| Social Sciences | Credits |
|---|---|
| HIST 281 or 282 | 3 |
| W T 201, 202, 203 | 9 |
| Social science elective from core curriculum | 3 |
| | 15 |

## Certification (Fifth Year)

Pre-professional standing in the College of Education is required for admission.

*First Semester*

| | Credits |
|---|---|
| C I 500-level course—Teaching methods in major field | 3 |
| C I 500-level course—Teaching methods in minor field | 3 |
| C I 604—Reading and Writing in Content Areas | 3 |
| C I 615—Adolescent Learner in the Secondary Classroom | 3 |
| OR | |
| C I 639—The Junior High/Middle School | 3 |
| CI 620—Sociocultural Concerns in Education | 3 |

[1]Completion of this coursework automatically fulfills university core curriculum requirements.

*Second Semester*

| | *Credits* |
|---|---|
| CI 557—Secondary School Internship | 12 |

Foreign language majors and minors must have demonstrated oral and written proficiency in their language for admission to the fifth year. Contact the Foreign Language Department for details.

English majors and minors must check with their curriculum and instruction adviser concerning required English courses not included in major/minor.

Six units of approved university core capstone courses are required.

## Secondary Teaching Field

Students who wish to prepare to teach in junior and senior high schools must complete one major and at least one minor teaching field. Two teaching minors are recommended, especially for students planning to teach in the junior high school.

Students must select major and minor teaching fields from the list below. In general, it is expected that students will make a choice in the sophomore year, although this decision may be made at the beginning of the freshman year. Each student is assigned an adviser from the Curriculum and Instruction Department and the major and minor teaching fields. Outlines of the departmental and interdepartmental curricula requirements are available for major and minor teaching fields given below.

## Secondary Education

(Grades 7-12)

### Major Teaching Fields

An outline of specific requirements should be obtained from the Department of Curriculum and Instruction.

Agriculture
Art
Biological Sciences
Business Education
Chemistry
English
French
General Science
German
Health Education
History
Home Economics
Industrial Education
Journalism
Mathematics
Music
Physical Education
Physical Science
Physics
Political Science
Social Studies
Spanish
Speech Communication
Theatre
Trade and Industrial Education

(The student should secure adviser's approval before beginning a major or minor.)

### Minor Teaching and Supporting Fields

An outline of specific requirements should be obtained from the Department of Curriculum and Instruction.

Agriculture
Anthropology
Art
Biological Sciences
Business Education
Chemistry
Computer Education
Earth Science
Economics
English
English as a Second Language
General Science
Geography
German
Health Education
History
Home Economics
Industrial Education
Italian
Journalism
Latin
Mathematics
Music
Occupational Education
Physical Education
Physical Science
Physics
Psychology
Political Science
Reading
Recreation
Russian
Social Studies
Sociology
Spanish
Special Education
Speech Communication
Theatre

## Supervised Internship

Supervised internship experiences are provided in the public schools. Students are assigned to cooperating teachers employed by a school system.

Staff members of the College of Education are responsible for the supervision of interns, making regular visits to observe the student's teaching, and holding conferences with the student and the cooperating teacher concerning the internship experience.

### Prerequisites for Supervised Internship

Only those students who have demonstrated scholarship, dependability, and a commitment to the profession of education are accepted for supervised internship. The failure on the part of the student intern to meet any requirements may result in the immediate forfeiture of internship privileges.

Applicants for supervised internship must:

1. Have achieved pre-professional standing in a teacher preparation program.
2. Maintain an overall GPA of 2.75 or higher in professional education courses and a cumulative GPA of 2.5 or higher in all courses (elementary, special, or elementary/special education).
3. Maintain a 2.5 or higher GPA in the major teaching field and a 2.3 or higher GPA in the minor teaching field.
4. Provide negative results of a tuberculosis screening immediately prior to beginning student teaching.
5. Pass the professional knowledge and subject matter areas of the National Teachers' Examination at or higher than cut-off scores established by the Nevada Department of Education prior to applying for internship.
6. Be qualified in the professional judgment of the College of Education faculty.

Admission to supervised internship is secured through the director of laboratory experiences for either the elementary/special education or secondary teaching field. **Applications for the fall semester must be received by March 15 and applications for the spring semester must be received by September 15.** A student must have completed a minimum of 15 prescribed semester credits at the university prior to admission to student internship.

## Requirements for Graduate Degrees

### Master's Degree

Graduate students may major in counseling and educational psychology (with specializations in elementary, secondary, college, community, marriage and family, and career development); educational leadership (with specializations in elementary or secondary principalship, school administration, and the superintendency); and elementary, secondary, and special education (with specializations in reading, early childhood education, computer education, computer education/media, media/library science, occupational education, behavior disorders, early childhood special education, learning disabilities, and mental retardation).

The specific requirements for the curriculum to be followed are adapted to the professional needs of the student. Students should not enroll in any course for graduate credit without first securing the approval of the department that such a course or courses are acceptable toward a major or minor.

General improvement courses for in-service education on the graduate level should also be considered by the student. These courses are also offered in extension or branch centers, workshops, short conferences, evening schools, and individual problem courses by appropriate arrangement. Inquiries are encouraged.

The master of arts, master of science and master of education degrees require 30 to 42 credits of approved courses with a major in education and a six-credit thesis, a total of 36 to 48 credits. A nonthesis master of arts or master of science degree 36 to 48-credit option may be selected. Program outlines and more specific information can be obtained from each of the three departments. All candidates for these degrees are required to complete a research course and a minimum of six credits of courses outside the specific department of study.

A maximum of six graduate credits of S/U grades may apply toward a master's degree requiring 36 semester credits or more.

Each candidate for the master of education degree must have completed a minimum of two academic years of satisfactory teaching or administrative experiences.

In addition to admission requirements specified by each department, applicants must be qualified in the professional judgment of the College of Education faculty.

## Education Specialist (Ed.S.) Degree

The education specialist degree is a 32 to 33 credit, sixth-year degree program beyond the master's degree. Majors are offered in counseling and educational psychology, curriculum and instruction, and educational leadership. Any student desiring to pursue a program leading to the education specialist degree should consult the department in whose field the degree is offered.

### Entrance Requirements

1. Possession of an accredited and relevant master's degree.
2. Post-master's experience relevant to the earned master's degree.
3. A GPA of 3.5 overall or higher in the master's degree program.
4. Acceptable scores on either the GRE or the Miller Analogies Test.
5. Departmental acceptance (standards may be higher than those stated in the university requirements).
6. Be qualified in the professional judgment of the College of Education faculty.
7. College of Education Graduate Studies Committee and dean acceptance.
8. Graduate School acceptance.

### Program Completion Requirements

1. A minimum of 32 graduate credits beyond the related master's degree is required.
2. Six post-master's or 15 post-baccalaureate acceptable credits must be obtained from outside the College of Education.
3. At least 16 of the total credits must be taken in the department offering the degree, and at least 16 of the total credits must be taken in courses at the 700 level.
4. A maximum of six post-master's credits taken prior to admission to the degree program may be applied to the program upon admission.
5. A maximum of six post-master's credits taken off campus or through continuing education may be applied toward the degree.
6. A maximum of three graduate credits of S/U grades may apply toward the education specialist degree.
7. An Examining/Guidance Committee is appointed for each student in the Ed.S. degree program. The committee is comprised of four members of the graduate faculty: two are from within the department in which the student is pursuing the degree; one is from another department within the college; one is selected from a department outside the College of Education.
8. A research project or its equivalent must be completed. The form of the project may vary, but it must represent a contribution to the professional field in which the degree is obtained.
9. Requirements for the degree must be completed during a period not to exceed six years.

## Doctor of Education (Ed.D.) Degree

Majors offered at the doctorate level are counseling and educational psychology, curriculum and instruction (reading and special education options only), and educational leadership.

Applicants for the doctor of education degree must meet general university requirements for admission, Graduate School requirements, College of Education requirements, and department requirements.

The basic program includes a minimum of 90 semester credits beyond the baccalaureate degree, including 12 credits of dissertation. A maximum of six graduate credits of S/U grades may apply toward the doctor of education degree. A residency requirement of at least two full-time summer or regular semesters with a minimum of 12 graduate credits must be completed.

Those individuals interested in the doctor of education program should contact the department concerned.

### Academic Requirements

Each applicant must satisfy the regular graduate admission requirements listed for doctoral programs and the following special requirements:

The applicant must:

1. Have completed at least two full years of successful professional experience in a field appropriately related to the chosen major.
2. Have an earned master's degree from a regionally accredited institution in an area appropriately related to the chosen major.
3. Be recommended by the graduate faculty of the department in which the major is sought and approved by the College of Education Committee for Graduate Programs.

### Degree Requirements

The regular doctorate graduate regulations apply with these modifications:

**Full-Time Study:** At least two full-time summer or regular semesters must be completed with a minimum of 12 graduate credits for each summer or regular semester. A maximum of three credits of dissertation, independent study or workshop credits may be applied per full-time term. This requirement must be satisfied *after* admission to the doctoral program. (Special rules apply for curriculum and instruction, special education option. Consult an adviser for details.)

**Program:** A minimum of 90 semester credits beyond the baccalaureate degree, including 12 credits of dissertation, must be completed. In addition to 30 graduate credits from the master's degree, a maximum of 16 relevant graduate credits in an accredited program beyond the master's degree to which the applicant was admitted may be applied to the approved Ed.D. program of studies for the candidate. There are specific course requirements and qualifying, comprehensive, and final examinations.

**Dissertation:** The dissertation must involve scholarly and practical consideration of a professional problem designed to contribute to the improvement of educational practices or to the body of educational theory. The topic may (1) evolve from practical

educational experiences, (2) be based upon directed field experiences, or (3) be a scholarly study of an educational problem involving theoretical implications.

**Foreign Language:** None is required.

**Miscellaneous:** The details of the examining committee, adviser, appropriate calendar, and development of an individually structured program are made available after an applicant is admitted.

**Fees:** All credits are assessed at the regular fee in effect at the time of registration.

# COUNSELING AND EDUCATIONAL PSYCHOLOGY (CEP)

*Faculty:* Baldwin, Downing, Fisher, Harrison, Maples, Meyers, Pierce (Ch.)

The department offers graduate courses in counseling, guidance, educational psychology and school psychology for schools K to 12, in college student development, in adult vocational counseling, in community counseling and in marriage and family counseling. Adapted sequences exist to provide academic structure to meet all Nevada licensure requirements for professionals within the marriage and family, pupil- and student-personnel team. Entrance requirements and program patterns are available by inquiry. Admission and retention of students in all programs is subject to the professional judgment of the department faculty.

# CURRICULUM AND INSTRUCTION (CI)

*Faculty:* Beach, Bear, Cheney, Combs, Cummings, Demchak, Drinkwater, Faltis, Johns, Johnson, Lafer, Luft, Maddux (Ch.), McIntosh, Robinson, Rose, Templeton, Tooke, Warner

## Elementary and Special Education

Undergraduate majors are offered in elementary, special, and elementary/special education. Completion of the latter program qualifies students for K-6 teaching licensure and a K-12 special education endorsement from the Nevada Department of Education. A master's degree student may major in elementary or special education. Master's degree graduates can also qualify to receive an elementary teaching license or a resource room endorsement from the Nevada Department of Education.

## Secondary Education

A major in secondary education is offered at the master's level only. Undergraduate majors and minors are provided by approved curricula in teaching fields listed in the College of Education section. Copies of requirements are available in the department office.

Members of the department will assist graduate students in planning balanced programs suited to their educational objectives.

## Media and Library Science Minor

A minor in instructional media/library science is offered for those individuals who are concerned with the utilization, coordination and administration of media materials. The minor provides relevant training for pre- and inservice educational technologists, librarians, teachers, administrators, politicians, business, industrial and military personnel trainers, commercial artists, television presentors, photographers, salespeople and others concerned with the storage and utilization of learning/communication materials.

*Note: This minor program is not designed to prepare teachers or other school personnel with licensure in the media/library science specialty.*

# EDUCATIONAL LEADERSHIP (E L)

*Faculty:* Foldesy (Ch.), Noonan, Peltier

The department offers support for teacher preparation through its undergraduate program in the areas of legal, historical, social and philosophical foundations. Graduate courses are offered leading to the master of arts, master of education, education specialist, and doctor of education degrees with a major in educational leadership. Appropriate selection of courses enables the graduate student to meet licensure requirements for an administrative position in the public schools of Nevada.

# Service Divisions

## Center for Learning and Literacy

*Faculty:* Bear (Assoc. Dir.), Templeton (Dir.)

The fundamental purposes of the Center for Learning and Literacy are to serve as a center for teaching and research in literacy, provide opportunities for undergraduate and graduate students to develop and apply competence in diagnosing and remediating reading and learning disabilities, and provide diagnostic and tutorial services in reading and learning disabilities to individuals from the elementary to the adult level. Students with learning disabilities and reading problems are diagnosed and remediated in the facilities by certified teachers or prospective teachers. Fees are charged for the services to cover the cost of materials and operations. The center is equipped to demonstrate diagnostic and remedial techniques. Programs offered through the center prepare teachers in remedial education and could lead to an advanced degree. For further information, contact the Center for Learning and Literacy, College of Education, 784-4951

## Learning and Resource Center

*Faculty:* Sawyer (Dir.)
*Adjunct Faculty:* Bullis, Maples

The Learning and Resource Center in the Education Building provides instructional media facilities in diverse areas. These include:

**Media Library**—a cooperative effort with the Washoe County School District, houses an extensive children's book collection, course-related books and educational materials including resource files, audio and video tapes, filmstrips, study prints, slides, media kits, and Apple II microcomputers.

**Media Production Facility**—mounting and laminating pictures, lettering, duplication, overhead transparency making, book binding, and photographic copy stand.

**Instructional Enhancement**—Microteaching facilities, audio and video tape dubbing and editing, and consultation in the area of instructional design.

The Learning and Resource Center is open regularly from 8 a.m. to 8 p.m., Monday through Thursday, and 8 a.m. to 4:30 p.m. on Friday. Audiovisual equipment is available for use in the College of Education. Materials used in the media production facility are available to university faculty and students at nominal costs. For further information, contact the Learning and Resource Center, College of Education, 784-4971.

## Research and Educational Planning Center

*Faculty:* Rock, S. (Dir.), Calhoun, P., Cline, D., Foldesy, E., Meyer, J., Weiser, R.

The center conducts sponsored research, development and training projects of state and national significance in education and related social science areas. Other activities of the center include consultation and technical services to the school districts of Nevada and research-related technical assistance to the College of Education faculty as well as faculty from other university colleges and departments.

# College of Engineering

Jon A. Epps, *Dean*

The College of Engineering offers undergraduate instruction in civil, electrical and mechanical engineering, with a broader undergraduate program provided by the engineering physics curriculum. Graduate-level instruction is provided in civil, electrical and mechanical engineering. Specialized graduate programs in construction engineering and hyrdology/hydrogeology are also available.

## Objectives

Engineers apply a knowledge of science, mathematics and a logical discipline of decision-making to the creation of systems needed by society.

The various engineering curricula provide the necessary basic and advanced knowledge to prepare students for positions of responsibility and leadership in their fields of interest, both now and in the future. The students are prepared to meet the technical and ethical demands of the profession and to become informed citizens in the community.

## Accreditation

The civil, electrical, and mechanical engineering programs for the baccalaureate degree are accredited by Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (EAC/ABET). The members of the faculty maintain affiliations with their professional societies and various industrial and governmental organizations which keep them current in their fields, and also provide stimulation for both undergraduate and graduate research projects.

## Cooperative Programs

Several cooperative programs are available, in which students may gain funds and experience during the summer (three months), a semester (eight months) and two summers, plus an academic year (15 months). For details see the various baccalaureate sections and inquire at the dean's office.

## Degrees Offered

*Baccalaureate Degrees:* Upon satisfactory completion of the prescribed curriculum the student in engineering becomes a candidate for the degree of bachelor of science in civil engineering, electrical engineering, engineering physics or mechanical engineering.

*Graduate Degrees:* The degree of master of science may be earned in civil, electrical, mechanical engineering and hydrology/hydrogeology, subject to the general requirements of the university, the department concerned, and the Graduate School. A professional degree in construction engineering is offered through the civil engineering department.

The interdisciplinary Ph.D. degree in engineering may be earned in many areas including artificial intelligence, potential field phenomena, information theory, system analysis and research, materials science, applied mechanics, computer integrated manufacturing systems engineering (CIMSE), energy systems, water resources, structural analysis, electronic devices, biomedical systems, and biomedical instrumentation subject to the university, college, and Graduate School requirements.

### Minor in Engineering

**(For baccalaureate engineering students only)**

1. A minimum program for a minor outside the major department consists of at least 18 credits of formal courses in the minor department, 12 credits of which are upper-division courses approved by the chairman of both the minor and major departments.
2. The 12 credits of upper-division courses in the minor department, alluded to in requirement 1, must be in addition to the credits in upper-division required courses in that department as specified by the curriculum of the major department.

### Engineering as a Preparatory Degree

Engineering majors currently have one of the highest rates of acceptance to United States medical schools. They also have an advantage over other majors in acceptance to architecture, business, dental, and law schools; however, additional courses may be needed. Students interested in using engineering as a preprofessional degree should consult with the assistant dean.

## College of Engineering Admission

Engineering applicants with a 3.3 high school GPA or above or an ACT mathematics test score of 28 or above (SAT mathematics test score of 580 or above) may select the engineering major of their choice. Students who do not meet this criteria must earn acceptance to an engineering major by enrolling in the College of Engineering as a pre-major (i.e., pre-civil, pre-electrical or pre-mechanical engineering) and completing a **freshman year engineering curriculum** as listed in this catalog, which applies to the major of their choice, with a 2.5 GPA.

## Mathematics and Science Entrance Requirements

In addition to the university requirements (see Admission section of this catalog) for admission to the baccalaureate programs, the College of Engineering specifically recommends four units of mathematics (including trigonometry) plus three units of science, including physics, chemistry, and one-half year of computer programming. Advanced placement classes in mathematics and science are valuable.

## Advisement

It is mandatory that all students receive advisement from a faculty member assigned by the department to assist each student in planning and maintaining the academic standards needed to complete the degree requirements for their chosen program. Undeclared students are to be advised by the assistant dean. Students *are not* permitted to attend engineering classes without prior advisement from an engineering faculty representative.

## Transfer Students

A student from outside the University of Nevada, Reno, who wishes to transfer to the College of Engineering and be accepted must follow general university policy for admission to advanced standing. Each such applicant is considered for admission based on their qualifications and the availability of space in the specific program for which application is being made.

## Baccalaureate Degree Requirements

Students who are not subject to core curriculum requirements should consult with their academic adviser. *The university core curriculum requirements are satisfied by engineering core and departmental requirements.* Transfer students may meet core and departmental requirements with similar course work from other colleges and universities.

In any field of specialization, the degree requirements consist of the general university requirements, the engineering core, and the departmental requirements. This totals 129 to 132 semester credits.

Engineering students may register for a maximum of nine credits pass-fail (S/U) in any courses, except those courses specifically required in engineering, mathematics, science or which are classified as technical or science electives.

The freshman year is basically similar for all departments thus transferring from one department to another in engineering during the freshman year can be done with minimal loss of credit or time. The specific departmental course requirements and suggested curricula to complete the requirements for the bachelor of science degree in the specific departments are presented on the following pages. The elective courses are selected by the student with the approval of the adviser and in general should be selected to broaden the student's education.

In addition to the general university requirement of a C average for graduation, the engineering student must also maintain a C average in the following courses: all engineering courses offered by the departments of the college; all basic science courses; all science electives; and all technical electives. Candidates for baccalaureate degrees from the College of Engineering may not use two-year technology courses in the determination of the average grade of C required in engineering courses. All engineering students must also take the national E.I.T. examination prior to graduation.

**Field Trips:** Any of the courses taught in the college may require field trips as an integral part of the educational experience. Field trips may be scheduled by the college's student organizations and they may be organized generally from within the college instructional structure in response to educational goals and needs.

## Priority Acceptance in Engineering Courses

Should it become necessary, prioritized acceptance of students into those classes where demand exceeds availability is based upon the accumulative GPAs as established by academic performance in courses taken at the University of Nevada, Reno.

First semester transfer students from institutions other than the University of Nevada, Reno are accepted in engineering classes based upon the GPA as established in transfer by the Office of Admissions and Records.

Implementation of this policy is accomplished by GPA lists of students requesting space in courses at early (CARS) registration. Those students who do not obtain class space are identified by the instructor and/or chairman and are notified.

## Application for Graduation

Major program curriculum requirements make it necessary to offer many of the required courses in alternate semesters only. This requires advance time to assist students in planning properly for graduation. Therefore, all applications for graduation in the College of Engineering must be filed in the dean's office twelve (12) months prior to the anticipated date of graduation. It is each student's direct responsibility to file the application by this date as exceptions are not granted.

# CIVIL ENGINEERING (C E)

*Faculty:* Bird, Douglas, Epps, Holcomb, Krenkel, Maragakis, Norris, Saiidi (Ch.), Sanders, Sebaaly, Siddharthan

### Undergraduate Curriculum

The objective of the program of study in civil engineering is to give students an educational background from which they can enter the practice of the profession of engineering. Civil engineering includes the planning, analysis, design, and construction of physical systems involving structures, soils, mapping, water resources, transportation, hydrology, water supply, wastewater disposal, and water quality management. The curriculum is designed to give an introduction to these disciplines. Students with an interest in environmental engineering can pursue an undergraduate track which emphasizes additional chemistry and microbiology classes.

Attention is directed to the existence of two cooperative training programs available for civil engineering students. These programs are offered jointly with the Civil Engineering Department and the following sponsoring agencies: the Nevada Department of Transportation and the Associated General Contractors of Nevada. Both programs offer financial assistance to the student through summer employment with the cooperating organizations. For further information write to the director of Civil Engineering Cooperative Training Programs.

The Nevada Chapter of the Associated General Contractors supports a fractional chaired professorship in the department. This support broadens the area of construction engineering.

The curriculum for the bachelor of science in civil engineering degree is as follows:

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| C E 141—Engineering Measurements | 3 |
| C E 140—Introduction to Civil Engineering | 1 |
| CHEM 101—General Chemistry | 4 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| Fine arts core curriculum course | 3 |
| | 18 |

*Second Semester*

| | Credits |
|---|---|
| C E 101—Engineering Graphics | 2 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| Social science core curriculum course | 3 |
| | 16 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| C E 241—Statics | 3 |
| C E 243—Computer Programming for Civil Engineers[1] | 3 |
| MATH 217—Calculus III | 4 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| W T 201—Foundations of Western Culture | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C E 246—Construction Materials | 3 |
| C E 368—Fluid Mechanics Lab | 1 |
| E E 201—Introduction to Network Analysis | 3 |
| ENGR 201—Engineering Communications | 3 |
| M E 242—Dynamics | 3 |
| M E 367—Elementary Fluid Mechanics | 3 |
| MATH 320—Differential Equations | 2 |
| | 18 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| C E 364—Engineering Hydrology | 2 |
| C E 366—Highway/Transportation Engineering | 3 |
| C E 369—Concrete and Asphalt Lab | 1 |
| C E 372—Strength of Materials | 3 |
| C E 388—Engineering Economy | 2 |
| C E 389—Probability and Statistics for Civil Engineers | 2 |
| C E 390—Water and Waste Treatment | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| C E 374—Metals and Timber Lab | 1 |
| C E 381—Structural Analysis | 3 |
| C E 471—Mathematical Methods in Civil Engineering[2] | 3 |
| C E 489—Water Resources Engineering I | 3 |
| C E 492—Fundamentals of Geotechnical Engineering | 4 |
| Restricted science elective | 4 |
| | 18 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| C E 484—Structural Steel Design | 3 |
| C E 485—Reinforced Concrete Design I | 3 |
| M E 371—Thermodynamics I | 3 |
| W T 202—The Modern World | 3 |
| Technical elective[2] | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| C E 491—Contracts, Specifications | 2 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Humanities/social science elective | 1 |
| Technical elective[2] | 6 |
| | 12 |
| Total credits for a bachelor of science in civil engineering | 130 |

Students enrolled in civil engineering cooperative programs are required to take a one-credit seminar course (C E 250, 350, 450) at the appropriate level each summer they are enrolled in the program. These credits are in addition to the total required for other students.

Class attendance is mandatory in all civil engineering courses. Civil engineering students who need to repeat courses to meet the minimum GPA requirement set by the university or the college are allowed to repeat only courses in which they received a grade of "D."

## Professional Degree in Construction Engineering

The department offers a post-baccalaureate professional degree in construction engineering. The program is funded by the Northern Nevada Division of the Associated General Contractors. Students entering the program must have a B.S. degree from an ABET accredited civil engineering program. The program is designed to be completed in two semesters. To obtain specific information about admission requirements, scholarships, and the program of study, contact the AGC professor, Civil Engineering Department.

## Graduate Programs

Continuing education beyond the bachelor's degree is a necessity for those engaging in the practice of the profession of civil engineering. The master's degree programs are recommended for those who wish to engage in this profession.

The department offers programs leading to the master of science (M.S.) degree in civil engineering and the doctor of philosophy (Ph.D.) in engineering. Detailed curricula in the general civil engineering field or with specialization in structures, soil mechanics and foundations, highway materials, or environmental engineering are determined in conference between the student and the adviser. Requirements for graduate degrees are stated in the Graduate School section. Both Plan A and Plan B are available for M.S. programs. Specific departmental requirements for the M.S. program may be obtained from the Civil Engineering Department.

The department also participates in the interdisciplinary master of science degree with a major in land use planning policy and hydrology/hydrogeology in cooperation with several other departments. For further information refer to the Interdisciplinary and Special Programs section of this catalog.

Additional information on graduate programs may be obtained by writing to the chairman of the department. Teaching and research assistantships are available in civil engineering. Applications for assistantships are due by April 15 for the fall semester and by October 15 for the spring semester.

# ELECTRICAL ENGINEERING (E E)

*Faculty:* Chang, Chatterjee, Egbert, Etezadi-Amoli, Fadali, B. Johnson, W. Johnson, Kleppe, Rawat (Ch.), Rao, Trzynadlowski
*Adjunct Faculty:* P. Vohl, A. Scandurra

[1] C E 243 is a prerequisite for all 300-level courses.

[2] Students electing to take the environmental option take CHEM 102 for the restricted science elective, BIOL 101 in place of C E 471 and CHEM 142 in place of one technical elective. The remaining technical electives are C E 497 and 499.

## Undergraduate Curriculum

The program in electrical engineering is designed to provide a broad scientific background coupled with training in original and logical thought so the graduate can continue intellectual advancement and make significant contributions to the field of electrical engineering. The fundamental nature of the required courses provides the basis for concentration in depth in communications, computer, control, electronics, and power engineering.

The departmental requirements for the bachelor of science in electrical engineering degree are included in the following curriculum. This curriculum meets all graduation course requirements.

The professional EIT examination, administered by a state board of engineering registration, must be taken by all electrical engineering students before graduation during the senior year of study.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 101—General Chemistry | 4 |
| ECON 102—Principles of Microeconomics | 3 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| Fine arts core curriculum course | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C S 183—Introduction to Computer Science I | 4 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 15 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| E E 231—Computerized Matrix Algebra | 3 |
| ENGR 201—Engineering Communications | 3 |
| MATH 217—Calculus III | 4 |
| M E 241—Statics | 3 |
| PHYS 202—Engineering Physics II | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| C S 333—Computer Logic Design | 3 |
| E E 200—Network Analysis Lab | 1 |
| E E 201—Introduction to Network Analysis | 3 |
| E E 202—Materials in Electrical Engineering | 2 |
| MATH 320—Differential Equations | 2 |
| PHYS 203—Engineering Physics III | 3 |
| W T 201—Foundations of Western Culture | 3 |
| | 17 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| E E 301—Circuits and Systems | 3 |
| E E 320—Analog Electronics Lab | 1 |
| E E 321—Introduction to Electronics | 3 |
| E E 361—Power System Fundamentals | 3 |
| M E elective (M E 242—Dynamics or M E 371—Thermodynamics) | 3 |
| MATH 352—Probability and Statistics | 3 |
| PHYS 206—Engineering Physics Lab III | 1 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| E E 330—Computer Logic Lab | 1 |
| E E 336—Microprocessors | 3 |
| E E 351—Electric and Magnetic Fields | 3 |
| E E 380—Control Systems Lab | 1 |
| E E 381—Signals and Systems | 3 |
| E E 386—Control Systems | 3 |
| W T 202—The Modern World | 3 |
| | 17 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| E E 490—Electrical Projects Lab | 2 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Social science core curriculum course | 3 |
| Technical electives | 9 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| E E 491—Engineering Design/Analysis | 4 |
| Science or technical elective | 3 |
| Technical electives | 9 |
| | 16 |

Total credits for a bachelor of science in electrical engineering ..... 132

NOTE: E E 200, 201, 301, 333 are offered every semester; E E 231, 320, 321, 361 are offered during the fall semester; E E 202, 330, 336, 351, 380, 381, 386 are offered during the spring semester.

### Areas of Concentration

Senior technical electives consist of six courses (18 credits) to be selected from at least four of the following areas of concentration: *Communication:* E E 481, 482, 484; *Computer:* E E 431, 434, 437, 439; *Control:* E E 486, 487; *Electronics:* E E 422, 423, 424, 426, 427, 428; *Fields:* E E 450, 451, 452, 455, 456, 458; *Power:* E E 461, 463, 466, 467, 468.

## Engineering Physics

The program in engineering physics, administered by the Electrical Engineering Department, leads to the degree of bachelor of science in engineering physics. The program is designed for the student who desires a background in engineering science, based on a firm foundation of physics, as well as an introduction to computer science; or who would like to pursue graduate studies in physics. The curriculum allows the student 18 credits for humanistic-social electives to be in accord with accredited engineering programs.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| C S 183—Introduction to Computer Science I | 4 |
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| E E 231—Computerized Matrix Algebra | 3 |
| ENGL 102—Composition II | 3 |
| CHEM 202—General Chemistry for Scientists and Engineers | 4 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 18 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| C S 283—Introduction to Computer Science II | 3 |
| MATH 217—Calculus III | 4 |
| MATH 352—Probability and Statistics | 3 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| W T 201—Foundations of Western Culture | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C S 333—Computer Logic Design | 3 |
| E E 201—Introduction to Network Analysis | 3 |
| MATH 320—Differential Equations | 2 |
| PHYS 203—Physics for Scientists and Engineers III | 3 |
| PHYS 206—Physics for Scientists and Engineers Lab III | 1 |
| W T 202—The Modern World | 3 |
| | 15 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| E E 301—Circuits and Systems | 3 |
| E E 321—Introduction to Electronics | 3 |
| PHYS 351—Mechanics | 3 |
| PHYS 361—Light and Physical Optics | 3 |
| PHYS 363—Optics and Spectroscopy Lab | 1 |
| W T 203—The American Experience and Constitutional Change | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| E E 386—Control Systems | 3 |
| PHYS 352—Mechanics | 3 |
| PHYS 362—Light and Physical Optics | 3 |
| PHYS 364—Optics and Spectroscopy Lab | 1 |
| Fine arts core curriculum course | 3 |
| Science or technical elective | 3 |
| | 16 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| PHYS 421—Modern Physics I | 3 |
| PHYS 425—Thermal Physics | 3 |
| PHYS 473—Electricity and Magnetism | 3 |
| Social science core curriculum course | 3 |
| Science or technical electives | 5 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| E E 491—Engineering Design/Analysis | 4 |
| PHYS 422—Modern Physics II | 3 |
| PHYS 426—Introduction to Solid State Physics | 3 |
| PHYS 474—Electricity and Magnetism | 3 |
| Elective | 5 |
| | 18 |

Total credits for a bachelor of science in engineering physics degree ..... 132

### Graduate Curriculum

The practice of the professions of electrical engineering and computer science requires broad ability in both scientific thinking and the art of working with other people. As education for those who wish to engage in this profession with competence, four years of undergraduate study and at least one year of graduate study are strongly recommended. The undergraduate and graduate curricula at the university are planned to offer as much as possible of the breadth of education needed for leadership in the profession, as well as knowledge of the physical sciences and the basic professional techniques. There is no prescribed curriculum for the M.S. degree or the interdisciplinary Ph.D. degree in engineering; the student's program is individually selected in consultation with the adviser to meet the general requirements of the Graduate School as stated in that section. Graduate students will be required to select a graduate committee before the end of their first semester. The committee will be responsible for approving each student course requirement. An E E graduate student will receive credit toward a degree for no more than nine hours of courses that have not been pre-approved by his graduate committee.

Both Plan A (thesis) and Plan B (nonthesis) are available for M.S. programs. Plan A is normal, but Plan B is available at the student's request if the faculty feels the student has already had experience after receiving the B.S. degree equivalent to that of a thesis and that the student will benefit more from additional course work than from completing a thesis. If Plan B is permitted, the student must successfully complete a two-credit professional paper based on previously completed research or engineering experience.

The department also participates in an interdisciplinary program leading to a master of science degree with a major in computer science. For further information, refer to the interdisciplinary section of this catalog or contact the department chairman.

A manufacturing systems engineering program has been developed. The program is jointly sponsored by the electrical engineering and mechanical engineering departments. It will educate engineers to employ an integrated view of properties of materials, manufacturing process fundamentals, production system analysis, computer aided design and manufacturing, and robotics in systems design and synthesis. For further information, contact the department concerned.

# MECHANICAL ENGINEERING (M E)

*Faculty:* Cengel, Dandini (consultant to ERDC), Evrensel, Fashbaugh, Gordaninejad, Greiner, Luo, McKee, Muszynska, Samanta, Snyder, Tracy, Turner, Wirtz (Ch.)

Mechanical engineers work in all segments of the economy. Challenging opportunities exist in both heavy and light manufacturing, in natural resource development, the utilities, the aerospace industry, and government, to name just a few. Some mechanical engineers focus on research and mathematical analysis, while others concentrate on practical applications in design and development.

The undergraduate curriculum is broadly based to accommodate a wide cross-section of career goals. Students take a core of required courses in engineering, the humanities, mathematics, and science, which is supplemented with elective courses. In this way they are introduced to basic engineering science and design concepts with the opportunity to develop specific career interests.

## General Requirements

| | Credits |
|---|---|
| *English (writing):* | |
| ENGL 101, 102; ENGR 201 | 9 |
| *Mathematics and Science:* | |
| CHEM 101; MATH 215, 216, 217; M E 299, 402; PHYS 201, 202, 204, 205; mathematics/science elective | 33 |
| *Humanities and Social Sciences:* | |
| ECON 102; W T 201, 202, 203; elective; fine arts elective | 18 |
| *Engineering Science and Design:* | |
| C E 372; E E 200, 201; M E 150, 201, 241, 242, 250, 310, 351, 367, 371, 391, 410, 452, 461, 465, 491; METE 350; 6 credits restricted elective | 60 |
| Six credits mechanical engineering electives | 9 |

The mechanical engineering curriculum is accredited by the Accreditation Board for Engineering and Technology (ABET). The program is designed so that required courses are used to meet minimum ABET requirements regarding engineering design and engineering science content. The mechanical engineering curriculum meets or exceeds all university core curriculum requirements.

Students enrolled in mechanical engineering cooperative programs may take a one-credit course (M E 198, 298, 398, 498) at the appropriate level each academic period they are enrolled in the program. These credits are in addition to the total required for other mechanical engineering students.

*Since many upper-division mechanical engineering courses have strict prerequisites, it is important that courses be completed in the order shown.* Students who do not meet prerequisites for MATH 215 should attend summer school prior to their first semester.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 101—General Chemistry | 4 |
| ECON 102—Microeconomics | 3 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| | 14 |

*Second Semester*

| | Credits |
|---|---|
| ENGL 102—Composition II | 3 |
| M E 150—Introduction to Mechanical Design | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| Fine arts elective | 3 |
| | 17 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| M E 201—Computer Programming | 3 |
| M E 241—Statics | 3 |
| MATH 217—Calculus III | 4 |
| METE 350—Materials Science | 3 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C E 372—Strength of Materials | 3 |
| ENGR 201—Engineering Communications | 3 |
| M E 242—Dynamics | 3 |
| M E 250—Introduction to Computer Aided Design | 3 |
| M E 299—Differential Equations | 3 |
| | 15 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| E E 200—Electrical Engineering Lab | 1 |
| E E 201—Introduction to Electrical Engineering | 3 |
| M E 351—Machine Design | 4 |
| M E 367—Elementary Fluid Mechanics | 3 |
| M E 371—Thermodynamics I | 3 |
| M E 402—Numerical Methods in Engineering | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| M E 310—System Analysis and Design | 4 |
| M E 391—Instrumentation | 3 |
| M E 461—Heat Transfer | 3 |
| W T 201—Foundations of Western Culture | 3 |
| Mechanical engineering restricted elective | 3 |
| | 16 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| M E 410—Introduction to System Control | 3 |
| M E 465—Optical Design | 3 |
| M E 491—Mechanical Engineering Lab | 2 |
| W T 202—The Modern World | 3 |
| Fine arts core curriculum course | 3 |
| Mechanical engineering restricted elective | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| M E 452—Design Synthesis | 4 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Restricted electives | 9 |
| | 16 |

Total credits required for a bachelor of science in mechanical engineering ..... 129

## Graduate Curriculum

The department currently offers the master of science degree in mechanical engineering and participates in the interdisciplinary Ph.D. program in the College of Engineering. The department does not have a language requirement for the Ph.D.

The program of courses and research for both the master's and doctoral degrees is tailored to the background, the needs, and the interests of the individual student.

Candidates for the M.S. degree may satisfy the thesis requirement by original research (Plan A). A candidate with acceptable professional engineering experience may substitute course work for the thesis upon approval of the department faculty (Plan B).

Some of the areas of research currently in progress are laser anemometry, temperature control in electronic devices, mechanics of fiber reinforced composites, solar energy collection and systems, materials engineering, heat transfer augmentation, and biofluid mechanics.

For details of the graduate programs, see the Graduate School section.

# College of Human and Community Sciences

Jean L. Perry, *Dean*

The College of Human and Community Sciences is composed of faculty whose primary focus is on the needs of individuals and families over the lifespan and across all social strata and income levels. The course of study emphasizes the human dimension in community life. Parenting, aging, communicating, and maintaining individual health and fitness are examples of topics addressed. The college's mission is excellence in interdisciplinary undergraduate and graduate preparation, research, and service to the community. The college includes five departments: community health sciences; human development and family studies; nutrition; recreation, physical education and dance; and social work. There are also four university-wide centers in the college: the Child and Family Research Center, the Geriatric and Gerontology Center, the Health Career Advisement Center, and the Senator Alan Bible Center for Applied Research.

## COMMUNITY HEALTH SCIENCES (CHS)

*Faculty:* Hayes, Marinelli (Ch.), Miller, Reed, Thornton

Undergraduate Degree: bachelor of arts
Major: health education
Undergraduate Degree: bachelor of science
Majors: predentistry, premedicine, prephysical therapy

This department integrates education for the health-related fields of health education and predentistry, premedicine, and prephysical therapy. The program addresses the growing need for health professionals educated with a broad base in the physical sciences plus a component of biomedical ethics, communication skills, humanities, and health. In addition to the above majors, community health sciences provides preparatory courses for careers in chiropracty, mortuary science, optometry, pharmacy, physician assistant, occupational therapy, podiatry, and public health.

### Career Potential

The health education program prepares students for careers as community health educators, health agency program planners, and health teachers.

The pre-professional programs prepare students for advanced education in dentistry, medicine, occupational therapy, pharmacy, physical therapy, and podiatric medicine.

## HEALTH CAREER ADVISEMENT CENTER

*Director:* Miller

In addition to seeking advice from their academic advisers, students planning a career in any of the health professions should consult with the director of the Health Career Advisement Center. The office is a centralized resource for all university students interested in health careers. The director can assist students with information on the many career opportunities and options and the health-related degree programs available at the University of Nevada, Reno and other schools. The office has up-to-date information about professional school admission requirements and applications for national admission testing. Call for an appointment: 784-4949.

## HUMAN DEVELOPMENT AND FAMILY STUDIES (HDFS)

*Faculty:* Essa, Everts, Gunn, Halderman, Havercamp, Hilton, Kees-Martin, Leigh (Ch.), Murray, Tripple

Undergraduate Degree: bachelor of science
Major: human development and family studies
Minor: human development and family studies
Graduate Degree: master of science
Major: human development and family studies

This program addresses the quality of life of individuals and families. Students may choose a particular time in the life span as an area of specialization. The department brings an integrated perspective to the study of human development throughout the life span and family systems, relationships, processes, and management of resources in changing social institutions.

### Career Potential

These programs prepare students for careers as administrators of child development or family services programs, child development specialists, curriculum coordinators and teachers of programs for young children, school age program coordinators, youth program specialists, community education instructors, parent educators, senior center coordinators, family financial planners, consumer advocates and family public policy advocates.

## NUTRITION (NUTR)

*Faculty:* Benedict, Omaye (Ch.), Pritsos, Read

Undergraduate Degree: bachelor of science
Major: nutrition
Options: clinical dietetics, nutritional science
Minor: nutrition
Graduate Degree: master of science
Major: nutrition

This department offers a bachelor of science degree in nutrition with two options: clinical dietetics or nutritional sciences. The student will learn about human anatomy, physiology, microbiology, and biochemistry, and how each of these relate to nutrition; human nutrition in health and disease as it applies to various stages of the life cycle; food science, techniques of food preparation and nutrient composition of food; and nutritional assessment, planning, intervention and evaluation. Focus is on communication and education in helping people make healthy food choices.

### Career Potential

The clinical dietetics option prepares the student for either an accredited internship or an approved AP4 program in preparation for the National Registered Dietitian Examination and work as a registered dietitian in community nutrition, hospital settings, and private practice.

The nutritional science option prepares the student for graduate work and nutrition research. Students pursuing this option generally would complete advance degree (M.S. or Ph.D.) work in nutrition, and conduct nutrition research.

## RECREATION, PHYSICAL EDUCATION, AND DANCE (RPED)

*Faculty:* Bailey, Ballew, Bogard, Fox, Laughter, Loper, Magney, Plummer (Ch.), Rippee, Twardokens

Undergraduate Degree: bachelor of arts
Majors: physical education, recreation
Option: dance emphasis, municipal recreation
Minor: dance
Undergraduate Degree: bachelor of science
Majors: physical education, recreation
Options: fitness management, municipal recreation
Minors: physical education, recreation
Graduate Degree: master of science
Major: physical education

The relationship between exercise, fitness, health, recreation, and movement science has increasing importance in issues of public health, rehabilitation, stress reduction, mental health, and individual well-being. This department prepares physical education teachers as well as recreation, dance and fitness professionals to serve the needs of public organizations and private businesses.

### Career Potential

This department prepares students as athletic coaches and trainers, physical education teachers, instructors and dance professionals, fitness counselors and directors, physical education teachers in kindergarten through 12th grades, and recreational directors/planners.

## SOCIAL WORK (S W)

*Faculty:* Albers, Bisno (Ch.), Black, Dodson-Harry, Harrison, Henry, Larsen, Pandey, Pierce, Pillard, Welker, Yadama

Undergraduate Degree: bachelor of arts
Major: social work
Graduate Degree: master of social work
Major: social work

The baccalaureate program offers course and field work that prepares individuals for beginning-level professional social work practice. It also offers preparation for admission to graduate school in such fields as corrections, counseling, law, public health, social work, or public administration. Graduates of this program are eligible to take the examination to be licensed as social workers.

The bachelor's course of study is accredited by the Council on Social Work Education, and the master's program is in the process of seeking initial accreditation.

### Career Potential

Students learn knowledge, theories, skills, and professional values that enable them to become social workers in such programs as child welfare, community development, corrections, delinquency, employee assistance, health settings, mental health, mental retardation, planning and administration, public assistance, and services to the aged.

# Instructional Programs

## University Core Requirements

The completion of core curriculum requirements is necessary prior to the award of any baccalaureate degree. For further information see the section on University Core Curriculum Requirements.

## College Requirements

The following requirements apply to all majors offered in the College of Human and Community Sciences:

1. A minimum of 33 credits of coursework in a major.
2. A minimum of 40 credits of coursework at the upper-division level.
3. A minimum of 128 total credits.
4. Completion of HCS 101 for three credits. This course requires 45 hours of community service volunteer work.
5. Completion of a research course for three credits.

# Baccalaureate Majors

## Health Education Major

The bachelor of arts degree with a health education major prepares individuals to plan, implement and evaluate health education programs designed to improve the health of the community. Courses in the natural sciences, social and behavioral sciences and supervised field work enable the graduate to explain and interpret the latest knowledge and developments in the health field. This strong degree program also prepares the student to pursue graduate studies.

| *Major Interest Subject* | *Credits* |
|---|---|
| S W 220—Introduction to Social Work | 3 |
| CHS 300—Communication Skills in Health Care | 3 |
| CHS 325—Foundations of Health Education | 3 |
| CHS 354—Personal Health and Lifestyle | 3 |
| CHS 452—Health Systems and Policy | 3 |
| CHS 462—Epidemiology | 3 |
| CHS 470—Health Education Seminar | 3 |
| CHS 475—Human Values and Professional Ethics | 3 |
| CHS 489—Field Experience in Health Education | 3 |
| S W 390—Introduction to Research | 3 |
| *General Requirements* | |
| BIOL 262, 263—Human Anatomy and Physiology | 6 |
| *PLUS* six credits from electives in the department | 6 |

*Additional Required Courses:* In addition to credits for the major, students must complete 18-21 credits in a minor.

## Human Development and Family Studies Major

The bachelor of science degree with a major in human development and family studies prepares students to work with individuals of all ages and their families. Study of theory and research findings are integrated with a variety of supervised field experiences. Emphasis is on how individuals interact within the family

system and with the larger socio-economic environment. All majors study human development throughout the lifespan, interpersonal relationships, family roles, family processes and management of resources in a changing society. An area of concentration may be selected in child or adolescent development, adult development and aging, family studies, family resource management, early childhood education/early childhood special education, or general human development and family studies.

| *Required Courses* | *Credits* |
|---|---|
| HDFS 132—Child Guidance and Parenting | 3 |
| HDFS 233—Practicum with Children and Families | 2 |
| HDFS 274—Individual and the Family | 4 |
| HDFS 341—Personal Finance | 3 |
| HDFS 371—Family Resource Management | 3 |
| HDFS 430—Human Sexuality | 3 |
| HDFS 431—Advanced Studies in Human Development and Family | 6 |
| HDFS 433—Administration of Child and Family Services | 3 |
| HDFS 434—Family Education and Intervention Programs | 3 |
| HDFS 436—Family Interaction | 3 |
| HDFS 438—Children and Families in a Multiethnic Society | 3 |
| HDFS 458—Families and Public Policy | 3 |
| HDFS 470—Professional Internship | 3 |
| HDFS 472—Contemporary Family Issues | 3 |
| NUTR 121—Human Nutrition | 3 |
| NUTR 422—Nutrition in the Life Cycle | 1 |
| | 49 |

### Area of Concentration

Students select 18 credits in addition to the major requirements to concentrate in one of the following areas: family studies, child and adolescent development, adult development and aging, family resource management, early childhood education/early childhood special education or general human development and family studies. It is essential for students to contact their adviser in developing an area of concentration.

| *Additional Required Courses* | *Credits* |
|---|---|
| Sociology | 3 |
| EC 101 or 102 | 3 |
| SOC/PSY 210 or 392, S W 390 | 3 |
| SPCM 113, 217 or 329 | 3 |
| ENGL 321; SPCM 315, 329, 411, 435 | 6 |

## Nutrition Major

The bachelor of science degree in nutrition, with either the clinical dietetics or nutritional sciences option, requires a minimum of 128 credits. At least 40 credits must be earned in courses numbered 300 or 400. A maximum of 30 required or elective credits on an S/U basis may be utilized as part of the required credits.

### Clinical Dietetics Option

For an individual to become a registered dietitian, the American Dietetic Association requires that students (1) complete an undergraduate degree in nutrition which includes courses that comprise an approved Plan IV program, and (2) complete an accredited internship or an approved AP4 preprofessional practice plan. The clinical dietetics option consists of required and elective courses approved by the American Dietetic Association as a Plan IV program. Students who complete the clinical dietetics degree/Plan IV program are eligible upon graduation to complete the second step (completion of either an accredited internship or an approved AP4 preprofessional practice plan) required to become a registered dietitian. With a bachelor of science consisting of an approved Plan IV and completion of the internship/AP4, students are then eligible to sit for the national registration examination for dietitians and employment as a registered dietitian. As a registered dietitian, students may choose from a variety of careers including clinical/hospital dietetics, administrative dietetics, community nutrition and private or consulting nutrition services.

The following courses are required for the clinical dietetics option:

*Natural science and mathematics courses:* BIOL 111, 251, 262, 263; CHEM 101, 102, 142, 143; MATH 115.

*Social sciences:* SOC/PSY 101; EC 101 or 102.

*Professional courses:* NUTR 223, 225, 320, 321, 419, 426, 427, 440, 470.

*Other required courses:* CEP 330; HDFS 274, 438; MGRS 323; and a course in either statistics or computer literacy.

*Recommended Courses*
*Freshman Year*

| | *Credits* |
|---|---|
| EC 101 or 102 | 3 |
| ENGL 101, 102 | 6 |
| CHEM 101 | 3 |
| HCS 101 | 3 |
| MATH 115 | 5 |
| NUTR 225 | 3 |
| PSY 101 or 102 | 3 |
| Elective | 2 |
| Fine arts core curriculum course | 3 |
| | 31 |

*Sophomore Year*

| | *Credits* |
|---|---|
| BIOL 262, 263 | 6 |
| CHEM 102, 142, 143 | 8 |
| HDFS 274 | 4 |
| NUTR 223 | 3 |
| SPCM 113 | 3 |
| W T 201, 202 | 6 |
| Electives | 5 |
| | 35 |

*Junior Year*

| | *Credits* |
|---|---|
| BIOL 251 | 3 |
| CEP 330 | 3 |
| MGRS 323 | 3 |
| NUTR 320, 321, 419 | 9 |
| W T 203 | 3 |
| Computer literacy or statistics | 3 |
| Electives | 8 |
| | 32 |

*Senior Year*

| | *Credits* |
|---|---|
| HDFS 438 | 3 |
| NUTR 426, 427, 440, 470 | 9 |
| Capstone courses (core curriculum) | 6 |
| Electives | 14 |
| | 32 |

### Nutritional Sciences Option

The nutritional sciences option is focused on developing research skills and is designed to prepare students for graduate work/research in the area of nutrition. In addition to the university core curriculum requirements and the college requirements, the following course work is required for nutritional science students:

*Natural science and mathematics courses:* BIOL 111, 112, 201 or 202, 251, 262, 263; CHEM 101, 102, 343, 344, 345; MATH 115, 213; PHYS 151, 152, 153, 154.

*Social science courses:* PSY 101 and SOC 101 plus an additional nine credits of social science.

*Nutrition courses:* NUTR 223, 419, 426, 427, 433, 440 plus three credits of additional nutrition.

*Recommended Courses*
*Freshman Year*

| | *Credits* |
|---|---|
| BIOL 101, 102 | 4 |
| CHEM 101 | 4 |
| ENGL 101, 102 | 3-6 |
| HCS 101 | 3 |
| MATH 115 | 5 |

| | |
|---|---|
| PHYS 151, 152 | 6 |
| PSY 101 | 3 |
| Elective | 1 |
| | 29-32 |

*Sophomore Year*

| | Credits |
|---|---|
| BIOL 201 or 202; 262, 263 | 9 |
| CHEM 102, 343 | 7 |
| NUTR 223 | 3 |
| PHYS 153, 154 | 6 |
| W T 201, 202 | 6 |
| Elective | 1 |
| | 32 |

*Junior Year*

| | Credits |
|---|---|
| BIOL 251 | 3 |
| CHEM 344, 345 | 5 |
| MATH 213 | 3 |
| NUTR 419 | 3 |
| SOC 101 | 3 |
| W T 203 | 3 |
| Electives | 3 |
| Nutrition elective | 3 |
| Social sciences | 6 |
| | 32 |

*Senior Year*

| | Credits |
|---|---|
| B CH 400, 403 | 6 |
| NUTR 426, 427, 433, 440 | 12 |
| Capstone courses (core curriculum) | 6 |
| Electives | 5 |
| Social sciences | 3 |
| | 32 |

## Physical Education Major

The bachelor of science or bachelor of arts degree with a major in physical education offers a wide range of courses in the theory and teaching of athletic and physical fitness activities. Students in this major may be certified to teach in junior high, middle and high school by taking a prescribed number of courses in the College of Education. These include 10 credits of supervised teaching in the public schools and specialized courses in teaching methods.

| *Curriculum* | Credits |
|---|---|
| HCS 101 | 3 |
| University core curriculum requirements | 33-36 |
| RPED 201, 204, 253, 257, 401, 403, 405, 406, 451, 452 | 24 |
| RPED 250, 251, 255, 256 | 2 |
| RPED 252, 254, 258, 259 | 2 |
| Electives | 7-11 |
| Minor requirements | 18-24 |
| Related field | 22 |
| RPED courses (additional) | 10 |
| | 128 |

## Physical Education Major With Emphasis in Dance

Students in this major seek careers in the performing arts or teaching for public and private institutions. The course of study emphasizes technique, choreography, production and teaching methods.

| *Curriculum* | Credits |
|---|---|
| HCS 101 | 3 |
| MUS 101 | 3 |
| RPED 110-122, 219, 253, 261, 262, 263, 264, 265, 363, 364, 365, 403, 461, 493 | 39 |
| THTR 119 | 3 |
| Electives | 23-26 |
| Minor requirements | 18-21 |
| University core curriculum requirements | 33-36 |
| | 128 |

## Predentistry and Premedicine Majors

This major includes course and field work that prepares the student for admission to health related graduate or professional schools such as medical school and dental school. The graduate is also prepared for advanced training in such fields as public health, health planning and administration, and community health education.

Students wishing to pursue a premedical or predental course of study should complete a bachelor of science degree. Occasionally, a student is accepted to professional school prior to completing baccalaureate degree requirements. Predental or premedical students who transfer to approved professional schools, and who wish to earn a baccalaureate degree from the University of Nevada, Reno, should refer to the Registration and Records section of this catalog under Requirements for Graduation—Resident Credits Requirement. Additional information about this option and about admission requirements for schools of dentistry and medicine are available from the Health Careers Advisement Center, Sarah Fleischmann Building, Room 214.

| *Required Courses* | Credits |
|---|---|
| *Departmental Requirements* | |
| CHS 300—Communication Skills in Health Care | 3 |
| CHS 354—Personal Health and Life Styles | 3 |
| CHS 452—Health Systems and Policy | 3 |
| CHS 462—Epidemiology | 3 |
| CHS 475—Human Values and Professional Ethics | 3 |
| S W 220—Introduction to Social Work | 3 |

| *General Requirements* | Credits |
|---|---|
| **Chemistry:** | |
| CHEM 101-102—General Chemistry | 8 |
| CHEM 343-344—Organic Chemistry | 6 |
| CHEM 345—Organic Chemistry Lab | 2 |
| **Behavioral Science:** | |
| PSY 101—General Psychology | 3 |
| PSY 441—Abnormal Psychology | 3 |
| Additional behavioral science course | 3 |
| **Biology:** | |
| BIOL 111—Organismal Biology | 4 |
| Additional credits to be selected from the following (six credits must be upper division): BIOL 112, 251, 290, 368, 414, 475, 480 | 9 |
| **Physics:** | |
| PHYS 151-152—General Physics | 6 |
| PHYS 153-154—General Physics Lab | 2 |
| **Mathematics:** | |
| MATH 213—Calculus for Science I | 3 |
| | 68 |

## Prephysical Therapy Major

The bachelor of science degree with a major in prephysical therapy is designed to meet the admissions requirements of accredited schools of physical therapy as recommended by the Council of Medical Education and the American Medical Association.

To be certified as a physical therapist, the student must complete a professional or certification program from an accredited school of physical therapy. Currently, Nevada has no such program; however, Nevada does participate in the Western Interstate Commission for Higher Education (WICHE) program to place students in physical therapy schools in the Western states. Students can apply to accredited certification programs out-of-state at the beginning of their junior year. A few schools accept transfers at the end of the junior year.

For additional information on the prephysical therapy program and the various options available to the student, contact the Health Career Advisement Center, Sarah Fleischmann Building, Room 214.

| *Required Courses* | *Credits* |
|---|---|
| *Departmental Requirements* | |
| CHS 220—Introduction to Social and Health Services | 4 |
| CHS 300—Communication Skills in Health Care | 3 |
| CHS 354—Personal Health and Life Styles | 3 |
| CHS 452—Health Systems and Policy | 3 |
| CHS 462—Epidemiology | 3 |
| CHS 475—Human Values and Professional Ethics | 3 |
| **Mathematics:** | |
| MATH 110—College Algebra | 3 |
| **Biology:** | |
| BIOL 111—Organismal Biology | 4 |
| BIOL 251—Microbiology | 3 |
| BIOL 262-263—Human Anatomy and Physiology I, II | 6 |
| **Chemistry:** | |
| CHEM 101-102—General Chemistry | 8 |
| CHEM 142-143—Introductory Organic Chemistry and Lab | 4 |
| **Recreation and Physical Education:** | |
| RPED 403—Kinesiology | 3 |
| RPED 406—Physiology of Exercise | 3 |
| **Physics:** | |
| PHYS 151-152—General Physics | 6 |
| PHYS 153-154—General Physics Lab | 2 |
| **Behavioral Science:** | |
| PSY 101—General Psychology | 3 |
| PSY 441—Abnormal Psychology | 3 |
| | 67 |

Additional electives such as statistics, human growth and development, and an additional psychology course should be selected on the basis of the requirements of the specific physical therapy schools to which the student plans to apply.

## Recreation Major

### Fitness Management Option

This option incorporates study in exercise, lifelong physical activity, human physiology and exercise, nutrition, fitness assessment, and motivation. Combining these with an understanding of business principles prepares students to work in public and private fitness centers in both management and consulting capacities.

| *Curriculum* | *Credits* |
|---|---|
| HCS 101 | 3 |
| RPED 251, 256, 257, 290, 302, 341, 342, 343, 370, 396, 403, 406, 408, 421, 492 | 38-40 |
| University core curriculum requirements | 36 |
| **Nutrition:** | |
| NUTR 121, 422c, 422d, 422e, 422f, 427 | 10 |
| **Related Subjects:** | |
| MGRS 367—Personnel Administration | 3 |
| CIS 201—Introduction to Computer Systems | 3 |
| CIS 202—Computer Information Systems Lab | 1 |
| CIS 203—Microcomputers in Business | 3 |
| ACC 201-202—Introductory Accounting I, II | 6 |
| BIOL 262-263—Human Anatomy and Physiology I, II | 6 |
| College requirements | 3 |
| Electives | 19-21 |
| | 128 |

### Municipal Recreation Option

This option prepares students to plan, organize, administer and manage intensive programs of athletic and physical fitness activities. Designing and maintaining facilities for community based recreation programs and managing parks and sports complexes for public use are included. Students find careers in state, county and city recreation programs.

| *Curriculum* | *Credits* |
|---|---|
| HCS 101 | 3 |
| University core curriculum requirements | 33-36 |
| *Major Requirements:* | |
| RPED 201—Introduction to Recreation and Physical Education | 3 |
| RPED 256—Methods in Teaching Outdoor and Recreational Games | 1 |
| RPED 257—Methods in Teaching Physical Fitness and Rhythmic Exercise | 1 |
| RPED 270—Advanced First Aid and Emergency Care | 2 |
| RPED 290—Field Experience in Recreation or Physical Education | 1 |
| RPED 302—Organization and Administration of Intramural and Recreation Programs | 2 |
| RPED 341—Planning Concepts for Outdoor Recreation | 3 |
| RPED 342—Community Recreation | 3 |
| RPED 351—Physical Education Activities for Primary Grades K-3 | 3 |
| OR | |
| RPED 352—Physical Education Activities for Intermediate Grades 4-8 | 3 |
| RPED 421—Lifetime Sports Program | 3 |
| RPED 440—Recreation Administration | 2 |
| RPED 492—Recreation Internship | 8-10 |
| Minor requirements | 18-21 |
| Electives | 32-37 |
| | 128 |

## Social Work Major

The bachelor of arts degree with a major in social work offers course and field work that prepares students for entry-level professional social work practice and licensure as a social worker in the state of Nevada upon examination. The student is also prepared for admission to graduate school in such programs as social work, public health, counseling, corrections, law, or public administration. Through the unique combination of course work and field experience, students learn the knowledge, theories, skills, and professional values that enable them to function as social workers in such programs as public assistance, child welfare, mental health, mental retardation, rehabilitation, delinquency, corrections, community development, and planning and administration.

The student is required to complete 34 credits in the department, 28 credits in required courses. The remaining six credits are elective and should be selected in consultation with an adviser. Twenty-one credits are required outside the department.

Additionally, students who major in social work must either (1) complete a fourth semester college course in a foreign language or demonstrate equivalent proficiency, or (2) complete departmental required options in cultural diversity. Specific courses in cultural diversity to meet this requirement can be determined with an adviser.

Undergraduate students interested in the social work major are admitted to premajor status. All premajors and majors are assigned to a social work adviser. Students enrolled in the School of Social Work as premajors, or who have been accepted into the major, must have their courses reviewed by an adviser before registering.

Students must apply for admission to the major by November 1 for spring semester and by April 1 for fall semester. Admission materials are available in the School of Social Work, Business Building, Room 525. To be considered for admission, students must (1) complete 56 credits with a minimum GPA of 2.0, (2) complete S W 220 and 330 with a GPA of 2.0 or higher in each course, (3) submit a formal application form and an essay discussing professional goals and potential for interpersonal/helping relationships, and (4) submit references.

Requirements for graduation with a social work major include completion of 128 credits or more with an overall GPA of 2.0 or higher and completion of all required social work courses with a 2.0 or higher in each course.

The program is accredited by the Council on Social Work Education to award the social work major at the baccalaureate level.

| *Major Interest Subject* | *Credits* |
|---|---|
| S W 220—Introduction to Social Work | 3 |
| S W 320—Individual in Society | 3 |
| S W 330-331—Methods of Social Work I, II | 6 |
| S W 390—Introduction to Research | 3 |
| S W 450—Social Welfare Policy | 3 |
| S W 480-481—Field Experience in Social Work | 10 |
| Electives in social work | 6 |
| | 34 |

| *General Requirements* | *Credits* |
|---|---|
| ANTH 101—The Human Experience | 3 |
| BIOL 100—Biology: Principles and Applications | 3 |
| PSY 101—Introduction to Psychology | 3 |
| SOC 101—Principles of Sociology | 3 |
| Three credits each in political science and economics | 6 |
| | 18 |

*Additional required courses:* The student must also meet a language proficiency requirement or take courses in cultural diversity.

# Minors and Certificate Programs

## Dance Minor

Students majoring in another field may minor in dance by completing the following:

| | *Credits* |
|---|---|
| RPED 110—Beginning Modern Dance | 1 |
| RPED 111—Intermediate Modern Dance | 1 |
| RPED 119—Jazz Dance | 1 |
| RPED 120—Beginning Ballet | 1 |
| RPED 253—Methods of Teaching Dance and Rhythms | 2 |
| RPED 261—Introduction to Dance Composition | 2 |
| RPED 262—Dance Production | 3 |
| RPED 264—History of Dance I: Primitive-19th Century | 3 |
| RPED 265—History of Dance II: 20th Century | 3 |
| RPED 362—Aesthetics and Criticism in Dance | 3 |
| RPED 364—Dance Pedagogy | 2 |
| RPED 365—Art of Performance | 2 |
| | 24 |

## Human Development and Family Studies Minor

This minor requires a total of 18-24 credits with nine credits in upper-division coursework. HDFS 274 is required. Students can select coursework to support their particular academic and professional goals.

## Nutrition Minor

Students majoring in another field may minor in nutrition by completing 18 credits from the following: NUTR 121, 223, 419, 421, 422, 426, 427, 433, 440.

## Recreation and Physical Education Minor

Students majoring in another field may minor in recreation and physical education by completing the following:

| *Minor Interest Subject* | *Credits* |
|---|---|
| RPED 201, 204, 403, 405, 406 | 12 |
| RPED 301 or 302 | 2-3 |
| RPED 250 through 259 | 3 |
| Electives | 1-3 |
| | 20-23 |

## Gerontology Certificate Program

Please refer to description of program and course requirements in the Interdisciplinary and Special Programs section of this catalog.

# Graduate Programs and Degrees

## Human Development and Family Studies Major

*Degree:* master of science

A student applying for graduate standing must meet the following academic requirements:

1) A bachelor's degree from an accredited educational institution, with course work and/or work experience in human development, interpersonal relationships, families or family economics.

2) An overall undergraduate GPA of 2.75 or higher.

3) A score of 400 or above on the verbal part of the GRE.

Within the master of science degree, students may specialize in an area of academic interest through the selection of electives and a thesis or professional paper topic. The candidate may select a thesis plan or professional paper plan. In either plan, 12 hours of credit in courses numbered 700 or above are required. The thesis results from research supervised by a member of the Department of Human Development and Family Studies who has expertise in the candidate's research area. The professional paper will include an analysis of a specific professional problem related to the candidate's area of concentration. A total of 32 credits is required as described below.

| | *Credits* |
|---|---|
| HDFS 631—Advanced Studies in Human Development and Family | 3 |
| HDFS 636—Family Interaction | 3 |
| HDFS 730—Family Theories | 3 |
| HDFS 740—Family Economics and Management | 3 |
| HDFS 771—Research Methods | 3 |
| HDFS 796—Professional Paper | 3 |
| OR | |
| HDFS 797—Thesis | 6 |
| Electives | 8-11 |
| Statistics | 3 |
| | 32 |

## Nutrition Major

*Degree:* master of science

The master of science with a major in nutrition requires 24 credits of coursework plus six credits of thesis, distributed as follows:

| | *Credits* |
|---|---|
| NUTR 725—Nutrition and Health | 3 |
| NUTR 726—Seminar in Nutrition (three semesters) | 3 |
| Research methods | 3 |
| Statistics | 3 |
| Support elective courses at 600/700 level | 12 |

Entrance requirements to this program consist of a bachelor's degree from an accredited educational institution, an undergraduate GPA of 3.0 or above, and a minimum score of 1000 on the combined verbal and quantitative portions of the GRE.

Once admitted to the program, the student will be assigned a graduate adviser who, within the first year, will assist the student to: 1) form an appropriate graduate committee which will be comprised of the student's graduate adviser, another graduate faculty member in nutrition and a third graduate faculty member from the university at large; 2) develop the course of study and submit it for approval to the student's graduate committee. The course of study must include three credits of NUTR 725—Nutrition

and Health, NUTR 726—Seminar, Statistics, and Research Methods; six credits of thesis; and 12 credits of courses in nutrition and a selected support area as biochemistry, biology, physiology, recreation and physical education, etc. (of these 12 credits, six must be at the 700 level); and 3) begin to formalize the thesis project and submit a preliminary draft of the thesis proposal to the student's graduate committee for input and approval.

The second year of graduate study should include: 1) completion of thesis research and the thesis itself; 2) completion of all coursework; and 3) completion of comprehensive and final examinations.

An 3.0 overall GPA is required to maintain progress in the master of science program. Students will also be required to take at least one credit, or in the case of graduate assistants sufficient credits to constitute full-time enrollment, in order to maintain degree progress.

### Graduate Assistantships

A limited number of graduate assistantships are provided in the department. An application for graduate assistantships can be obtained from the Department of Nutrition. In order to maintain an assistantship, students will be expected to maintain a 3.0 GPA, maintain satisfactory degree progress and perform the assistantship tasks in a satisfactory manner.

## Physical Education Major

*Degree:* master of science

The Recreation, Physical Education and Dance Department offers a graduate program leading to the master of science degree.

| | *Credits* |
|---|---|
| RPED 702—Critical Issues in Physical Education | 2 |
| RPED 703—Curriculum Construction in Physical Education | 2 |
| RPED 704—Physical Education Seminar | 2 |
| RPED 705—Physiological Bases of Conditioning Programs | 2 |
| RPED 792—Readings in Physical Education and Recreation | 2 |
| RPED 793—Independent Projects in Physical Education | 2 |
| (Prerequisite: 15 graduate credits in RPED) | |

Total credits 30 (thesis 6, coursework 24); 32 (professional paper 3, coursework 29).

Entrance requirements to this program consist of a bachelor's degree from an accredited educational institution, and an undergraduate GPA of 3.0 or higher.

Once admitted to the program, the student will be assigned a graduate adviser who, within the first year, will assist the student to: 1) form an appropriate graduate committee which will be comprised of the student's graduate adviser, another graduate faculty member in recreation, physical education, and dance and a third graduate faculty member from the university at large; 2) develop the course of study and submit it for approval to the student's graduate committee; and 3) begin to formalize the thesis project and submit a preliminary draft of the thesis proposal to the student's graduate committee for input and approval.

The second year of graduate study should include: 1) completion of the thesis; 2) completion of all coursework; and 3) completion of comprehensive and final examinations. An overall GPA of 3.0 or higher is required to maintain progress in the master of science program. Students will also be required to take at least one credit per semester, or in the case of graduate assistants, sufficient credits to constitute full-time enrollment, in order to maintain degree progress.

### Graduate Assistantships

A limited number of graduate assistantships are provided in the department. An application for graduate assistantships can be obtained from the Recreation, Physical Education and Dance Department. In order to maintain an assistantship, students will be expected to maintain a 3.0 GPA or higher, maintain satisfactory degree progress, and perform the assistantship tasks in a satisfactory manner.

Further details may be obtained from the office of the dean of the Graduate School or from the chairman of the department.

## Social Work Major

*Degree:* master of social work

The master of social work prepares students for advanced social work practice. This degree requires 60 credits of graduate coursework, which includes 18 credits of field work. A particular commitment to quality social services in public settings is evident throughout the curriculum. A wide variety of field experiences is available, including options in urban and rural settings.

Students in the graduate program must complete a core curriculum in social work and then may specialize in one of three areas of concentration: the elderly, vulnerable families, or seriously ill (mentally or physically) or isolated populations. Graduates of this program will be eligible to qualify by testing and experience for licenses as social workers, clinical social workers, and independent social workers. Students should contact the department for information about the master of social work program.

# Donald W. Reynolds School of Journalism

David Seibert, *Acting Dean*

*Faculty:* Conover, Coulson, Ellis, Frook, Highton, Howland, Land, Laxalt, Lerude, Linn, Morris, Padellford
*Visiting Faculty:* Frook, Laxalt

Journalists play a crucial role as they discover, analyze and report the events and trends that shape our society.

Professionals in the related fields of advertising and public relations provide equally important services as we rely upon them to inform us of the nature of products, companies, and public and private agencies that influence our lives.

The practice of these professions demands skill in writing and understanding of government, economy and society.

The objective of the Donald W. Reynolds School of Journalism is to help students acquire the combination of general education and journalistic skill that will enable them to pursue inquiry intelligently, treat issues fairly and communicate facts clearly.

## Bachelor of Arts Degree

Students seeking the bachelor of arts degree from the Reynolds School of Journalism must complete at least 128 credits, 40 of which must be numbered 300 or higher.

The university requires the completion of the core curriculum.

Of the 128 credits required for graduation, at least 90 credits must be in courses other than journalism and journalism related skills courses, and at least 65 must be in the liberal arts. A minimum of 30 credits must be in journalism, including courses in the journalism core and one career option, as described below.

Of journalism courses, only JOUR 101, 201 and 203 may be taken during the freshman and sophomore years. Students are urged to enroll in liberal arts courses and to satisfy requirements of the core curriculum and the journalism school's requirement for proficiency in a foreign language during the first two years of university-level study.

Journalism majors are required to pursue a second major field of study, a minor, or an approved interdisciplinary cluster of courses in an outside field.

To gain approval to major in journalism, a student must have junior standing and a GPA of 2.5 or higher. Freshmen and sophomores are classified as prejournalism majors.

Students majoring in journalism may count toward graduation no more than 15 credits taken for S/U. With the exception of journalism courses offered for S/U only, all courses satisfying specific requirements for the major must be taken for a letter grade.

## Liberal Arts Requirements

Professional journalists must have a working knowledge of the nation's cultural, literary and artistic heritage, the nature of other societies, the organization of local, state, national and international government, the effects of economic transactions and the scientific and mathematical perceptions of the ecology.

Therefore, the curriculum for journalism majors includes a strong liberal arts education. The following requirements include the university's core curriculum requirements *and* the journalism school's additional liberal arts requirements.

| Writing: | Credits |
|---|---|
| ENGL 101, 102 | 3-6 |
| **Mathematics:** | |
| MATH 105, 115, 211, 213 or 215 | 3 |
| **Economics:** | |
| ECON 101, 102 | 6 |
| **Basic Science:** | |
| BIOL 100; CHEM 101, 102, 105, 201, 202; PHYS 100, 151-153, 152-154, 201-204, 202-205 or 203-206 | 3 |
| **Behavioral Science:** | |
| PSY 101, 103; SOC 101; or ANTH 101 | 3 |
| **Environmental Science:** | |
| GEOG 103; GEOL 101; B CH 150 or ANTH 102 | 3 |
| **Political Science:** | |
| P SC 101, 211, 231, 304, 305, 308 or 309 | 3 |
| **Fine Arts:** | |
| ART 100, 116, 117; MUS 120, 121, 122, 201, 202, 203; or THTR 100 | 3 |
| **The Western Tradition:** | |
| W T 201, 202, 203 | 9 |
| **Literature:** | |
| ENGL 235, 236, 241, 244, 253, 261, 291, 292, 293, 337 or FLL 366 | 6 |
| **Philosophy:** | |
| PHIL 110, 112, 125, 130, 200, 203, 207, 211, 212, or 213 | 3 |
| **Cultural Studies:** | |
| ANTH 200, 201, 205, 464, 467, 468, 488; FR 221, GEOG 476, 487, 488, 489; GER 221; ITAL 221; JAPN 221; SPAN 221 or 222 | 3 |
| **Integrative Capstone Courses:** | |
| Select two courses from the list of capstone courses that will be identified as part of the university's core curriculum | 6 |
| **Additional Liberal Arts:** | |
| Select additional courses from those listed above or MATH 101 or ENGL 101 or any foreign language course numbered 101, 102, 203, 204, 205 or 209 | 12 |

## Outside Field of Study

Journalism majors are required to complete one of the following: a dual *major or a minor in* another department, or an approved *interdisciplinary cluster* of courses. A cluster comprises at least 18 credits of coursework, nine credits of which must be numbered 300 or above, forming a coherent plan of study of an interdisciplinary topic. The cluster must be approved by the student's adviser.

## Language Requirement

The understanding of other cultures is important to the professional journalist. Journalism majors must demonstrate proficiency in one foreign language by successfully completing a fourth-semester course in that language or by passing an examination at that level.

## GPA Requirement

As a professional school, the Reynolds School of Journalism expects students to demonstrate a solid commitment to performance and excellence.

To major in journalism, students must maintain a GPA of 2.5 or higher in all courses and specifically within the journalism curriculum. A student whose grade in a journalism course is lower than "C," and whose GPA within journalism courses is below 2.5, must repeat the course.

A student who does not satisfy the GPA requirements for two successive semesters may not register in additional journalism courses without advance written approval of the dean.

## Journalism Courses

All journalism majors must complete the courses in the journalism core, which provides basic knowledge and skills for students seeking careers in print and broadcast journalism, advertising or public relations, plus the courses in one career option. Majors may also take journalism elective courses of their choice.

Completion of the core and one career option totals 30 credits.

## The Journalism Core

The journalism core consists of the following courses:

*Freshman Year*

| | Credits |
|---|---|
| JOUR 101—Introduction to Journalism | 3 |

*Sophomore Year*

| | Credits |
|---|---|
| JOUR 201—Basic Reporting | 3 |
| JOUR 203—Advanced Reporting | 3 |

*Junior and Senior Years*

| | Credits |
|---|---|
| JOUR 303—Media Graphics | 3 |
| JOUR 401—Media Law | 3 |

## Career Options

Career option courses may be taken only by students who have junior standing, satisfy the GPA requirements and have successfully completed JOUR 101, 201 and 203. Career option courses should be taken in the sequence shown.

| *Print Journalism* | Credits |
|---|---|
| JOUR 311—Assignment Reporting | 3 |
| JOUR 313—Photojournalism | 3 |
| JOUR 411—News Editing | 3 |
| JOUR 413—History and Ethics of Journalism | 3 |
| JOUR 499—Professional Internship | 3 |

| *Broadcast Journalism* | Credits |
|---|---|
| JOUR 321—Writing News for Broadcast | 3 |
| JOUR 323—Broadcast News Writing and Production | 3 |
| JOUR 421—Radio News Reporting | 3 |
| JOUR 423—Television News Reporting | 3 |
| JOUR 499—Professional Internship | 3 |

| *Advertising* | Credits |
|---|---|
| JOUR 331—Introduction to Advertising | 3 |
| JOUR 333—Advertising Media | 3 |
| JOUR 334—Advertising Copy | 3 |
| JOUR 431—Advertising Photography and Graphics | 3 |
| JOUR 433—Advertising Case Studies | 3 |
| JOUR 499—Professional Internship | 3 |

| *Public Relations* | Credits |
|---|---|
| JOUR 313—Photojournalism | 3 |
| JOUR 341—Public Relations Principles and Practice | 3 |
| JOUR 343—Public Relations Case Studies | 3 |
| JOUR 411—News Editing | 3 |
| JOUR 441—Public Relations Problems | 3 |
| JOUR 499—Professional Internship | 3 |

## Minor in Journalism

Students majoring in another field may minor in journalism by completing the following courses:

| | Credits |
|---|---|
| JOUR 101—Introduction to Journalism | 3 |
| JOUR 201—Basic Reporting | 3 |
| JOUR 203—Advanced Reporting | 3 |
| JOUR 303—Media Graphics | 3 |
| JOUR 401—Media Law | 3 |
| Plus at least three credits from one or more of the career options shown above | 3-6 |

## Journalism Teaching

Students may prepare for the teaching of journalism in high school through a combination of courses in journalism and education. This program is offered by the College of Education.

## Accreditation

The Reynolds School of Journalism is accredited by the Accrediting Council on Education in Journalism and Mass Communications. Accreditation was first granted in 1970.

# Master of Arts Degree

The master's program in journalism prepares students for careers in the media or teaching. The student acquires research skills and develops journalistic competence. In a competitive field, such a program of study makes a valuable difference.

The program is designed to meet the needs of students of diverse academic and professional backgrounds and interests. The Reynolds School of Journalism encourages applications from those who hold degrees in other disciplines as well as those with journalism backgrounds who wish to continue their education.

## Admission Requirements

Students are admitted to the graduate program each fall semester on a competitive basis, with notification of acceptance by May 1.

A completed application and supporting credentials must be submitted directly to the university office of Admissions and Records by April 15. Supporting credentials include:

1. Official transcripts from each college and university attended.
2. Graduate Record Examination scores (from a test taken within the past five years).
3. Application fee (nonrefundable).

In addition, each applicant must provide the following information directly to the Reynolds School of Journalism for consideration with the application:

1. Letter of intent explaining study goals.
2. Three letters of recommendation.
3. Other evidence of potential for success in graduate study.

Successful applicants tend to have an undergraduate GPA of at least 3.0 (on a 4.0 scale) and a composite GRE score of at least 1,500. Primary consideration is given to the verbal and analytical sections of the GRE. One of the letters of recommendation should be from an appropriate professor at the student's undergraduate institution, appraising the applicant's capabilities for graduate work. Additional letters of recommendation from employers are acceptable. The applicant's statement of experience and interest in journalism should specify what they expect to accomplish from pursuing graduate study in journalism.

Students entering the master's program should have demonstrated writing and editing skills and have satisfactorily completed courses in media law and the history and ethics of journalism. Depending upon a student's educational and professional background, the student may be required to complete courses in these areas. If the student's GPA in these courses is below 2.5, the student must retake courses with grades of "C" or below.

## International Students

The Reynolds School of Journalism welcomes applications from international students, believing that mutual benefit is derived when students from other countries are in the program. The school also recognizes that journalism, more than many other fields, requires language skill. International students must be able to follow rapid speech both in the field and the classroom, as well as

to deal with abstract ideas communicated in English. Completion of the master's degree in journalism attests to the student's proficiency in English.

The Test of English as a Foreign Language (TOEFL) is required of international students whose native language is not English. A score of 600 or higher on the TOEFL is required for admission. The GRE is not required of students taking the TOEFL.

## Plan of Study

Prior to a student's registration for the first semester of study, a member of the journalism graduate faculty is assigned as the student's adviser. (The student may later select a different adviser.) The student and the adviser work out a plan of study that shows the direction of the student's course work and an anticipated date of completion. This plan of study becomes a part of the student's file and constitutes the terms and conditions that the student must meet for completing the degree requirements. Subsequent changes in the plan of study must be approved by the director of graduate studies.

## Writing Proficiency Examination

A writing proficiency examination is administered at the beginning of the fall semester. Students take the examination their first fall semester of graduate standing. Students who score less than 80 percent take the test again during the fall semester. Those who score less than 80 percent a second time are required to pass a prescribed undergraduate writing course with a grade of B or higher or to work with the Writing Center to correct deficiencies.

## Graduate Assistantships

Graduate assistantships are available in the Reynolds School of Journalism each year. Graduate assistants teach and assist faculty in their courses and research.

Graduate assistants receive stipends for one academic year. Stipends are accompanied by grants-in-aid which pay most of the tuition

Students applying for assistantships should file their applications with the Reynolds School of Journalism no later than April 15. Graduate assistantships are awarded only to students who are officially admitted to graduate standing. Assistantships begin in the fall semester.

## Degree Requirements

To qualify for the master of arts degree with a major in journalism, students must satisfy the following requirements:

1. Writing proficiency examination.
2. Undergraduate prerequisites, if any.
3. Core curriculum (21 credits).
4. Directed study (12 credits).
5. Maintenance of a GPA of 3.0 or higher.
6. Professional research project (four credits).
7. Project development course (two credits).
8. Oral defense of professional research project.

Of the 33 graduate credits required, at least 21 must be in courses numbered 700 or higher. Courses numbered lower than 600 are not counted toward the degree. With the exception of JOUR 797—Professional Research Project and JOUR 798—Project Development, no course may be taken for S/U.

## Directed Study

Students with undergraduate degrees in journalism or mass communication or with extensive professional experience take 12 credits in a minor field. Students without such backgrounds take journalism courses instead.

## Core Curriculum

The following courses are required for all journalism graduate students:

| *Required Courses* | *Credits* |
|---|---|
| JOUR 701—Media Research Methods | 3 |
| JOUR 702—Qualitative Research Methods | 3 |
| JOUR 797—Professional Research Project | 4 |
| JOUR 798—Project Development | 2 |
| PLUS, one journalism writing course from the following: | |
| JOUR 618—Magazine Writing | 2 |
| JOUR 707—Analytical Writing | 3 |
| JOUR 771—Technical Writing | 3 |
| JOUR 779—Literary Journalism | 3 |
| JOUR 790A—Persuasive Writing | 3 |
| JOUR 790B—Book Workshop | 3 |
| PLUS, two journalism graduate-level electives | |
| AND, 12 enrichment credits in journalism or other colleges as specified by Advisory/Examination Committee | |
| | 33 |

## Electives

Elective graduate courses in journalism include such topics as media management, advertising and public relations research, mass media history, international journalism, legal restraints on the media, television network programming, literary journalism, technical writing, public affairs reporting and magazine writing and editing.

## Maintaining Progress

Students are expected to maintain satisfactory progress toward the degree. A student's graduate record begins with the first course credited to the degree and includes all subsequent courses. Students must maintain a GPA of at least 3.0 within the core curriculum and a GPA of 3.0 or higher in all courses counted toward the degree. Students must complete all requirements within four years.

To maintain standing in the program, a student must enroll for at least one graduate-level credit during each regular semester.

## Professional Research Project

Most decision-oriented positions in journalism require a general understanding of what research is and how it can help solve problems. Increasingly, decisions are based on research, and more news stories are about research. As a result, both applied and theoretical approaches to research have taken on more significance in the decision-making process of journalism and in our understanding of the media and their use.

In light of this, each student must complete a professional research project designed to blend research with practice. Students identify a problem within the field, investigate it in a media setting and apply appropriate research procedures. The project is the capstone of the student's graduate studies.

Student submits written prospectus to the Advisory/Examination Committee, outlining the purpose and approach of the research, at least 60 days before the client affiliation. (NOTE: **the student must complete JOUR 701 or 702 before preparing the initial prospectus.)**

The Advisory/Examination Committee, chosen by the student, consists of three or more members, one from outside the Reynolds School of Journalism. The chairman must be a member of the graduate faculty of the school. Once approved by the dean of the Graduate School, membership can be changed only after approval by the dean of the Graduate School.

A consultative meeting is held between the student and the advisory committee to discuss revisions of and refinements in the prospectus. After the meeting, the committee votes to accept or

reject the prospectus. Final approval of the prospectus is required before the student can begin working with a media firm. The student whose prospectus is approved works closely with the committee in the completion of the project. This includes submitting periodic progress reports to the committee adviser while working with the media.

## Oral Defense

Upon completion of the professional research project, the master's candidate makes an oral defense of the project. It is evaluated as a measure of the student's conceptual, research and writing abilities.

The student schedules the defense, with the consent of the committee, for a date not later than two weeks before the end of spring or fall semester. All members of the committee must have adequate time to read the project document before the oral examination. The student is responsible for duplicating and distributing copies of the document to the advisory committee and making arrangements for scheduling the oral defense. Students also should make certain their academic progress sheets are filed with the director of graduate studies in journalism two weeks before the date of the oral defense.

A majority vote of the committee is sufficient to approve the project. The signatures of all the committee members must appear on the signature sheet.

The committee adviser decides whether final corrections (after the oral defense) have been made properly and checks the style and form of the final typed version. Procedures for the professional research project are the same as those for the thesis in the Graduate School section of this catalog.

Three copies of the professional research project document should be delivered to the Reynolds School of Journalism.

# School of Medicine

Robert M. Daugherty, Jr., M.D., Ph.D., *Dean*

The University of Nevada School of Medicine is one of only 20 community based medical schools in the U.S. This means that the school uses already existent clinical facilities in its clinical training programs; it owns no teaching hospital, nor does it aspire to do so. The school is designed to train capable and caring physicians who will practice primary care medicine in a community rather than an academic setting.

In a state like Nevada, with a small and scattered population, limited resources and a need for primary care physicians, the university based and community integrated model has been determined to be both philosophically and pragmatically the most practical.

Important allied health programs overseen by the school include the medical technology/clinical laboratory sciences program and the Department of Speech Pathology and Audiology.

## Baccalaureate Degree Programs

The School of Medicine offers a bachelor of science degree with majors in biochemistry, clinical laboratory science and speech pathology or audiology. The clinical training and practicum associated with these fields are fully integrated with the school's curricular structure, and students may earn their baccalaureate degrees by completing:

1. A total of 128 credits in required and elective courses. Of the 128 credits, a maximum of eight credits of combined courses in recreation and physical education and military science (below 300-level) may apply.
2. A minimum of 40 credits in courses numbered 300 or above.
3. The university core curriculum requirements.
4. The general university requirements regarding GPA and resident credit.

The number of credits taken on an S/U basis may not exceed 30. These courses may not be taken within the required areas.

In addition, a bachelor of science degree with a major in medical sciences is offered for medical students who enter after three years of university level study. The major may be completed during the two-year basic sciences curriculum provided all university and school requirements are satisfied during that time.

## Biochemistry

An undergraduate major is offered in biochemistry through the School of Medicine. This program provides the student with a well-rounded general education that emphasizes the biological and chemical sciences and strong specific training in the major field through a sequence of standard biochemistry courses during the junior and senior years. A minor in biochemistry is also available.

The bachelor of science in biochemistry prepares students for graduate study, civil service positions, industry and professional fields related to life, health, agriculture, and the medical sciences.

The curriculum for majors is shown below. Fulfillment of this program satisfies university core curriculum requirements. Students interested in the program should contact the Biochemistry Department for advisement.

*Freshman Year*

| | Credits |
|---|---|
| BIOL 111, 112 | 7 |
| CHEM 201, 202 recommended; CHEM 101, 102 accepted | 8 |
| ENGL 101, 102 | 6 |
| MATH 215 | 4 |
| Social science core course | 3 |
| Fine arts core course elective | 1 |
| | 32 |

*Sophomore Year*

| | Credits |
|---|---|
| AGEC 270 or equivalent | 3 |
| CHEM 343, 344 | 6 |
| CHEM 347, 348 | 4 |
| MATH 216 | 4 |
| PHYS 151, 152 | 6 |
| PHYS 153, 154 | 2 |
| SPCM 113 | 3 |
| W T 201—Foundations of Western Tradition | 3 |
| Elective | 1 |
| | 32 |

*Junior Year*

| | Credits |
|---|---|
| B CH 400, 417 | 8 |
| B CH 403, 404 | 4 |
| CHEM 330 | 4 |
| CHEM 353, 354 recommended; CHEM 357, 451 accepted | 6 |
| MINE 213 or equivalent | 2 |
| Biological science elective[1] | 4 |
| W T 202—The Modern World | 3 |
| Elective | 1 |
| | 32 |

*Senior Year*

| | Credits |
|---|---|
| B CH 407, 408 | 6 |
| B CH 413 | 4 |
| B CH 420, 421 | 2 |
| Biological science elective[1] | 4 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Elective (must include six credits for core curriculum capstone requirement) | 13 |
| | 32 |

## Minor in Biochemistry

Students majoring in another field may minor in biochemistry by completing the following:

| | Credits |
|---|---|
| B CH 400, 403, 404 | 8 |
| B CH 413 or 417 | 4 |
| An additional six credits in any course in the physical sciences (including additional biochemistry) | 6 |
| | 18 |

## Clinical Laboratory Science

The clinical laboratory science (CLS) curriculum is designed to provide the student with the knowledge and skills required to perform diagnostic procedures in the clinical laboratory. Emphasis is placed on the role of the clinical laboratory scientist in modern health care delivery.

Students who wish to pursue a career in clinical laboratory science are classified premajors upon admission to the university.

Students may select a two-year course of study, the completion of which allows them to enter the work force at the level of a

[1]Must be at 300 level or higher.

medical laboratory technician (MLT), or they may elect to complete a bachelor of science with a major in CLS which provides the potential for greater upward mobility and responsibility. Students may apply to the MLT program after the first semester's requirements are completed. Admission criteria include a GPA of 2.50 or higher in required courses with a C grade or better in each of these courses. Completion of the two year MLT required courses with an overall GPA of 2.00 or higher and a C grade or better in each required course culminates in a certificate of completion at the university. A similar two-year MLT program leading to an associate degree is offered through Clark County Community College (CCCC). Further information concerning the CCCC MLT program may be obtained by contacting the clinical laboratory science program at the university or the CCCC Science and Health Division.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 101—General Chemistry | 4 |
| CLS 111—Medical Terminology | 1 |
| ENGL 101—Composition I | 3 |
| MATH 115—Algebra and Trigonometry | 5 |
| | 13 |

*Second Semester*

| | Credits |
|---|---|
| BIOL 112—Cellular and Molecular Biology | 3 |
| CHEM 102—General Chemistry | 4 |
| CLS 161—Medical Laboratory Principles I | 2 |
| CLS 162—Medical Laboratory Principles II | 1 |
| ENGL 102—Composition II | 3 |
| Social science core course | 3 |
| | 16 |

*Summer*

| | Credits |
|---|---|
| CLS 251—Immunology/Immunohematology | 2 |
| CLS 252—Applied Immunology/Immunohematology | 2 |
| CLS 281—Parasitology/Mycology/Virology | 1 |
| CLS 282—Applied Parasitology/Mycology | 1 |
| | 6 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| BIOL 262—Human Anatomy and Physiology I | 3 |
| CHEM 142—Organic Chemistry | 3 |
| CHEM 143—Introductory Organic Chemistry Laboratory | 1 |
| CLS 216—Applied Instrumentation | 1 |
| CLS 221—Principles of Disease I | 1 |
| CLS 271—Clinical Microbiology | 2 |
| CLS 272—Applied Clinical Microbiology | 3 |
| | 14 |

*Second Semester*

| | Credits |
|---|---|
| BIOL 263—Human Anatomy and Physiology II | 3 |
| CLS 222—Principles of Disease II | 1 |
| CLS 241—Clinical Chemistry | 3 |
| CLS 242—Applied Clinical Chemistry | 3 |
| CLS 281—Parasitology/Mycology/Virology | 1 |
| CLS 291—Hematology | 2 |
| CLS 292—Applied Hematology | 2 |
| | 15 |

*Summer*

| | Credits |
|---|---|
| CLS 296—Clinical Practicum | 3 |

Students who wish to pursue a bachelor's degree with a major in CLS at the University of Nevada, Reno must earn a GPA of 2.50 or higher with a grade of C or better in each required course and cannot enroll in clinical laboratory science courses unless they have completed the MLT curriculum or equivalent, or have obtained permission from the instructor. Once admitted to the major, students must maintain a GPA of 2.50 or higher and must earn a grade of C or better in each major course to satisfy minimum graduation requirements. Applications for both the MLT and MT majors are reviewed by the CLS faculty and students are accepted on the basis of academic achievement and space available in the programs. Students who do not meet the above criteria for acceptance may appeal to the Medical Technology Advisory Council for provisional consideration. Transfer students are considered by means of interview and transcript evaluation to determine equivalence of prerequisite course content. The CCCC MLT program fully articulates with the bachelor CLS program at the University of Nevada, Reno and students who successfully complete the MLT curriculum at either institution may enter the bachelor's program at the university.

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 330—Analytical Chemistry | 4 |
| CLS 317—Principles of Laboratory Supervision/Management | 2 |
| CLS 352—Advanced Immunohematology Laboratory | 1 |
| PHYS 152—General Physics | 3 |
| W T 201—Foundations of Western Tradition | 3 |
| Fine arts core course | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| B CH 400—Introductory Biochemistry | 4 |
| CLS 301—Biometry | 1 |
| CLS 371—Advanced Clinical Microbiology | 2 |
| CLS 372—Advanced Clinical Microbiology Laboratory | 2 |
| W T 202—The Modern World | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| | 15 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| CIS 202—Computer Information Systems Laboratory | 1 |
| CLS 391—Advanced Hematology | 2 |
| CLS 392—Advanced Hematology Laboratory | 1 |
| CLS 425—Instrumentation | 1 |
| Core curriculum capstone course | 3 |
| Elective | 3 |
| | 11 |

*Second Semester*

| | Credits |
|---|---|
| CLS 431—Immunology | 3 |
| CLS 432—Serology Lab | 1 |
| CLS 441—Clinical Chemistry | 3 |
| CLS 442—Clinical Chemistry Lab | 1 |
| Core curriculum capstone course | 3 |
| | 11 |

*Summer*

| | Credits |
|---|---|
| CLS 496—Clinical Practicum | 15 |

During the course of study, all students in the program (certificate and bachelor's degree) are required to enroll in a clinical practicum and are assigned to affiliated hospital laboratories for practical experience. Students must successfully complete these rotations which include satisfactory performance in all clinical laboratory disciplines. A passing score on a comprehensive examination given at the completion of the clinical practicum is required for all students wishing to graduate with a bachelor's degree.

Students who satisfactorily complete either program are eligible to take the appropriate generalist certification examination given by various certifying agencies. For further information concerning the CLS curriculum, contact the Clinical Laboratory Science Department, Room 300, Mackay Science Building, (702) 784-4846.

## Speech Pathology and Audiology

The baccalaureate degree program (B.S.) with a major in speech pathology (including an option in audiology) is a *preprofessional* program. A master's degree is considered essential for *professional* competence. A minimum of 38 credits in speech pathology and audiology and 125 clock hours of supervised practicum with individuals who present a variety of communicative disorders is required. In addition, 20 credits in related areas such as anthropology, mathematics, nursing, biology, physical sciences, psychology, special education, linguistics, sociology, or semantics must be completed, and each student must satisfy the university core curriculum requirements, and demonstrate adequate ability to work with children having articulation and language disorders.

| *Required Courses* | *Credits* |
|---|---|
| SPA 259—Phonetics | 3 |
| SPA 310—Speech and Language Development | 3 |
| SPA 356—Survey of Speech Pathology | 3 |
| SPA 357—Communication Science | 3 |
| SPA 359—Assessment of Communication Disorders | 3 |
| SPA 360—Methods of Clinical Management | 3 |
| SPA 361—Articulation Disorders | 3 |
| SPA 362—Introduction to Audiology | 3 |
| SPA 363—Practicum in Speech Pathology | 4-8 |
| OR | |
| SPA 459—Seminar in Clinical Procedures | 2 |
| SPA 463—Internship in Speech Pathology and Audiology | 6-8 |
| SPA 466—Rehabilitation for Hearing Handicapped | 3 |
| SPA 467—Language Disorders in Children | 3 |

All majors are required to have their programs approved by a faculty adviser within the Speech Pathology and Audiology Department.

For additional information on the baccalaureate program in speech pathology and audiology, contact the department chairman, Room 108, Mackay Science Building.

# Graduate Programs

## Master of Science Degree Programs

## Biochemistry

The Biochemistry Department offers graduate degree programs through the College of Agriculture and the School of Medicine.

### General Requirements for Admission

Applicants with a bachelor's degree in the physical or natural sciences having at least three credits each in biology and organic chemistry and meeting the requirements of the Graduate School may be accepted in biochemistry. Before completing the requirements for the master's degree, students must have completed the following courses or their equivalents: one year of physics; one year of biology, botany, zoology or physiology; and CHEM 343, 344, 347, 348, 330, 353, 354.

### Course Work

A minimum of 30 credits, including six credits of thesis, is required. In addition, the candidate must submit a written thesis and pass a given number of written cumulative exams and an oral defense of thesis.

| *Required Courses* | *Credits* |
|---|---|
| B CH 613, 617—Biochemistry of Macromolecules, Metabolic Regulation | 8 |
| B CH 790—Seminar | 2 |
| B CH 797—Thesis | 6 |
| *Required Selectives* | |
| B CH 701, 702, 711, 712—Experimental Biochemistry, Biochemical Techniques[1] | 5 |
| B CH 718, 722, 752—Plant Metabolism, Metabolism, Mitochondrial Structure and Function[1] | 3 |
| B CH 705, 731, 740, 751—Molecular Genetics, Physical Biochemistry, Enzymology, Nucleic Acids[1] | 3 |
| Additional electives | 3 |
| | 30 |

All students must have their curricular programs approved by a supervisory committee. For additional information, contact the Biochemistry Department, Room 145, Howard Building, School of Medicine.

## Cell and Molecular Biology

The cell and molecular biology program is an interdisciplinary program with participating faculty from the School of Medicine and Colleges of Agriculture and Arts and Science. The program consists of a variety of disciplines which involve research at a cell and/or molecular biology level. Programs of study are offered that lead to the master of science, doctor of philosophy, or a combined M.D./Ph.D. degree.

Specific information and course requirements are located in the Interdisciplinary and Special Programs section of the catalog.

## Cellular and Molecular Pharmacology and Physiology

The cellular and molecular pharmacology and physiology program is an interdisciplinary option within the pharmacology graduate program with participating faculty from the School of Medicine and College of Human and Community Science. The program trains students in the disciplines of pharmacology and physiology involving research at cellular and molecular levels. The program of study offered leads to the doctor of philosophy degree.

Specific information and course requirements are located in the Interdisciplinary and Special Programs section of this catalog.

## Speech Pathology and Audiology

### General Requirements for Admission

The master of science (M.S.) degree program is designed to provide a professional level of competency in speech pathology. Each applicant must meet the general admission requirements for graduate standing as described in the Graduate School section. Each student is expected to complete a concentration of course work in speech pathology and audiology, subject to approval of the department, prior to admission to graduate standing. This program is accredited by the Educational Standards Board (ESB) of ASHA.

### Course Work

A minimum of 40 academic credits must be completed at the graduate level. The thesis program, Option A, requires a minimum of 34 course credits plus six credits of thesis, and a comprehensive oral examination covering the thesis and background information.

The nonthesis program, Option B, requires a minimum of 40 academic course credits. A comprehensive oral and written examination covering communication science, the normal speech and hearing processes, pathologies, and clinical procedures is given to each student early in the last semester of course work. A student completing the program with a master's degree must plan to acquire the background and experience necessary to pass the American Speech Language and Hearing Association national examination to be recognized and certified as a competent speech pathologist or audiologist. Graduate students must complete a minimum of 300 clock hours of supervised clinical experience at

[1]Select any combination for a total of required credits.

the graduate level and a total of 400 supervised clock hours for both graduate and undergraduate programs.

An approved program in speech pathology and audiology (which meets national certification requirements) is developed by the graduate adviser, supervising committee, and the student, from the following courses:

| | Credits |
|---|---|
| SPA 659—Seminar in Clinical Procedures | 2 |
| SPA 660—Aspects of Speech Pathology and Audiology | 1 |
| SPA 661—Advanced Speech Pathology | 2 |
| SPA 663—Internship in Speech Pathology and Audiology | 6-8 |
| SPA 664—Practicum in Audiological Testing | 2 |
| SPA 665—Medical Audiology | 3 |
| SPA 666—Rehabilitation for Hearing Handicapped | 3 |
| SPA 667—Language Disorders in Children | 3 |
| SPA 720—Introduction to Graduate Study | 3 |
| SPA 721—Craniofacial Disorders | 3 |
| SPA 751—Dysphasia | 3 |
| SPA 752—Stuttering | 3 |
| SPA 753—Communication Disorders in the Cerebral Palsied | 3 |
| SPA 754—Seminar in Physical Anomalies | 2 |
| SPA 757—Experimental Phonetics | 3 |
| SPA 759—Seminar in Clinical Procedures | 2 |
| SPA 762—Disorders of Voice | 3 |
| SPA 765—Advanced Audiology | 3 |
| SPA 767—Advanced Practicum | 2 |
| SPA 768—Seminar in Audiology | 3 |
| SPA 769—Seminar in Audiological Measurements | 2 |
| SPA 794—Workshops and Institutes | 1-3 |
| SPA 780—Independent Study | 1-3 |
| SPA 797—Thesis | 1-6 |

All students must have their programs approved by a departmental graduate adviser and supervisory committee.

For additional information on the graduate program in speech pathology and audiology, consult the department chairman, Room 108, Mackay Science Building.

*Early Childhood Special Education Endorsement*—students interested in working with young children with special needs may be interested in completing the interdisciplinary courses which lead to a Nevada teaching endorsement in early childhood special education. Additional information and specific courses are provided in the interdisciplinary section of this catalog.

## Doctor of Philosophy Degree Programs

### Biochemistry

The Biochemistry Department offers the Ph.D. degree either in the College of Agriculture or the School of Medicine.

#### General Requirements for Admission

All applicants for admission as Ph.D. students must satisfy the general requirements of the Graduate School and must complete courses satisfying the prerequisites in chemistry, biology, and physics before they can be advanced to candidacy.

#### Course Work

A minimum of 72 credits, including 24 credits of dissertation work, is required. In addition, students must pass a specified number of cumulative exams and an oral comprehensive exam in order to be advanced to candidacy.

| *Required Courses* | Credits |
|---|---|
| B CH 613, 617—Biochemistry of Macromolecules, Metabolic Regulation | 8 |
| B CH 790—Seminar | 3 |
| B CH 799—Dissertation | 24 |

| *Required Selectives* | Credits |
|---|---|
| B CH 701, 702, 711, 712[1]—Experimental Biochemistry, Biochemical Techniques[1] | 5 |
| B CH 718, 722, 752[1]—Plant Metabolism, Metabolism, Mitochondrial Structures and Function[1] | 6 |
| B CH 705, 731, 740, 751[1]—Molecular Genetics, Physical Biochemistry, Enzymology, Nucleic Acids[1] | 6 |
| 20 credits of additional electives to total 72 credits | |

All students must have their curricular programs approved by a supervisory committee. For additional information, contact the Biochemistry Department, Room 145, Howard Building, School of Medicine.

### Cell and Molecular Biology

The cell and molecular biology program is an interdisciplinary program with participating faculty from the School of Medicine and Colleges of Agriculture and Arts and Science. The program consists of a variety of disciplines which involve research at a cell and/or molecular biology level. Programs of study are offered that lead to the master of science, doctor of philosophy, or a combined M.D./Ph.D. degree.

Specific information and course requirements are located in the Interdisciplinary and Special Program section of the catalog.

### Pharmacology

A master of science and doctor of philosophy degree in pharmacology is offered with the option in cellular and molecular pharmacology and physiology. (See Interdisciplinary and Special Programs.)

### Combined M.D./Ph.D.

A combined M.D./Ph.D. degree program is offered with majors in anatomy, biochemistry, cellular and molecular biology, pharmacology, and physiology.

#### General Requirements for Admission

Candidates may be accepted to the M.D./Ph.D. program only after being accepted to the School of Medicine as a regular M.D. student and if they meet the criteria for admission to the Graduate School. Application to the M.D./Ph.D. program is made via the normal process for admission to the School of Medicine. An additional application must be submitted to the M.D./Ph.D. program committee and the Graduate School.

Additional information about the M.D./ Ph.D. program can be obtained from the Department of Pharmacology, Howard Building, School of Medicine.

# Professional Degree Programs

## Four-year Medical School Program

#### General Information

The School of Medicine was established in 1969 on the Reno campus as a two-year basic sciences program and was authorized to convert to a four-year, M.D. degree-granting school in 1977 by the Nevada State Legislature. In 1980, the school graduated the first class of physicians trained completely in Nevada.

The school emphasizes the development of primary care physicians who will provide comprehensive and longitudinal health care, meeting the needs of the individual, the family and the community. The school is dedicated to selecting and training individuals who will provide health care with both competence and compassion.

Classes, laboratories and clinical activities take place in a combination of on-campus buildings and community health facilities in northern, southern and rural Nevada. Affiliation agreements

[1]Select any combination for a total of required credits.

with hospitals located throughout Nevada provide students with access to clinical facilities totaling nearly 2,000 beds.

The School of Medicine is fully accredited by the Liaison Committee on Medical Education.

The primary goal of the school is to educate sensitive, caring, responsible physicians capable of delivering high-quality health care. Students are taught to be sensitive to their own needs as individuals and as physicians, to the needs of their families and friends and to the needs of their patients and their patients' families. The curriculum emphasizes interviewing and interpersonal skills that will heighten this sensitivity.

It is expected that Nevada's new physicians will feel a responsibility not only to treat the ill but also to become leaders in the efforts to promote and maintain health in the community in which they practice.

The four-year curriculum at Nevada is divided into two components: the basic sciences and the clinical sciences.

### The Basic Science Years

During the first two years, students are provided with opportunities to learn the facts and concepts essential to the practice of medicine from seven basic sciences—biochemistry, behavioral sciences, anatomy, physiology, microbiology, pathology and pharmacology; the elementary skills necessary for entering the clinical years; and methods of integrating basic and clinical sciences.

This first goal is accomplished by providing basic science courses, two or three at a time, as depicted in the illustration.

A second goal, that of learning clinical skills, is accomplished in two ways. Four courses are offered to introduce students to the clinical setting. Students interact with patients within the first three weeks in medical school and continue such experiences throughout the first two years.

A third goal, that of integration, is an underlying feature throughout the curriculum. In addition to the integration which occurs during normal course work and examinations, a specific course entitled "Biomedical Problem Solving" is taught on a four-week cycle throughout years one and two. This course presents students with a number of common medical problems around which they learn to apply basic science content information and concepts. The biomedical problem-solving course is interdepartmental in nature and is taught by faculty whose content expertise most readily matches the problem for that week.

*First Year*

| | Credits |
|---|---|
| B CH 601-602—Human Biochemistry | 9 |
| ANAT 601—Human Anatomy | 6 |
| ANAT 602—Human Anatomy | 3 |
| ANAT 603—Human Anatomy | 4 |
| PCHY 601—Human Behavior I | 3 |
| PCHY 660—Introduction to Clinical Medicine | 3 |
| PHSY 601—Human Physiology | 6 |
| PHSY 602—Human Physiology | 5 |
| MED 601—Biomedical Problem Solving | 4 |
| MED 670—Physical Diagnosis I | 2 |
| FCM 601—Nutrition Applications | 1 |
| FCM 663—Primary Care Preceptorship | 4 |
| | 50 |

*Second Year*

| | Credits |
|---|---|
| MICR 601—Medical Microbiology | 9 |
| PHAR 601—Medical Pharmacology | 9 |
| PATH 601—General Pathology | 4 |
| PATH 602—Systemic Pathology | 6 |
| PATH 603—Laboratory Medicine | 2 |
| PATH 604—Laboratory Medicine | 2 |
| PCHY 602—Human Behavior II | 4 |
| MED 602—Advanced Biomedical Problem Solving | 4 |
| MED 673—Physical Diagnosis II | 2 |
| FCM 676—Community Health | 3 |
| | 45 |

At the end of the second year, students are required to take Part I of the National Board of Medical Examiners examination. Students must earn a passing score to continue the second semester of the third year.

### The Clinical Years

The second two years of medical school are spent in Reno, Las Vegas and outlying areas in the clinical setting, i.e., in doctors' offices, the affiliated hospitals and university-operated ambulatory care centers. The school requires the following clinical rotations: family and community medicine, eight weeks; internal medicine, 12 weeks; obstetrics and gynecology, eight weeks; pediatrics, eight weeks; psychiatry, eight weeks; and surgery, 12 weeks.

Students are required to take the internal medicine and surgery rotations during the third year and must also select three of the four eight-week rotations during the third year. The remaining eight-week rotation is taken during the fourth year.

These rotations are conducted under close supervision of medical school full-time, part-time and volunteer faculty and residents.

*Required Clerkships Third and Fourth Year*

| | Credits |
|---|---|
| IMED 451, 651—Clerkship | 12 |
| SURG 451, 651—Clerkship | 12 |
| OBGY 451, 651—Clerkship | 8 |
| PEDI 451, 651—Clerkship | 8 |
| PCHY 451, 651—Clerkship | 8 |
| FCM 451, 651—Clerkship | 8 |
| | 56 |

*Additional Required Clinical Courses*

| | Credits |
|---|---|
| FCM 461a | 4 |
| Electives | 24 |
| | 28 |

In the fourth year, students choose (in addition to the final rotation) a number of elective courses, both in and out of state, to develop depth and breadth in their clinical training. These choices are based on their interests, potential strengths and desire to enhance clinical skills. Students also spend a required four-week rotation with a rural Nevada physician in order to become acquainted with the practice of medicine and the lifestyle in a small community, removed from the influences, facilities and contacts shared in an urban setting.

Also in the fourth year, Part II of the National Boards must be taken.

## Requirements for Entrance

Since the medical school utilizes the centralized application service of the Association of American Medical Colleges (AAMC), students must submit their applications through the American Medical College Application Service (AMCAS). AMCAS applications may be obtained from the Health Career Advisement Office, Office of Medical School Admissions or the AAMC, 1776 Massachusetts Avenue, Northwest, Washington, D.C. 20036. On completion, the application must be sent directly to AMCAS. DEADLINE IS NOVEMBER 1.

The Medical College Aptitude Test (MCAT) is required of all applicants. This exam is offered twice yearly, once in the spring and once in the fall. Registration packets for the MCAT may be obtained from the Testing Services Office or from the Medical School Admissions Office. The MCAT must be taken within three years of the date of anticipated matriculation and no later than the fall prior to the year of anticipated entrance. **NOTE: Because of the recent revision of the MCAT, all applicants must take the 1991 MCAT. MCAT's prior to 1991 will not be accepted.** In addition to the MCAT,

a minimum of three years of college work (90 semester hours) is required. The Admissions Selection Committee strongly recommends completion of a baccalaureate degree.

| *Requirements for application include:* | *Semester Credits* |
|---|---|
| Chemistry (including 8 credits of organic) | 16 |
| Biology | 8 |
| Physics | 8 |
| Behavioral Sciences (three credits of the behavioral science requirement must be upper-division) | 6 |

Students should utilize courses that deal with the psychological stages of the life cycle in fulfillment of the behavioral science requirement (i.e., human growth and development, adolescence, aging, human sexuality, abnormal psychology, family dynamics, or medically oriented sociology). Supplementary courses strongly recommended as useful to the study or practice of medicine but *not required* for admission, include history, literature, philosophy, ethics, and computer science.

A demonstrated competency in English composition and expression is required. Generally, students are expected to satisfy the English composition requirements of their undergraduate institution.

Accepted students are responsible for completing all prerequisite course work prior to matriculation. Testing out of a class (CLEP or A.P.) and/or receiving pass/fail or audit in lieu of a letter grade is not acceptable for required courses.

Application during the summer is strongly encouraged.

## Selection Factors

Candidates are evaluated on the basis of academic performance, performance on the MCAT, the nature, breadth and depth of scholarly, extracurricular and health care related activities during college years, excellence and balance of the natural sciences, social sciences, and humanities; academic letters of evaluation, and the personal interview if requested by the Admissions Selection Committee. A high priority is given to legal residents of Nevada. A small number of out-of-state applicants are considered each year who have a strong residential tie to Nevada, or who are residents of Alaska, Idaho, Montana or Wyoming, which are Western, rural states without medical schools. Individuals who do not meet these residential requirements are discouraged from applying to the University of Nevada, Reno. Non-U.S. citizens must have permanent resident visas and be Nevada residents to be considered.

# Departments and Faculty

The School of Medicine has seven basic science and seven clinical science teaching departments. Interaction among the sciences provides a well-balanced approach to health care education.

## Anatomy

*Faculty:* Highison, Melarkey, Schneider (Ch.), Stratton, Tibbitts
*Clinical Faculty:* Fogel

## Biochemistry

*Faculty:* Ahmad, Ball, Blomquist, Borgeson, Bowman, Condit, Cramer, DeLisle, Dreiling, Harrington, Heisler, Horodyski, Lewis, Miller, Nichol, Pardini, Reitz, Schooley, Seemann (Ch.), Welch, Winicov, Woodin
*Adjunct Faculty:* Bornhop, Lightner, Pritsos, St, Jeor, Wakayama

## Clinical Laboratory Science

*Faculty:* Holmer, Kiehn, Maehara (Prog. Dir.), Wakayama
*Clinical Faculty:* Barnes, Content, Donahoo, Ernaga, Fisher, Hammon, Lods, Nikolaisen

## Family and Community Medicine

*Faculty:* Anderson, Antone-Knoll, Applebaum, Balvin, Bargen, Barken, Bloomfield, Buckley, Campton, Carlson, Chamberlain, Clark, Coughlin, Dankworth, Delionback, A. Dingacci, R. Dingacci, Edgcomb, Elam, Evans, Fales, Fenwick, Gummer, Hardy, Harn, Harrlson, Hess (Ch.), Higgs, Hoskins, Ingle, Inskip, J.L. Johnson, J. Johnson, Jonak, Jones, Kreisler, Lemieux, Levinger, Leviseur, Lewis, Malone, Mann, McBeath, McLennan, Millman, Mirkil, Moller, Moren, O'Shaughnessy, Owen, Owensby, Panicari, Parra, Patterson, Pennelle, Peterson, Pierczynski, Plunkett, Reimer, Rose, Rosen, Rosenberg, Ross, Shreck, Shumaker, Silver, D. Smith, W. Smith, Sonderegger, Stafford, Stoloff, Straus, Sugino, Thompson, Tietz, Tueller, Uhalde, Van Dyken, Tobel, Watson, Weisner, Weiss, B. Wilkin, J. Wilkin, Winch, Wirges

## Internal Medicine

*Faculty:* Bernstein, Blanchard, Boyer, Brogan, Brown, Bryg, Bumbaca, Busby, Carmichael, Cinque, R. Daugherty, Desai, Eaton, Ellerton, Gillespie, Gingold, Goodman, Graze, Greenhouse, Hall, Heaton, Hershewe, Hruska, Key, Kurtz, Lardinois, MacKintosh, Peacock, Peck, Pixley, N. Pokroy, Raskin, Schlegelmilch, S. St. Jeor, Shah, Shane (Ch.), Speck, Speer, Starich, Stewart, Toffel, Yoneda, Zanjani, Zell, Zweig
*Clinical Faculty:* Adams, Adan, Allen, Anderson (Emeritus), Andrews, Anjum, Arcotta, Arger, Baggett, Barg, Barnet, Bentley, Berndt, Bigley, Boman, Bowers, Brookhyser, Bross, Brown, Buckley, Cade, Calvanese, Campbell, Cameron, Carmena, Carrera, Caudill, Chambers, Chanderraj, Chemplavil, Christianson, P. Clark, R. Clark, Climer, Coker, Cole, Correa, Cross, Culhane, Cunningham, DaVee, Davis, DeBello, K. Desai, Diedrichsen, Dieringer, Dietrich, DiFore, DiPalo, Drummer, Edwards, Evert, Evins, Fabella, Falk, Fayad, Fazekas, Feld, Fialkow, Fuller, Futamachi, Ganchan, Gansert, Gardner, Gilbreath, Glavor, Goring, Graves, Grenn, Grisby, Gross, Haga, Haikal, Hamlin, Handke, Hardwick, Heeren, Held, Hill, Hogle, Hope, Humphrey, Hunter, Ismail, Jackson, P. Jacobs, T. Jacobs, Johnson, Jorna, Joya, Kane, Kantor, Karch, Kehne, Krause, Lagstein, LaMancusa, Landow, Lehrner, Lund, MacDonald, Marston, Mashhood, McMahon, Miller, Moore, More, Morrill, Morrison, Muntha, Myles, Nemec, M. Newmark, S. Newmark, Nicke, Noble, Nogueira, Norman, Nuttal, Odaimi, O'Neill, O'Rourke, Palitang, Parker, Pathi, Pendegast, Perer, Pinto, Pitterman, Pourzan, Povolny, Prabhu, Prupas, Read (Emeritus), Reagan, Reddy, Roberts, Roth, Sage, Savran, Schiff, Scoville, Scully, Seher, Shields, Shin, Shoen, Sieren, Simrod, Siragusa, L. Smith, R. Smith, S. Smith, Soong, Spring, Standlee, Steljis, Swarts, Thomas, Thompson, Thornley, Torok, Treanor (Emeritus), Uhl, Van Epps, Vicks, Washinsky, Weigel, Whipple, Williamson, G. Wilson. Wing, Wright, Young, Zebrack

## Medical Library

*Faculty:* Zenan (Dir.)

## Microbiology

*Faculty:* Courchesne, Hall, Henry, Hudig, Kozel (Ch.), Lupan, Nichol, St. Jeor, Winicov

## Obstetrics-Gynecology

*Faculty:* Aberman, Clark, Kelly, Rojas, Shapiro, Sheld, Lipshitz, Wrightson (Acting Ch.)

*Clinical Faculty:* Ames, Anes, Avery, Beck, Belliveau, Berman, Boruszak, Bossak, Bower, Braly, Carlson, Chotiner, DiSala, Drake, Erickson, Fortier, Garcia, Glick, Groom, B. Hecht, F. Hecht, Ho, Huneycutt, Johnson, Jones, Klose, Knutzen, Mabey, McGaw, Naughton, Parker, Proctor, Recine, Resnick, Rettenmaier, Robertson, Rueckl, Sher, Soloway, Stapleton, Steele, Turner, Voyevidka, Wagner, Zak

## Office of Rural Health

*Faculty:* C. Ford, S. Semiatin

## Pathology and Laboratory Medicine

*Faculty:* Anderson, Clark, Laubscher, Mackey, Malin (Course Coordinator, Pathology), Manalo, Morris, O'Donnell, Palosaari, Parks (Course Coordinator, Laboratory Medicine), Ritzlin (Vice Ch.), Sohn (Ch.), Stock, Varga, Westerberg, Young
*Clinical Faculty:* Anes, Belliveau, Bolstad, Butler, Callister (Emeritus), Clark, Erling, Green, Hall, Hoffman, Hollander, Manilla, McCarty, McCusker, McMullen, Molden, Mulkey, Salvadorini (Emeritus), Scholes, Schrader, P. Scully, Sewell, Slaughter, Small, Soloway, Unger, Wilkes

## Pediatrics

*Faculty:* Artman, Chaney, Feldman, Frank, Johnson, Kurlinski, Larson, Lazerson (Ch.), Milbeck, Morris, Peele, Peterson, Quddus, Scott, Scully
*Clinical Faculty:* Ahn, Barnes, Batra, Bernstein, Buchanan, Cannon, Cardle, Carlile, Carter, Cass, Clift, Colletti, Coopersmith, Cortez, Davis, Diedrichsen, Dinwiddie, Downey, Dudding, Ekpoudia, Evans, Farwig, Flynn, Fontana, Gharavi, Gilbert, Gioia, Gordon, Greenwood, Halpern, Horsley, Hug-English, Jackson, Jain, Jolley, Kehne, LeGro, Mahon, Miller, Monibi, Mousel, Mujica, Nelson, Neyland, Pemberton, Pintar, Premsrirut, Rajnovich, Roitman, Rosenstein, Rothstein, Shapiro, Stoker, Thomas, Toth, White, C. Winder, J. Winder, Zenteno, Zucker

## Pharmacology

*Faculty:* Billings, Bjur, Buxton, Craviso, Gerthoffer, McCalden, Sutko, Westfall (Ch.)

## Physiology

*Faculty:* Carl, Horowitz, Hume, Keef, Kenyon, Lardinois, Peacock, Publicover, Sanders (Ch.), Simmonds, Standish, Starich, Vogalis, Ward, Zanjani

## Psychiatry and Behavioral Sciences

*Faculty:* Altrocchi, Antonuccio, Boutilier, Brannan, Chappel, Chatham, Danton, Giere, Harris, Johnson, Kiel, Mahaffey, Makakian, Marino, May, Miller, Parker, Pauly (Ch.), Pope, Rahe, Shon, Small, Smith, Stodola, Van Biber, Veach, Worby, Young, Zimmerman
*Clinical Faculty:* Adamski, Agre, Bhoothalingom, Bittker, Cardillo, K. Clark, O. Clark, Dillon, Foster, Glovinsky, Gould, Gutride, Horne, Howle, Irwin, Jensen, Kershul, Lynn, Marchant, Nims, Ocskay, Orchow, Podewils, Rasul, Roitman, Sheehan, Tanenbaum, Taylor, Terry, Warren, Weeks, Weiher, White
*Visiting Faculty:* D. Smith, Mauksch, Saslow

## Radiology

*Faculty:* Barcia (Dir.), Darrah
*Clinical Faculty:* Amante, Bandt, Boyden, Dziob, Eckel, Golding, Hueftle, Isaac, Kollins, Kremp, Lane, Laughlin, Leary, Martin, Miercort, Miller, Mulopulos, Pretto

## Speech Pathology and Audiology

*Faculty:* Golberg, McFarlane (Ch.), Paynter, Summer, Tyler, Uken, Vogel, K. Watterson, T. Watterson
*Clinical Faculty:* Ahlstrom, Brophy, Dooley, Dyches, Stoker, Trimmer, West

## Surgery

*Faculty:* Ames, Billings, Little (Ch.), Marshall, McGregor, Savlov, Swain
*Clinical Faculty:* Allie, Ameriks, Banich, Baranoff, Batdorf, Bell, D. Berry, R. Berry, Black, Bomberger, Boyers, Brady, Bradner, Braunstein, Bray, Brophy, Brouwers, B.N. Brown, Bruce, Buchwald, Bunch, Buzzard, Caffereta, Cammack, Capanna, Carr, Cavell, Cavin, Cecchi, Chino, Chowdry, D. Christensen, G. Christensen, J.L. Christensen, Clark, Class, Clift, Colgan, Colletti, Colquitt, Cone, Coppola, Cox, Cunningham, Curry, Dales, J. Daugherty, Dawson, Detmer, Dombrowski, Dooley, Doubrava, Dow, Dudek, Ebert, Edmiston, Egtedar, Ellis, Erculei, Ewing, Fathie, Feikes, Fisher, Fogel, Follmer, Ford, Fouse, Fry, Gainey, Gillespie, Glass, Gomez, Gott, Grace, Greenberg, Greenwald, Guy, Gwinn, Hall, Halvorson, Hamilton, Hammargren, Handsfield, Harris, Hastings, Herz, Hetter Higgins, Hood, Hyde, Hyer, Iliescu, Jain, Randall Jones, Roger Jones, Roy Jones, Stephen Jones, Jordan, Juell, Khan, Kemp, Kien, Littoin, Long, Lurie, Mack, Mahon, Markman, Marone, McClish, McCuskey, McDonald, McElreath, Megquier, Mechant, Merino, Merriman, Millson, Milstein, Moore, Morelli, Morgan, Mortenson, Moss, Mousel, Nelson, Nehman, Niebaum, Nielsen, Noback, Orr, Ozobia, Pantazis, Parker, Parlasca, Perry, Plecha, Pratt, Prentice, Pretto, Prutzman, Ram, Reinkemeyer, Robbins, Roberson, Rosenauer, F. Russell, R.F. Russell, Rydell, Sande, Sargent, Schanz, Schonder, Schultz, Scott, Seip, Selsnick, Serfustini, Shields, Simpson, J. Smith, L. Smith, Soper, Sparkuhl, Steadman, Stevens, Strand, Swanson, Swissman, Tangredi, Tappan, Tapper, Tate, Teipner, Thalgott, Thompson, Thornton, Tofigh, Twesme, Vacca, Vitez, Vowles, Walker, Walsh, Ward, Warpinski, J. Warpinski, Waters, Watson, West, Westfield, Williams, Winne, Winter, Yeaton, Young, Zigich, Zivot

■

# Mackay School of Mines

Richard C. Bradt, *Dean*

*Departments of Instruction:* chemical and metallurgical engineering, computer science, geological sciences, and mining engineering.

## Objectives

A major portion of the economy of Nevada is directly tied to mineral production within the state. Availability of strategic mineral and energy resources to the national industrial base is now a matter of universal concern. A national concern for preservation of environmental quality dictates the use of wise and efficient technologies for development and production of nonrenewable resources. The primary objective of Mackay School of Mines is to provide a comprehensive education for geoscientists and mineral resource engineers seeking professional careers in the mineral and energy industries. The school also has a mission to develop highly select, competent research scientists who will provide new insights into the origin of mineral and energy resources and their distribution in space and time, and to produce outstanding geoscientists who will make major contributions to improving understanding of the origin and evolution of the solid earth. The presence of the Computer Science Department within the Mackay School of Mines insures the inclusion of the latest in high technology to its academic programs.

The curricula of the Mackay School of Mines are rigorous and demanding. Students desiring to enter the school should be well prepared in mathematics, physics and chemistry. Although the emphasis is on preparation for professional fields, courses for a well-rounded general education are built into the curricula.

## Auxiliary Organizations

The Mackay School of Mines' two new buildings, the 60,000 square-foot $11.1 million Laxalt Mineral Engineering Center and the 80,000 square-foot $9.6 million Laxalt Mineral Research Center, house classrooms and undergraduate and advanced laboratories for mining, chemical and metallurgical engineering and geological sciences. The laboratories are equipped with the latest modern and sophisticated research equipment. The original Mackay School of Mines, after renovation is completed, will house the expanded G.W. DeLaMare Mines and Engineering Library, the W.N. Keck Mineral Museum, and administrative offices of the Mackay School of Mines.

The G.W. DeLaMare Mines and Engineering Library supports undergraduate studies and graduate research in all disciplines. The W.N. Keck Mineral Museum has rare collections of minerals, Nevada ores, and fossils which are extensively used in teaching and research by faculty and students. The Nevada Bureau of Mines and Geology, Seismological Laboratory and Mackay Mineral Resources Research Institute share facilities in the same building complex. Teaching staff and laboratory facilities are augmented through programs conducted with the Water Resources Center and the U.S. Bureau of Mines which have large research centers on or near the campus. Close contact is also maintained with other state and federal agencies, as well as over 100 geological, geophysical, exploration, engineering, metallurgical, mining and petroleum companies having offices in the Reno area.

## Degrees

Students may graduate with degrees in any of the curricula offered by the school as listed at the time of admission or graduation. The choice of electives must meet the approval of the department in which enrollment occurs, and in general, electives should be chosen to broaden the student's education in humanities and social studies or fields of study related to the major subject rather than to increase specialization in it. Undergraduate degrees are usually conferred within a field of concentration.

Required social studies or humanities electives must be selected from the prescribed list of courses.

Students desiring to pursue an academic minor follow the sequence of courses prescribed by the minor department and approved by the student's academic adviser.

A baccalaureate student enrolled in the school may earn and apply a maximum of 30 credits of S/U grades only in social studies, humanities, nontechnical electives, and a very few approved technical courses. These may be transferred or taken at the University of Nevada, Reno and must be approved by the student's adviser.

The curricula leading to the bachelor of science degrees in chemical engineering, geological engineering, metallurgical engineering, and mining engineering are accredited by the Accreditation Board for Engineering and Technology, which is the agency accrediting engineering curricula throughout the U.S. and is recognized by the Council on Postsecondary Accreditation

The Mackay School of Mines offers study programs which enable students to earn the following degrees:

### Bachelor of Science

Chemical engineering, computer science, geology, geological engineering, geophysics, metallurgical engineering, mining engineering

### Master of Science

Computer science, geology, geological engineering, geochemistry, geophysics, hydrology and hydrogeology, metallurgical engineering, mining engineering

### Doctor of Philosophy

Geology and related earth sciences, geophysics, hydrology, hydrogeology, and metallurgical engineering

## Professional Engineering Degrees

The professional engineering degrees, Geological Engineer (Geol.E.), Metallurgical Engineer (Met.E.), and Engineer of Mines (E.M.), may be conferred upon graduates of the Mackay School of Mines or upon graduates of other institutions who have obtained the master of science degree in engineering from the university. Applicants must have been engaged in successful engineering work in positions of responsibility for a period of at least five years in the case of holders of the B.S. degree or four years for holders of the M.S. degree, and must submit theses showing ability to conduct advanced engineering work. These are not considered when they are merely investigations in literature, compilations of routine laboratory tests, or presentations of the work of others.

Professional engineering degrees may also be conferred upon graduates of the Mackay School of Mines and upon graduates of other engineering colleges of equal standing, who, after graduation, have been engaged for a period of at least one year in successful engineering work In a position of responsibility and who subsequently complete successfully one year of graduate work in engineering, including thesis, at the university.

Formal application for graduation with a professional engineering degree must be filed with the registrar not later than the beginning of the second semester of the year in which the degree is sought, and must be approved by the faculty of the Mackay School of Mines and by the dean of the graduate school. The application must be accompanied by detailed and satisfactory evidence as to the extent and character of the applicant's professional work. The thesis must have the general form prescribed for the master's thesis or must be a reprint of an article appearing in a reputable professional journal. The thesis or publication in final form must be approved by a committee appointed by the graduate dean and must be presented to the faculty of the Mackay School of Mines and to the dean of the graduate school at least eight weeks before the date set for conferring the degree.

# CHEMICAL and METALLURGICAL ENGINEERING (CH E, METE)

*Faculty:* Bautista, Bradt, Chandra, Fuerstenau, Hendrix, Jones (Ch.), Misra, Reddy, Smith
*Adjunct Faculty:* Carnahan

## Bachelor's Degrees

### Chemical Engineering

Chemical engineers apply the basic principles of chemistry, physics, mathematics and related engineering disciplines to the production of goods and materials for the needs of society. A new graduate in chemical engineering has the capability for contributing immediately to these needs in industry or for pursuing advanced academic training. Graduates of the chemical engineering program in Mackay School of Mines are highly sought after by the mineral and process industries. In addition to the required 38 credits in chemical engineering, 26 credits in chemistry, 10 in physics, 16 in mathematics and computer programming, 12 in related engineering, and 24 in social science, students may select nine credits in technical and mathematical electives of special interest.

In addition to the general university requirement of a C average or higher, the student must have a C average or higher for all courses identified as CH E and METE for graduation.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| CH E 101—Industry Orientation Lectures | 1 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| EC 101—Principles of Macroeconomics (or EC 102) | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| C S 113—Computer Applications for Engineers and Scientists | 2 |
| CHEM 202—General Chemistry for Scientists and Engineers | 4 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 17 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| CH E 232—Principles of Metallurgical and Chemical Engineering | 3 |
| CHEM 343—Organic Chemistry | 3 |
| MATH 217—Calculus III | 4 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| W T 201—Foundations of Western Culture | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| CH E 361—Chemical Engineering Thermodynamics | 4 |
| CHEM 330—Analytical Chemistry | 4 |
| CHEM 344—Organic Chemistry | 3 |
| MATH 320—Differential Equations (or M E 300) | 2 |
| PHYS 203—Physics for Scientists and Engineers III | 3 |
| W T 202—The Modern World | 3 |
| | 19 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| CH E 372—Fluid Mechanics Lab | 1 |
| CH E 373—Fluid Mechanics | 3 |
| CH E 441—Heat Transfer Lab | 1 |
| CH E 484—Heat Transfer | 3 |
| CHEM 353—Physical Chemistry | 3 |
| M E 241—Statics | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| CH E 442—Mass Transfer Lab | 1 |
| CH E 450—Techniques of Process Design and Economics | 3 |
| CH E 493—Mass Transfer | 3 |
| CHEM 354—Physical Chemistry | 3 |
| CHEM 355—Physical Chemistry Lab | 3 |
| E E 201—Introduction to Network Analysis | 3 |
| Fine arts core course | 3 |
| | 19 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| CH E 440—Chemical Reactor Design | 3 |
| CH E 451—Control of Process Systems | 3 |
| CH E 470—Process Equipment Design | 3 |
| CH E 494—Equilibrium Stage Operations | 3 |
| Technical electives[1] | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| C E 372—Strength of Materials | 3 |
| CH E 482—Design Project | 3 |
| M E 242—Dynamics | 3 |
| Mathematics technical elective[2] | 3 |
| Social studies or humanities | 3 |
| Technical electives[1] | 3 |
| | 18 |

Total credits required, 134. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Materials Science and Engineering

Materials science and engineering includes elements from most other engineering disciplines, and the demand for professionals in this field has been growing rapidly. Engineers trained in materials are at the forefront in the development of materials needed to contain ultra-high temperatures and pressures in aircraft, space-

[1]Technical electives may be selected in a field of special interest to the student; they must be approved by the adviser and the department chairman.

[2]The courses in the mathematics technical elective category are: MATH 251, 321, 330, 353; M E 402, 403.

craft, and energy generation systems. Electronic, photovoltaic, and superconductor devices, which make possible, for example, electronic integrated circuitry in modern computers, would not have been possible without the development of new materials. Even greater technological advances based on development of new and improved materials are promised for the future. Thus, materials science and engineering is at the "cutting edge" of our high technology society. Countless new industries will be fostered by developments in materials science and engineering during the coming decades.

The program in materials science and engineering requires the basic preparation in chemistry, physics and mathematics in the first two years common to other bachelor of science degrees in the department. Early in the sophomore year, students are taught the principles of the atomic and microscopic structure and properties of metallic, ceramic, polymeric (plastic), composite, and electronic materials. Advanced instruction in all these types of materials follows in later years, as well as specialized courses in crystal structure, mechanical and physical properties of materials, corrosion, and solid state reactions. The program allows the graduate to choose among a number of careers, including materials processing and manufacturing, materials selection for advanced applications, and design and development of new materials. Outstanding graduates are also qualified to pursue advanced graduate study in this department or in any of the best graduate materials science and engineering programs in the nation.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| EC 102—Principles of Microeconomics | 3 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| METE 101—Industry Orientation Lectures | 1 |
| Social science elective | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C S 113—Computer Applications for Engineers and Scientists | 2 |
| CHEM 202—General Chemistry | 4 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab | 1 |
| | 17 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| M E 241—Statics | 3 |
| MATH 217—Calculus III | 4 |
| METE 232—Principles of Metallurgical and Chemical Engineering | 3 |
| METE 350—Elements of Materials Science | 3 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| CH E 361—Thermodynamics | 4 |
| M E 299—Differential Equations | 3 |
| METE 416—X-ray Diffraction | 3 |
| PHYS 203—Physics for Scientists and Engineers III | 3 |
| PHYS 206—Physics for Scientists and Engineers Lab III | 1 |
| W T 201—Foundations of Western Culture | 3 |
| | 17 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 343—Organic Chemistry | 3 |
| CHEM 363—Physical Chemistry | 3 |
| GEOL 211—Mineralogy | 3 |
| METE 310—Transport Phenomena | 4 |
| METE 460—Physical Metallurgy I | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| CHEM 354—Physical Chemistry | 3 |
| CHEM 442—Polymer Chemistry | 3 |
| METE 450—Technical Process Design | 3 |
| METE 461—Physical Metallurgy II | 3 |
| METE 472—Introduction to Ceramics | 3 |
| | 15 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| M E 446—Composite Materials | 3 |
| METE 401—Corrosion of Metals | 3 |
| METE 420—Physical Properties of Crystals | 2 |
| METE 430—Solid State Kinetics | 3 |
| METE 470–Process Equipment Design | 3 |
| W T 202—The Modern World | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| E E 201—Introduction to Network Analysis | 3 |
| METE 482—Design Project | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Fine arts core elective | 3 |
| Mathematics/computer science elective | 3 |
| Technical elective | 3 |
| | 18 |

Total credits required, 135. Military science courses numbered below 300 and recreation, physical education and dance courses do not apply to this total.

## Minor in Materials Science

The Department of Chemical and Metallurgical Engineering offers an undergraduate minor in materials science for students majoring in engineering and physical sciences. Materials selection and the relationship between structure and properties of materials are often critical in the development of new technologies in engineering and the physical sciences. The university requires at least 18 credits in the minor field of study, nine of which must be in upper-division 300- or 400-level courses. The department requires that a minimum 12 credits of the 18 be taken within the Department of Chemical and Metallurgical Engineering from the list below. The remaining six or more credits may be taken from the second list of approved courses in other departments. Any of the 18 credits may also satisfy other requirements in the undergraduate major.

An adviser must be selected from the department to approve student plans for the minor in cooperation with the regularly assigned adviser in the major field of study. To receive official recognition of the minor, a student must request such recognition on the Application for Graduation.

| *Required Courses* | Credits |
|---|---|
| C E 246—Construction Materials | 3 |
| C E 369—Non-Metallic Testing Laboratory | 1 |
| C E 372—Strength of Materials | 3 |
| C E 374—Materials Testing Laboratory | 1 |
| C E 420—Advanced Portland Cement Concrete | 3 |
| C E 431—Pavement Design Rehabilitation and Maintenance | 3 |
| CHEM 442—Polymer Chemistry | 3 |
| E E 202—Materials in Electrical Engineering | 2 |
| M E 430—Materials | 2 |
| M E 445—Advanced Mechanics | 3 |
| M E 446—Composite Materials | 3 |
| METE 332—Unit Processes of Chemical Metallurgy | 3 |
| METE 350—Elements of Materials Science | 3 |
| METE 401—Corrosion of Metals | 3 |
| METE 416—X-ray Metallography | 3 |
| METE 460—Physical Metallurgy I | 3 |
| METE 461—Physical Metallurgy II | 3 |
| METE 472—Introduction to Ceramics | 3 |
| PHYS 421—Modern Physics | 3 |

| | |
|---|---|
| PHYS 426—Introduction to Solid State Physics | 3 |
| PHYS 473-474—Electricity and Magnetism | 6 |

## Metallurgical Engineering

Metallurgical engineers apply the principles of science, mathematics and engineering to the extraction, refining, and utilization of metallic and non-metallic substances from their naturally occurring ores. A new graduate in metallurgical engineering has the capability for contributing immediately to industry needs or for advanced academic training. In addition to the required 49-52 credits in metallurgical and related chemical engineering, 18 credits in chemistry, seven in physics, 19 in mathematics and computer programming, nine-12 in related engineering and science, 24 in social studies, English, and the humanities, students may select five credits of technical electives of special interest.

In addition to the general university requirement of a C average or higher, the student must have a C average or higher for all courses identified as CH E and METE for graduation.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| ENGL 101—Composition I | 3 |
| MATH 215—Calculus I | 4 |
| METE 101—Industry Orientation Lectures | 1 |
| EC 101—Principles of Macroeconomics (or EC 102) | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| C S 113—Computer Applications for Engineers and Scientists | 2 |
| CHEM 202—General Chemistry | 4 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 17 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 330—Analytical Chemistry | 4 |
| W T 201—Foundations of Western Culture | 3 |
| MATH 217—Calculus III | 4 |
| METE 232—Principles of Metallurgical and Chemical Engineering | 3 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| CH E 361—Chemical Engineering Thermodynamics | 4 |
| E E 212—Introduction to Electrical Engineering | 3 |
| MATH 320—Differential Equations | 2 |
| M E 241—Statics | 3 |
| METE 350—Elements of Material Science | 3 |
| W T 202—The Modern World | 3 |
| | 18 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| C E 372—Strength of Materials | 3 |
| CHEM 353—Physical Chemistry | 3 |
| GEOL 211—Mineralogy (or METE 460) | 3 |
| METE 373—Fluid Mechanics | 3 |
| METE 484—Heat Transfer | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| | 18 |

*Second Semester*

| | Credits |
|---|---|
| CHEM 354—Physical Chemistry | 3 |
| METE 322—Mineral Processing I | 3 |
| METE 324—Mineral Processing Lab | 1 |
| METE 450—Techniques for Process Design and Economics | 3 |
| METE 461—Physical Metallurgy II | 3 |
| METE 493—Mass Transfer | 3 |
| | 16 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| CH E 440—Chemical Reactor Design | 3 |
| METE 410—Extractive Metallurgy I-Pyrometallurgy | 3 |
| METE 411—Pyrometallurgy Lab | 1 |
| METE 431—Extractive Metallurgy II-Hydrometallurgy | 3 |
| METE 470—Process Equipment Design | 3 |
| Fine arts core course | 3 |
| | 19 |

*Second Semester*

| | Credits |
|---|---|
| METE 416—X-ray Diffraction | 3 |
| METE 482—Design Project | 3 |
| Mathematics technical elective[1] | 3 |
| Social studies or humanities | 3 |
| Technical electives[2] | 5 |
| | 17 |

Total credits required, 134. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Advanced Degrees

The department offers individual programs leading to the master of science and doctor of philosophy degrees in metallurgical engineering. The general university requirements for these advanced degrees are listed in the Graduate School section.

To be accepted as a graduate student, a bachelor's degree from an accredited college or university is required. For full graduate standing, at least 30 credits of undergraduate work in metallurgy, chemical engineering, and/or related science must have been completed. In addition, the student must qualify in at least one of the following requirements: (1) GPA of 2.75 in the four years of undergraduate work, (2) GPA of 3.0 for the last two years of undergraduate work, or (3) acceptable scores on the verbal and quantitative parts of the Graduate Record Examination aptitude test, with letters of recommendation from former instructors indicating capability for advanced course work and research.

Prospective students are advised to write directly to the chairman, Department of Chemical and Metallurgical Engineering, with an outline of major interests, experience and transcripts. Formal application is completed through the Office of Admissions and Records.

The department has several graduate fellowships, research assistantships, and teaching assistantships. Requests for assistance should be submitted prior to March 15, but all applications will be considered regardless of date of submission.

In order to assure well-balanced training and experience, all graduate students are required to participate in teaching and research.

# COMPUTER SCIENCE (C S)

*Faculty:* Brady, Egbert, Evans, Hong, Hooper, Langsner, Looney, Wishart (Act. Ch.)
*Adjunct Faculty:* Pinsky, Tacker, Sarbin

The department offers courses leading to a bachelor of science in computer science degree and master of science with a major in

[1]The courses in the mathematics technical elective category are: MATH 251, 321, 330, 353; M E 402, 403.

[2]Technical electives may be selected in a field of special interest to the student; they must be approved by the adviser and the department chairman.

computer science. An undergraduate minor in computer science is also offered.

## Bachelor of Science in Computer Science

The bachelor of science in computer science requires a foundation in mathematics and science, and is based on a carefully designed curriculum that closely follows nationally recommended standards for undergraduate computer science. Freshmen and sophomore students who want to major in computer science are designated as precomputer science majors upon admission to the university. They may be accepted later into the computer science major based upon academic performance.

| *Required Courses* | *Credits* |
|---|---|
| C S 183, 283, 285, 333, 336, 386, 387, 431, 485, 486, 495, 496 | 37 |
| CHEM 101[1]; PHYS 201,[1] 202, 203, 204,[1] 205, 206; E E 330 | 17 |
| MATH 215,[1] 216, 217, (307 or 320), 330, 352, 381 | 24 |
| *Technical Electives (select 15 credits)* | |
| C S 437, 481, 482, 483, 484, 487, 488, 489, 493; CH E 434; E E 422, 423, 424, 427, 428, 439, 481, 484; MATH 307, 435, 452, 453, 454; PHYS 355, 466 | 15 |
| | 93 |

The following curriculum is suggested for students pursuing the BSCS and indicates which semester upper division computer science courses may be offered.

*Freshman Year*
*First Semester*

| | *Credits* |
|---|---|
| C S 183—Introduction to Computer Science I | 4 |
| CHEM 101—General Chemistry | 4 |
| ENGL 101—Composition I[1] | 3 |
| MATH 215—Calculus I | 4 |
| | 15 |

*Second Semester*

| | *Credits* |
|---|---|
| C S 283—Introduction to Computer Science II | 3 |
| ENGL 102—Composition II[1] | 3 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Engineering Physics I | 3 |
| PHYS 204—Engineering Physics Lab I | 1 |
| University core requirement | 3 |
| | 17 |

*Sophomore Year*
*First Semester*

| | *Credits* |
|---|---|
| C S 285—Introduction to Computer Systems | 3 |
| MATH 217—Calculus III | 4 |
| MATH 352—Probability and Statistics | 3 |
| PHYS 202—Engineering Physics II | 3 |
| PHYS 205—Engineering Physics Lab II | 1 |
| University core requirement | 3 |
| | 17 |

*Second Semester*

| | *Credits* |
|---|---|
| C S 386—Programming Languages | 3 |
| MATH 330—Linear Algebra I | 3 |
| MATH 381—Discrete Math | 3 |
| PHYS 203—Engineering Physics III | 3 |
| PHYS 206—Engineering Physics Lab III | 1 |
| University core requirement | 3 |
| | 16 |

*Junior Year*
*First Semester*

| | *Credits* |
|---|---|
| C S 333—Computer Logic Design | 3 |
| C S 387—Introduction to the Theory of Computation | 3 |
| General elective | 2 |
| Technical elective | 3 |
| University core requirement | 6 |
| | 17 |

*Second Semester*

| | *Credits* |
|---|---|
| E E 330—Computer Logic Lab | 1 |
| C S 336—Microprocessors | 3 |
| MATH (307 or 320)—Symbolic Logic or Differential Equations | 3 |
| General elective | 3 |
| Technical elective | 3 |
| University core requirement | 3 |
| | 16 |

*Senior Year*
*First Semester*

| | *Credits* |
|---|---|
| C S 485—Analysis of Algorithms | 3 |
| C S 486—Principles of Operating Systems | 3 |
| C S 495—Software Engineering | 3 |
| General elective | 2 |
| Technical elective | 3 |
| University core requirement | 3 |
| | 17 |

*Second Semester*

| | *Credits* |
|---|---|
| C S 431—Digital Computer Architecture | 3 |
| C S 496—Senior Projects | 3 |
| General Elective | 3 |
| Technical Electives | 6 |
| | 15 |

Total credits required, 130.

## Bachelor of Science with a Major in Computer Science

For students with majors in science and engineering the department offers computer science as a second major. This major is limited to students whose primary major is mathematics, physics, chemistry, biology, biochemistry, geology, geophysics or any of the seven fields of engineering offered at the university. The course requirements for the major are:

| | |
|---|---|
| C S 183—Introduction to Computer Science I | 4 |
| C S 283—Introduction to Computer Science II | 3 |
| C S 285—Introduction to Computer Systems | 3 |
| C S 333—Computer Logic Design | 3 |
| C S 386—Computer Programming Languages | 3 |
| C S 387—Introduction to the Theory of Computation | 3 |
| C S 485—Analysis of Algorithms | 3 |
| C S 486—Principles of Computer Operating Systems | 3 |
| Computer science courses numbered 300 or above | 9 |
| | 34 |

## Minor in Computer Science

The computer science minor is open to all students and consists of C S 183, 283, 285, plus nine credits of upper division, computer science course work. A maximum of three credits from C S 489 or C S 493 may be applied towards the minor. Students completing the minor have a strong technical foundation upon which to build further expertise in computer science and to strengthen their understanding of the applications of computers in their major disciplines.

## Master of Science Degree

The purpose of the program is to provide an integrated course of study and research leading to the degree of Master of Science with a major in computer science. The program is concerned with the investigation into the fundamental properties of digital information processing systems and their applications, with an emphasis on both hardware and software aspects. Current interests of the faculty include: image processing, computability and complexity,

[1]Satisfies university core requirements.

computer aided design and simulation, programming languages, numerical analysis, operating systems, computer networks, neural networks, real time scheduling, functional programming, distributed and parallel computing, human-computer interface, fuzzy logic, machine learning, intelligent systems, and software engineering.

A student accepted into the program is expected to have met requirements for a bachelor's degree in engineering, mathematics, or science, and have experience which includes at least the equivalent of the computer sciences minor. The department may also prescribe other prerequisites for admission to the program for any student whose undergraduate degree is not in computer science. Further information may be obtained by contacting the department.

# GEOLOGICAL SCIENCES (GEOL)

*Faculty:* Anderson, Brune, Carr, Cochran, Firby, Hibbard, Hsu, E. Jacobson, R. Jacobson, Karlin, Larson, Noble, Schultz, Schweickert, Taranik, Trexler, Watters (Ch.), Wheatcraft
*Adjunct Faculty:* Hardyman, McCarthy, Raines

## Bachelor's Degrees

The curricula leading to the degree of bachelor of science include geology, geological engineering, and geophysics.

## Geology

The curriculum leading to the degree of bachelor of science in geology is offered primarily for those students who wish to obtain a broad education in geology and related basic sciences. The proper choice of electives permits the student to emphasize certain phases of geology, such as "hard rock," "soft rock," or environmental studies. These electives must be approved by the adviser.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| MATH 213—Calculus for Science I (or MATH 215) | 3-4 |
| ENGL 101—Composition I | 3 |
| Foreign language[1] | 4 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| GEOL 103—Physical Geology Lab | 1 |
| | 14-15 |

*Second Semester*

| | Credits |
|---|---|
| MATH 214—Calculus for Science II (or MATH 216) | 3-4 |
| ENGL 102—Composition II | 3 |
| Foreign language[1] | 4 |
| GEOL 102—History of the Earth | 4 |
| | 14-15 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 201—General Chemistry for Scientists and Engineers | 4 |
| Foreign language[1] | 2-3 |
| GEOL 211—Mineralogy | 3 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| Computer course | 2-3 |
| | 15-17 |

*Second Semester*

| | Credits |
|---|---|
| CHEM 202—General Chemistry for Scientists and Engineers | 4 |
| Foreign language[1] | 2-3 |
| GEOL 212—Elementary Petrology | 3 |
| Geology elective | 2-3 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| | 15-17 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 332—Structural Geology | 4 |
| GEOL 468—Sedimentology | 3 |
| W T 201—Foundations of Western Culture | 3 |
| EC 101—Principles of Macroeconomics (or EC 102) | 3 |
| Fine arts core course | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| EC 101—Principles of Macroeconomcis I (or EC 102) | 3 |
| GEOL 341—Geomorphology | 3 |
| GEOL 450—Field Methods | 1 |
| GEOL 469—Principles of Stratigraphy | 3 |
| G E 385—Geological Engineering Data Analysis | 3 |
| W T 202—The Modern World | 3 |
| | 16 |

*Summer Camp*

| | Credits |
|---|---|
| GEOL 451—Summer Field Geology | 6 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 425—Advanced Mineralogy | 4 |
| GEOL 461—Invertebrate Paleontology | 4 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Electives | 3-6 |
| | 14-17 |

*Second Semester*

| | Credits |
|---|---|
| Economic Geology (G E 484, or GEOL 471) | 3-4 |
| Geology elective | 3-4 |
| Electives | 6-9 |
| | 12-17 |

Total credits required, 128. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Geological Engineering

The curriculum leading to the degree of bachelor of science in geological engineering is designed to develop professional abilities in both engineering and the geological sciences. The program provides instruction in both geology and engineering before specialization in the senior year. A geotechnical option in the civil, mining petroleum, and consulting engineering fields, or a resources and environment option, allied to the mineral industries, and environmental planning, may be selected. Technical electives approved by the adviser provide flexibility within either option.

Seniors are required to take the engineers-in-training examination.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 101—General Chemistry | 4 |
| ENGL 101—Composition I | 3 |
| G E 106—Introduction to Geological Engineering | 1 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| GEOL 103—Physical Geology Lab | 1 |
| MATH 215—Calculus I | 4 |
| | 16 |

[1]Foreign language requirement is the same as the College of Arts and Science.

*Second Semester*

| | Credits |
|---|---|
| CHEM 102—General Chemistry | 4 |
| GEOL 102—History of the Earth | 4 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 16 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| EC 101—Principles of Macroeconomics (or EC 102) | 3 |
| G E 385—Geological Engineering Data Analysis | 3 |
| GEOL 211—Crystallography-Mineralogy | 3 |
| MATH 217—Calculus III | 4 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| ENGL 102—Composition II | 3 |
| GEOL 212—Elementary Petrology | 3 |
| M E 241—Analytic Mechanics for Engineers | 3 |
| M E 299—Differential Equations | 3 |
| W T 201—Foundations of Western Culture | 3 |
| Fine arts core course | 3 |
| | 18 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| C E 372—Strength of Materials | 3 |
| C S 113—Computer Applications for Engineers and Scientists | 2 |
| G E 483—Geological Engineering Slope Stability | 4 |
| GEOL 332—Structural Geology | 4 |
| GEOL 468—Sedimentology | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| C E 141—Engineering Measurements | 3 |
| C E 367—Elementary Fluid Mechanics | 3 |
| C E 492—Soil Mechanics | 3 |
| GEOL 341—Geomorphology | 3 |
| M E 371—Thermodynamics I (or equivalent) | 3 |
| Technical electives[1] | 2 |
| | 17 |

*Summer Camp*

| | Credits |
|---|---|
| GEOL 451—Summer Field Geology | 6 |

*Senior Year*
*(Geotechnical Option)*
*First Semester*

| | Credits |
|---|---|
| G E 478—Computer Applications in Geological Engineering | 3 |
| G E 479—Earthquake Engineering | 3 |
| G E 484—Groundwater Hydrology | 3 |
| SPCM 113—Fundamentals of Speech Communication | 3 |
| W T 202—The Modern World | 3 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| G E 485—Geological Engineering: Support and Stabilization Techniques | 4 |
| GEOL 487—Geological Engineering Design | 4 |
| GEOL 492—Geophysical Exploration | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Technical electives[2] | 3 |
| | 17 |

*Senior Year*
*(Resources and Environment Option)*
*First Semester*

| | Credits |
|---|---|
| GEOL 425—Advanced Mineralogy | 4 |
| GEOL 480—Environmental Geology | 3 |
| Social studies or humanities | 6 |
| Technical electives[2] | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| G E 485—Geological Engineering Support and Stabilization Techniques | 4 |
| GEOL 471—Ore Deposits | 3 |
| GEOL 492—Geophysical Exploration | 3 |
| SPCM 113—Fundamentals of Speech Communication | 3 |
| Social studies or humanities | 3 |
| | 16 |

Total credits required, 138. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Geophysics

The curriculum leading to the degree of bachelor of science in geophysics is offered because of a strong interest among students, industry, and research organizations for trained personnel in such fields as gravity, magnetic and electrical, seismic exploration, theoretical seismology and electromagnetic remote sensing. Basic skills in physics and mathematics; as well as geology and geophysics, are required for this major. Optional courses are offered for students planning to continue beyond the B.S. degree.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| CHEM 101—General Chemistry (or CHEM 201) | 4 |
| ENGL 101—Composition I | 3 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| GEOL 103—Physical Geology Lab | 1 |
| MATH 215—Calculus I | 4 |
| | 15 |

*Second Semester*

| | Credits |
|---|---|
| CHEM 102—General Chemistry (or CHEM 202) | 4 |
| GEOL 102—History of the Earth | 4 |
| MATH 216—Calculus II | 4 |
| PHYS 201—Physics for Scientists and Engineers I | 3 |
| PHYS 204—Physics for Scientists and Engineers Lab I | 1 |
| | 16 |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| C S 113—Applications for Engineers and Scientists | 2 |
| ENGL 102—Composition II | 3 |
| GEOL 211—Mineralogy | 3 |
| MATH 217—Calculus III | 4 |
| PHYS 202—Physics for Scientists and Engineers II | 3 |
| PHYS 205—Physics for Scientists and Engineers Lab II | 1 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| EC 102—Principles of Microeconomics | 3 |
| GEOL 212—Elementary Petrology | 3 |
| GEOL 290—Elementary Geophysics and Geodynamics | 3 |
| MATH 320—Differential Equations | 2 |
| PHYS 203—Engineering Physics III | 3 |

[1]Technical electives are to be selected from an approved list obtainable from each student's adviser.

[2]Technical electives common to both options: C E 493; GEOL 446, 493; MINE 241, 246, 301, 488. Additional technical electives for geotechnical option: GEOL 471, 480. Additional technical electives for reources and environment option: GEOL 479, 484, 489.

| | |
|---|---|
| PHYS 206—Engineering Physics Lab III | 1 |
| Fine arts core course | 3 |
| | 17 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 332—Structural Geology | 4 |
| PHYS 351—Mechanics | 3 |
| PHYS 355—Physical Electronics | 3 |
| W T 201—Foundations of Western Culture | 3 |
| Technical electives[1] | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| GEOL 450—Field Methods | 1 |
| GEOL 492—Geophysical Exploration | 3 |
| M E 403—Partial Differential Equations in Engineering | 3 |
| PHYS 352—Mechanics | 3 |
| PHYS 466—Introduction to Microcomputer Interfacing | 3 |
| W T 202—The Modern World | 3 |
| | 16 |

*Summer Camp*

| | Credits |
|---|---|
| GEOL 451—Summer Field Geology | 3 or 6 |

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 455—Physics of the Earth | 3 |
| GEOL 490—Elementary Seismology | 3 |
| PHYS 473—Electricity and Magnetism | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Geology elective (469, 471, 482) | 3-4 |
| | 15-16 |

*Second Semester*

| | Credits |
|---|---|
| GEOL 456—Physics of the Earth | 3 |
| GEOL 491—Earthquake Seismology | 3 |
| GEOL 494—Geophysics and Potential Theory | 3 |
| Social studies or humanities | 3 |
| Technical electives[1] | 3 |
| | 15 |

Total credits required, 130. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Advanced Degrees

The department offers master of science and doctor of philosophy degrees in geology and related earth sciences, geophysics, hydrology and hydrogeology and master of science in geological engineering. The general university requirements for all advanced degrees are listed in the Graduate School section. Additional specific requirements are outlined in the four programs described below.

### Foreign Language Requirements

In some instances, the student's Advisory Examining Committee may require a demonstration of ability to read and comprehend the technical literature in a second foreign language.

### General Admission Procedures

To be accepted as a graduate student, a bachelor's degree from an accredited college or university is required. For full graduate standing, at least 30 credits of undergraduate work in geology and/or related fields must be completed.

Minimum departmental requirements for *consideration of application* are: 1) an undergraduate four-year GPA of 2.75 or a 3.0 GPA for the last two years of undergraduate study; 2) GRE combined score of 1050 or higher in verbal plus quantitative sections; 3) Advanced GRE score of 580 or higher (applicants for advanced degrees in hydrogeology and geological engineering are not required to take the advanced examination). The applicant must fulfill all requirements of the Office of Admissions and Records and, in addition, must: 1) have three letters of recommendation sent to the chairman of the department certifying the ability of the applicant to perform graduate-level work; 2) send the chairman a brief letter specifying the area(s) of interest in the geological sciences in which study is desired. *Complete applications* (with letters of recommendation) must be received no later than March 15 for fall semester admission or October 15 for spring semester admission.

The Ph.D. program requires an overall GPA of 3.0 or higher. Provisional admission is permitted with GPAs below 3.0 in exceptional cases. Other requirements are the same as listed for the master's degree. For general requirements, the student is referred to the Graduate School section.

Detailed descriptions of the graduate programs, staff interests, and research facilities are available upon request from the chairman of the Department of Geological Sciences. Prospective students are encouraged to write directly to the chairman, and submit an outline of major interests, experience, and transcripts Formal application is completed through the Office of Admissions.

The department has a variety of graduate fellowships, research assistantships, and teaching assistantships. Although most requests for assistance should be submitted prior to March 15, many assistantships are awarded at irregular intervals throughout the year and all applications are considered regardless of date of submission.

### Master of Science and Doctor of Philosophy Degrees in Geology; Master of Science Degree in Geological Engineering

The student may work with either a major or major-minor program in geology or geological engineering, whichever is more appropriate to the individual's goals and basic training. In addition to advanced degrees listed below, specialization can include one or more of such fields as active tectonism, earth science, engineering geology, exploration geophysics, economic geology, geochemistry, hydrogeology, mineral exploration, mineralogy, ore deposits, paleontology, petrography and petrology of igneous and metamorphic rocks, sedimentation, seismology, stratigraphy, volcanology, etc. The location of the university campus at the edge of the Basin and Range and Sierra Nevada geological provinces gives it a unique advantage for field or regional studies. The exceptionally complete chemical, geophysical, hydrologic, petrographic, atomic absorption, paleomagnetic, DTA, X-ray, SEM and other facilities make it possible to undertake laboratory studies in geochemistry, geophysics, hydrogeology, mineralogy, mineralization, petrography, and petrochemistry.

Students enrolled in a master's program are required to take the department's comprehensive examination no later than their third semester. Examinations required for the Ph.D. degrees are outlined in the Graduate School section of this catalog.

### Master of Science and Doctor of Philosophy Degrees in Geophysics

Facilities for research in this area include an array of both permanent and portable seismographic stations, refraction and reflection seismic field equipment, instruments for gravity magnetic, resistivity, self-potential studies, and equipment for field and laboratory studies with electromagnetic remote sensing data. Student support is available under a number of research assistantships. Graduate study in this field has centered on both theoretical

[1]Technical electives may be selected in a field of special interest to the student; they must be approved by the adviser and the department chairman.

and practical work in seismology, gravity, and other geophysical fields, taking advantage of the unique character of the Basin and Range and Sierra Nevada regions.

Students enrolled in the master's program are required to take written comprehensive examination no later than their third semester. Examinations required for the Ph.D. degrees are outlined in the Graduate School section of this catalog.

### Master of Science and Doctor of Philosophy Degrees in Hydrology and Hydrogeology

The degrees of master of science and doctor of philosophy may be earned in hydrology and hydrogeology in an interdisciplinary program. Advanced degrees in hydrology and hydrogeology are offered in geology. Entering students should have a bachelor of science degree in geology, geological engineering or geophysics.

Depending upon the individual's specific goals, an interdisciplinary committee is appointed for each student to establish the appropriate program, which normally includes among the basic courses: hydrogeology, hydrometeorology, engineering hydrology, renewable natural resources, water resources projects, and advanced hydrology.

Examination procedures for these degrees are given in the Graduate School section of this catalog.

## MINING ENGINEERING (MINE)

*Faculty:* Daemen (Ch.), Danko, Mousset-Jones, Taylor
*Adjunct Professor:* Jucevic

### Bachelor's Degree

The department offers a bachelor of science in mining engineering degree which includes courses in mine design, mining technology, computer applications to operations control and management, environmental concerns, industrial safety and health, and mineral economics. The curriculum is arranged to provide a broad basic background for a modern mining engineer, as preparation either for industrial employment immediately after graduation or for further advanced study. The department maintains close liaison with state and federal bureaus of mines and with the mineral industry. Field excursions are arranged during the academic year, and students are required to take up paid employment in the minerals industry during at least one summer vacation. Some cooperative work-study programs are arranged for this purpose.

The Professional EIT examination administered by a State Board of Engineering Registration must be taken by all mining engineering students before graduation during the senior year of study.

*Freshman Year*
*First Semester*

| | Credits |
|---|---|
| C S 113—Computer Applications for Engineers and Scientists | 2 |
| CHEM 101—General Chemistry (or CHEM 201) | 4 |
| ENGL 101—Composition I | 3 |
| GEOL 101—Our Dynamic Planet Earth | 3 |
| GEOL 103—Physical Geology Lab | 1 |
| MATH 215—Calculus I | 4 |
| MINE 101—Industry Orientation Lectures | 1 |
| | 18 |

*Second Semester*

| | Credits |
|---|---|
| CHEM 102—General Chemistry (or CHEM 202) | 4 |
| ENGL 102—Composition II | 3 |
| MATH 216—Calculus II | 4 |
| MINE 102—Mineral Map Making | 2 |
| PHYS 201—Engineering Physics I | 3 |
| PHYS 204—Engineering Physics Lab I | 1 |
| | 17 |

*Summer*

| | Credits |
|---|---|
| MINE A—Mineral Industry Employment (Report Required) | none |

*Sophomore Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 211—Mineralogy | 3 |
| G E 385—Geological Engineering Data Analysis | 3 |
| MATH 217—Calculus III | 4 |
| M E 241—Analytic Mechanics for Engineers | 3 |
| MINE 210—Mining Methods | 3 |
| | 16 |

*Second Semester*

| | Credits |
|---|---|
| M E 242—Dynamics | 3 |
| M E 299—Differential Equations | 3 |
| MINE 342—Mine Surveying | 2 |
| MINE 361—Operations Research Methods | 3 |
| PHYS 202—Engineering Physics II | 3 |
| PHYS 205—Engineering Physics Lab II | 1 |
| W T 201—Foundations of Western Culture | 3 |
| | 18 |

*Summer*

| | Credits |
|---|---|
| MINE 343—Applied Mine Surveying | 2 |

*Junior Year*
*First Semester*

| | Credits |
|---|---|
| C E 367—Fluid Mechanics | 3 |
| E E 201—Introduction to Network Analysis | 3 |
| GEOL 332—Structural Geology | 4 |
| M E 371—Thermodynamics I | 3 |
| MINE 361—Operations Research Methods | 3 |
| W T 202—The Modern World | 3 |
| | 17 |

*Second Semester*

| | Credits |
|---|---|
| C E 372—Strength of Materials | 3 |
| EC 102—Principles of Microeconomics | 3 |
| METE 322—Mineral Processing I | 3 |
| METE 324—Mineral Processing Lab | 1 |
| MINE 310—Materials Handling | 3 |
| MINE 344—Mine Environmental Control | 3 |
| | 16 |

Senior field trip required for graduation.

*Senior Year*
*First Semester*

| | Credits |
|---|---|
| GEOL 471—Ore Deposits | 3 |
| MINE 411—Mine Economics | 2 |
| MINE 413—Mineral Inventory Estimation | 2 |
| MINE 425—Mine Power and Drainage | 3 |
| MINE 448—Rock Mechanics I | 3 |
| MINE 472—World Mineral Economics | 3 |
| Technical elective[1] | 2 |
| | 18 |

*Second Semester*

| | Credits |
|---|---|
| MINE 400—Mining Communication | 1 |
| MINE 418—Mine Feasibility | 3 |
| MINE 445—Drilling and Blasting | 3 |
| W T 203—The American Experience and Constitutional Change | 3 |
| Fine arts core course | 3 |
| Technical electives[1] | 3 |
| | 16 |

[1]Technical electives may be selected in a field of special interest to the stud; they must be approved by the adviser and the department chairman.

Total credits required, 137. Military science courses numbered below 300 and recreation and physical education courses do not apply to this total.

## Advanced Degrees

The department offers individual programs leading to the degree of master of science in mining engineering. The student can elect to pursue one of two tracks. The first is a traditional mining engineering program with specialization in fields such as computer applications, automation, mine design, rock mechanics and materials handling. The second is an option in mineral economics allowing the student to specialize in fields relating to mine management, operations research and mineral economics. The general university requirements for these advanced degrees are listed in the Graduate School section.

To be accepted as a graduate student, a bachelor's degree from an accredited college or university is required. For full graduate standing, at least 30 credits of undergraduate work in mining engineering or related sciences must have been completed. In addition, the student must qualify in at least one of the following requirements: (1) GPA of 2.5 in the four years of undergraduate work, (2) GPA of 3.0 for the last two years of undergraduate work, or (3) acceptable scores on the verbal and quantitative parts of the Graduate Record Examination aptitude test, with letters of recommendation from former instructors indicating capability for advanced course work and research.

Prospective students are advised to write directly to the chairman, Department of Mining Engineering, with an outline of major interests, experience, and transcripts. Formal application is completed through the Office of Admissions and Records.

The department has several graduate fellowships, research assistantships, and teaching assistantships. Requests for assistance should be submitted prior to March 15, but all applications will be considered regardless of date of submission.

A written comprehensive examination is required of all mining engineering graduate students. A passing grade is required for the exam and only two attempts are allowed. Failure to pass after two attempts results in suspension from the graduate program.

# Orvis School of Nursing

Sydney D. Krampitz, *Dean*

*Faculty:* Burgess, Cheek, Chu, DaVee, Droes, Ervin, Farnham, Halstead, Harmon, Hostetter, Krampitz, Lacey, McHugh, Petterson, Rubin, Schorr, Schroeder, Senior-Pomeroy, Veach

The Orvis School of Nursing offers a bachelor of science in nursing degree and a master of science degree with a major in nursing.

## The Baccalaureate Degree Program

The Orvis School of Nursing curriculum provides learning opportunities for students that enable them to develop and demonstrate the ability to: use the knowledge derived from the humanities and behavioral, physical, and natural sciences in order to assess, plan, implement, and evaluate the health care of clients—individuals, families, and groups; strive for productive health care delivery which is congruent with contemporary cultural, social, and scientific values; provide nursing care for clients in a variety of health care settings; collaborate, coordinate, and consult with colleagues on the interdisciplinary health teams in the delivery of health care; accept individual responsibility and accountability for nursing interventions and their results; and strive for continuing personal growth and identity.

The philosophy and conceptual framework of the Orvis School of Nursing reflect Jean Watson's theory of human care nursing. Human caring is transpersonal and intersubjective in nature and consists of protecting, enhancing and preserving humanity. Caring consists of helping people gain self-knowledge, self-control and self-healing regardless of external circumstances.

The baccalaureate program is designed to provide the high school graduate, as well as graduates of associate degree and diploma nursing programs, the opportunity to obtain a baccalaureate degree in nursing. Baccalaureate education is the basic preparation for professional nursing practice and for advancing toward positions of leadership in nursing. Upon completion of the program the graduate is qualified for positions in public health nursing, school nursing, hospital and other health agencies, commissioned status in the military services, as well as admission to graduate education. This program is approved by the Nevada State Board of Nursing and accredited by the National League for Nursing.

Additional information can be obtained from the school.

## Curriculum Requirements

I. Total number of credits required for graduation, 128
Lower-division credits—60-64 required
Upper-division credits—64-68 required

II. Lower-division requirements for prenursing majors.

| *Natural Sciences:* | *Credits* |
|---|---|
| Anatomy and physiology: BIOL 262, 263 | 6 |
| Basic statistics course | 3-4 |
| Elective[1] | 3 |
| Inorganic and organic chemistry: CHEM 101, 142, 143 | 8-9 |
| Mathematics (MATH 105 or higher) | 3 |
| Microbiology: BIOL 251 | 3 |
| Natural science elective[1] | 3 |
| Nutrition: NUTR 223 | 3 |
| | 32-34 |

| *Behavioral Science* | *Credits* |
|---|---|
| HDFS 274—The Individual and the Family | 4 |
| PSY 101 | 3 |
| SOC 101 | 3 |
| Behavioral science electives[1] | 3 |
| Cultural ethnic course[1] | 3 |
| | 16 |

| *Communication Skills* | *Credits* |
|---|---|
| CHS 300—Clinical Interviewing Skills | 3 |
| ENGL 101, 102 | 6 |
| | 9 |

| *Humanities* | *Credits* |
|---|---|
| WT 201—Foundations of Western Culture | 3 |
| WT 202—The Modern World | 3 |
| WT 203—The American Experience and Constitutional Change | 3 |
| Fine arts course | 3 |
| | 66-67 |

III. Upper-division requirements for nursing majors.

| | | |
|---|---|---|
| A. | Nursing science, self-learning skills laboratories, and clinical practica: NURS 301, 303, 317, 318, 327, 328, 417, 418, 427, 428, 441, 450 | 47 |
| B. | Basic research methodology course—nursing research: NURS 419 | 3 |
| C. | Clinical pharmacology | 3 |
| D. | NURS 337—Pathophysiology | 3 |
| E. | Upper-division non-nursing electives | 8 |
| | | 64 |

IV. Progression Policies.

A. Progression to the junior nursing sequence requires:

1. Formal application due by the fourth week of spring semester.
2. 2.75 Grade Point Average (GPA) on completion of all lower-division courses.
3. Only prerequisite courses, exclusive of general electives, are considered for selection to the upper-division nursing major. Grade point average is calculated from these prerequisite courses and this GPA is used for selection purposes.
4. A grade of C or higher is required for all prerequisite courses, exclusive of general electives.
5. Completion of all lower-division course requirements by the end of spring semester of sophomore year in the prenursing major.
6. Junior standing at the University of Nevada, Reno by the end of spring semester of sophomore year in prenursing major (60 credits).
7. Students who complete the requirements during the summer session will be considered on a space available basis. This process is instituted with the selection of those students meeting requirements identified in items 1 through 6.
8. All required prerequisite courses for progression to the upper division must be taken for a grade, not on an S/U basis. Transfer and change of major students' S/U credit is evaluated on an individual basis.

*Note:* Fulfillment of the above criteria does not imply automatic progression to the nursing major. Students are selected on the basis

[1]Select from a variety of identified courses.

of academic achievement and therefore are ranked according to GPA. The number of student positions is filled from the rank ordered list of students and their GPA. This procedure is used each year. Any student matriculating in the Orvis School of Nursing prior to 1985 has the option of using the new admission rules.

B. Profession within the nursing sequence:
   1. Maintenance of a 2.0 cumulative GPA and achieving a minimum grade of C in each nursing course.
   2. Regardless of the combined grade in either a theory or practice course, each student must achieve a minimum grade of C in each specialty area.
   3. A grade of C or better is required in pharmacology, statistics and research for progression within the nursing sequence.
   4. A student in the upper division of nursing may have to withdraw from the program for academic or nonacademic reasons. The following criteria are considered for reentry to the nursing major.

      A student has three years from the date of admission to the upper-division nursing major to complete requirements for graduation.

      Reentry into the upper division following withdrawal for academic reasons is extended to only *one* time. Reentry for nonacademic reasons is at the discretion of the Admissions and Progressions Committee in consultation with the dean.

      *Academic Withdrawal:* The student who is: (1) failing a nursing course, (2) considered clinically unsafe, or (3) receives less than a C as a final grade will be given the option to return to the incompleted level the following academic year. This privilege is limited to *one* time.

      *Nonacademic Withdrawal:* The student who withdraws for "personal reasons" is requested to state, *in writing*, at the time of withdrawal: (1) the exact reason for withdrawal, (2) intention/nonintention of returning to the program, (3) expected date of reentry into program. Withdrawals due to financial difficulties, death or serious illness in the immediate family, or serious personal illness are considered valid reasons for return to the incompleted level. The student must be receiving a passing grade in clinical and theory at the time of withdrawal. The privilege to return is at the discretion of the Admissions and Progressions Committee, in consultation with the dean. Students with extraordinary personal circumstances are given individual consideration. All students should contact their adviser for consultation and assistance.

      *Readmission:* Students seeking readmission to the upper division of nursing must do the following: (1) see their adviser to complete a readmission petition at least *four* months prior to the appropriate academic semester, (2) students who withdraw for nonacademic reasons must provide rationale that "personal reasons" have been resolved, (3) inform the Admissions and Progressions Committee of their intent to return to the upper division at least *four* months prior to return, and (4) any student returning to the upper division may be asked to demonstrate competency in nursing skills when returning to Level II, III, or IV.
   5. Any student who withdraws and/or transfers fromthe upper division of the nursing major must apply directly to Orvis School of Nursing for consideration of readmission and placement into the upper division in nursing. Eligibility depends upon space available and meeting current OSN progression requirements to the junior year.
   6. Any student who withdraws from NURS 317, 327, 417, 427, 441 must also withdraw from NURS 318, 328, 418, 428, 450, respectively.
   7. All nursing practice courses must be taken concurrently with nursing theory and/or skills laboratory courses.
      a. NURS 301, 303, 317, 318
      b. NURS 327, 328
      c. NURS 417, 418
      d. NURS 427, 428
      e. NURS 441, 450

      A generic student (one who has not completed the requirements for licensure as a registered nurse) who withdraws for *academic reasons* from any nursing course is required to withdraw from *all* concurrent nursing courses.

      A generic student who withdraws from a nursing course for *personal reasons*, but is passing at the time of withdrawal, may be permitted to waive the concurrency policy upon the discretion of the Admissions and Progression Committee and/or the dean.

      Registered nurse students are considered on an individual basis.
   8. Clinical pharmacology and statistics must be taken for a letter grade.

C. Students, after consultation with their advisers, may petition for course substitutions or other considerations relevant to OSN curriculum requirements. Required courses completed more than 10 year previous to application to the nursing major must be evaluated on relevancy and currency of content. Those requests for course substitutions or waivers not covered by an adviser's approval may be submitted to the chairman of the Admissions and Progressions Committee for consideration.

D. Satisfactory/Unsatisfactory Grading:
   1. A baccalaureate student may earn a maximum of 30 semester credits in courses graded on an S/U basis.
   2. A transfer student who has taken a course on an S/U basis must submit the course for evaluation and placement within the curriculum to the Admissions and Progressions Committee.

E. Special Examination:
   1. Consideration is given to credit by special examination for individual students in accordance with the university policies.
   2. Registered nurse students may earn up to 26 nursing credits by special examinations.

F. Independent Study
   1. Opportunity is provided for individual students to pursue ideas of particular interests and needs through independent study courses.

*SPECIAL NOTE:* Students are required to provide their own equipment such as tape recorders, bandage scissors, glasses, watches with second hands, stethoscopes, laboratory coats, uniforms, name pins, as well as health and liability insurance, and transportation.

Students must also provide documentation of a physical examination, chest X-ray, or the equivalent within six months prior to enrollment in both the junior and senior years of the program.

A rubella titer is required prior to matriculation in the junior year of the program. Other immunizations or tests may be required prior to admission.

Current CPR certification is required for all students during their junior and senior years.

## Advanced Placement for Registered Nurses

Orvis School of Nursing has a program designed for registered nurses seeking the bachelor's degree. Lower-division requirements may be met by transfer of appropriate coursework and 26 upper-division nursing credits may be earned by special examination. Registered nurses enrolled in upper-division nursing must be licensed in the state of Nevada. For details, please contact the School of Nursing. Revision of RN program is in progress for graduates of NLN accredited associate degree nursing programs.

## Master of Science Program

Graduate education in nursing prepares nurses for leadership in health care. It further develops clinical competence and increased sophistication in exploring and identifying a theoretical framework for nursing practice.

Graduate education serves as an introduction to scholarly activity for those who wish to pursue the doctoral degree in nursing. The focus is on the search for nursing knowledge, analysis and evaluation of nursing theory and the study of strategies of application.

Graduate education also provides the opportunity for students to further realize their creative potentials and collaborate with other health professions in effecting changes in nursing practice and health care.

The program offers two options: clinical specialist and nursing administration. Within the clinical specialist option, students select a specific track in adult health, psychiatric/mental health or childrearing family. All students are expected to develop competence in using the research process.

The Master of Science program is accredited by the National League for Nursing.

The program requirements range from 44 to 50 semester credits with an option for thesis or professional paper.

The academic requirements to be considered for admission are:

1. Graduate Record Examination (GRE): Aptitude section, a minimum combined score of 1000 is required on the verbal and quantitative sections.
2. An undergraduate overall GPA of 2.75 or higher or a GPA of 3.0 or higher on the last half of the undergraduate program.
3. Completion of a bachelor of science degree with an upper-division major in nursing *from an NLN Accredited School of Nursing*, to include the following specific coursework:
   a. Statistics
   b. Growth and development (must cover life span)
   c. Basic research
   d. Physical-psycho-social assessment
   e. Nursing diagnosis

Additional requirements for admission are:

1. Verification of current registration to practice nursing in the U.S. Evidence of registration in Nevada is required prior to actual registration in the program for those selected.
2. A personal statement of goals for graduate study.
3. Three letters of reference which address applicant's potential for success in graduate school: one from former faculty; one from employer or supervisor; one from an individual of choice.

Applicants must apply for admission through the university Office of Admissions and Records.

Prerequisites taken 10 years or more prior to entry into the graduate program are evaluated on an individual basis by the student's graduate adviser.

The total number of credits required varies according to the options selected. The *minimum* number of credits required for completion of the master's degree is 44 credits.

Graduate-level courses officially accepted in transfer to the University of Nevada, Reno may be considered to satisfy specific course requirements in the nursing program. The student must provide specific course information for department review to determine if the content is equivalent or comparable to the university requirement. If approved, such courses may be included in the official program of study to satisfy the degree requirement.

### Satisfactory/Unsatisfactory Grading

Graduate students must achieve a grade of B or above in each required graduate-level nursing course. Students who receive less than a B in a required graduate nursing course may repeat that course one time only.

### Prerequisites for 700-Level Courses in Nursing

A prerequisite for *all* 700-level courses in nursing is admission to the graduate program in the School of Nursing.

### Objectives for the Master of Science Program

#### Clinical Specialist Option

Upon completion of the master's program, the graduate will:

1. Practice an advanced clinical nursing role within a theoretically based framework with patients and families in a selected health care environment.
2. Demonstrate competence in a selected functional area.
3. Use the process and method of scientific inquiry in the study of nursing.
4. Contribute to the development of nursing science.
5. Function as a change agent within a selected health care environment.
6. Acquire a foundation for doctoral study in nursing.

| *Program of study* | *Credits* |
|---|---|
| NURS 706—Theoretical Foundations of Nursing | 3 |
| NURS 708—Nursing Theories and Family Health Patterns | 3 |
| NURS 720—Research in Nursing | 3 |
| NURS 721—Clinical Phenomena I | 3 |
| NURS 731—Clinical Phenomena II | 3 |
| NURS 722—Advanced Nursing Practice I Adult Health | 3 |
| OR | |
| NURS 723 Advanced Nursing Practice I Psychiatric/Mental Health | 3 |
| OR | |
| NURS 724—Advanced Nursing Practice I Childrearing Family | 3 |
| NURS 732—Advanced Nursing Practice II Adult Health | 3 |
| OR | |
| NURS 733—Advanced Nursing Practice II Psychiatric/Mental Health | 3 |
| OR | |
| NURS 734—Advanced Nursing Practice II Childrearing Family | 3 |
| NURS 742—Advanced Nursing Practice III Adult Health | 3 |
| OR | |
| NURS 743—Advanced Nursing Practice III Psychiatric/Mental Health | 3 |
| OR | |
| NURS 744—Advanced Nursing Practice III Childrearing Family | 3 |
| NURS 730—Theoretical Foundations for Change | 3 |
| | 27 |
| Advanced statistics (a graduate-level statistics course is required) | 3 |
| Clinical cognates (physiology or social behavioral course) | 3 |
| Electives | 5-8 |
| Scholarly paper (thesis) | 6 |
| OR | |
| Professional paper and comprehensive examination | 3 |

Students who select the clinician option may also elect a functional area in administration by completing the following courses in addition to the above program of study:

| | Credits |
|---|---|
| NURS 701—Role of the Nurse Administrator | 3 |
| NURS 735—Advanced Nursing Practice II—Nursing Administration | 3 |

## Administration Option

Upon completion of the master's program, the graduate will:

1. Practice an advanced administrative nursing role within a theoretically based framework in a selected health care environment.
2. Demonstrate competence in a selected functional area.
3. Use the process and method of scientific inquiry in the study of nursing.
4. Contribute to the development of nursing science.
5. Function as a change agent within a selected health care environment.
6. Acquire a foundation for doctoral study in nursing.

| *Program of study* | *Credits* |
|---|---|
| NURS 706—Theoretical Foundations of Nursing | 3 |
| NURS 701—Role of the Nurse Administrator | 3 |
| NURS 721—Clinical Phenomena I | 3 |
| NURS 722—Advanced Nursing Practice I Adult Health | 3 |
| OR | |
| NURS 723—Advanced Nursing Practice I Psychiatric/Mental Health | 3 |
| OR | |
| NURS 724—Advanced Nursing Practice I Childrearing Family | 3 |
| NURS 735—Practicum in Nursing Administration | 3 |
| NURS 720—Research in Nursing | 3 |
| NURS 730—Theoretical Foundations for Change | 3 |
| NURS 745—Advanced Nursing Practice III Nursing Administration | 3 |
| | 24 |
| Advanced statistics (a graduate-level statistics course is required) | 3 |
| Administrative cognates (B A 720, 721) | 6 |
| Electives | 6-9 |
| Scholarly paper (thesis) | 6 |
| OR | |
| Professional paper and comprehensive examination | 3 |

Students who select the administration option may also elect a functional area as clinician by completing the following in addition to the above program of study:

| | |
|---|---|
| NURS 731—Clinical Phenomena II | 3 |
| NURS 732—Advanced Nursing Practice II Adult Health | 3 |
| OR | |
| NURS 733—Advanced Nursing Practice II Psychiatric/Mental Health | 3 |
| OR | |
| NURS 734—Advanced Nursing Practice II Childrearing Family | 3 |

# Graduate School

Kenneth W. Hunter, Jr., *Associate Vice President for Research and Graduate Dean*
Ronald C. Dillehay, *Associate Dean*

## History of the Graduate School

Graduate-level training and research is a central part of the life of the University of Nevada, Reno. Post-baccalaureate study has been offered at the university since 1887, and the university awarded its first advanced degree in 1903. The activities of the graduate faculty and students in research and post-baccalaureate scholarship reinforce the land-grant mission of the university.

To fulfill the university's missions in education, research, and public service, the graduate faculty encourages its students to develop the skills of intellectual inquiry and critical analysis. It trains them in both the disciplinary and interdisciplinary skills necessary for problem-solving, and fosters a dedication to creative thought and the search for knowledge.

## Advanced Degrees and Majors

Supported by a variety of research centers and institutes, research services and library holdings, the university offers graduate study leading to the advanced degrees of master of arts, master of arts for the teaching of English, master of arts for the teaching of mathematics, master of business administration, master of judicial studies, master of education, master of music, master of public administration, master of science, doctor of education, and doctor of philosophy. In addition, certain professional degrees are granted in engineering, medicine, and mines.

Master's degrees are offered in agricultural economics, animal science, anthropology, atmospheric physics, biochemistry, biology, botany, business administration, cellular and molecular biology, chemistry, civil engineering, computer integrated manufacturing systems engineering, computer science, counseling and educational psychology, economics, educational leadership, electrical engineering, elementary education, English, foreign languages and literatures (French, German, Spanish), geochemistry, geological engineering, geology, geophysics, history, human development and family studies, hydrology and hydrogeology, integrated pest management, journalism, juvenile court judges, land use planning, mathematics, mechanical engineering, metallurgical engineering, mining engineering, music, nursing, nutrition, pharmacology, philosophy, physical education, physics, plant science, political science, psychology, public administration and policy, resource management, secondary education, social work, sociology, special education, speech communication, speech pathology and audiology, teaching of English, teaching of English as a second language, teaching of mathematics, and trial judges.

An educational specialist degree is offered in counseling and educational psychology, curriculum and instruction, and educational leadership.

A combined M.D./Ph.D. degree program is offered with major emphasis in anatomy, biochemistry, cellular and molecular biology, pharmacology, or physiology.

The doctor of education program is offered in counseling and educational psychology, curriculum and instruction, and educational leadership.

The doctor of philosophy degree is offered in anthropology, Basque studies, biochemistry, biology, cellular and molecular biology, chemistry, engineering, English, geochemistry, geology and related earth sciences, geophysics, history, hydrology and hydrogeology, metallurgical engineering, mining engineering, pharmacology, physics, psychology, and social psychology.

Inactive advanced degree programs include the master's in accounting, finance, management, marketing, and theatre; and the doctor of philosophy in political science, and sociology.

## Admission to Graduate School

### Application Information

An applicant for admission to graduate-level study must file an application with the Office of Admissions and Records. Applications for graduate standing are subject to approval by the chairman of the major department or program, the dean of the college which offers the major, and the dean of the Graduate School.

Applications for admission are accepted at any time of the year, but some programs make decisions on the admission of new students only once or twice a year. To insure timely processing, an application and all credentials should be received in the Office of Admissions and Records by the published filing date that precedes the instructional period in which the applicant plans to take courses.

Except in the MBA program, the minimum prerequisite for admission to graduate standing is 18 credits in the undergraduate major, or at least 18 credits of undergraduate courses acceptable to the department in which the degree is sought. Each academic department reserves the right to specify additional requirements beyond those of the university. If there are deficiencies in undergraduate preparation, the department may specify additional work to be done either before admission to graduate standing or while the advanced degree program is being pursued.

### Examination Scores

Scores on the Graduate Record Examination (GRE), or the Graduate Management Admission Test (GMAT), or the Medical College Admission Test (MCAT), must be submitted to the Office of Admissions and Records by all applicants. Those who take the GRE examinations are required to take the verbal, quantitative and analytical tests. The GRE or GMAT scores must be no more than five years old to be considered with an Application for Admission. Some departments have minimum score requirements for admission; others do not. Some departments also require the GRE advanced test in their respective fields. An applicant should contact individual departments to determine department policy.

### International Students

Applications from international students are evaluated on an individual basis.

A TOEFL score of 500 or higher is required for admission to the University of Nevada, Reno. Students who have achieved a TOEFL score of 600 or higher are exempt from Intensive English Language Center evaluation. All others must report to the Intensive English Language Center for evaluation and appropriate placement in English language courses. Departments may require TOEFL scores in excess of the minimum requirements.

An international student is required to have a TOEFL score of 550 or higher to be approved for a teaching assistantship.

International applicants must satisfy the medical examination and financial responsibility requirements prior to admission.

### University Faculty

University of Nevada, Reno personnel with the rank of instructor or above are not permitted to obtain a graduate degree at this campus.

## Graduate Standing

Admission to graduate standing is the first of a series of progression requirements toward an advanced degree and does not constitute admission to candidacy for a higher degree.

Students may be admitted to graduate standing in the Graduate School upon completion of a baccalaureate degree or an advanced degree if they meet the requirements specified. Departments or colleges may have entrance requirements in excess of the minimal requirements of the Graduate School. Prior to submitting an application for admission to graduate studies a student should contact the department to obtain these requirements in writing.

Each department, with the approval of the academic deans, reserves the right to determine which students are accepted for graduate study, even though the applicant may satisfy the minimal Graduate School requirements. Graduate standing is necessary before a student can pursue an approved program of study for an advanced degree. Admission to graduate standing permits a student to form an advisory-examining committee to proceed with development and approval of a program of study, and to design a research program for thesis or dissertation.

### Master's Programs

A student is eligible for admission to a master's degree program under any of the following conditions:

1. If the undergraduate grade point average is 2.75 or higher on a scale of 4.0, or an average of 3.0 or higher for the courses taken during the last half of the undergraduate program. An international student who is not a University of Nevada, Reno graduate must have a grade point average of 3.0 or higher.
2. If the total grade point average, multiplied by the GRE score (verbal and quantitative), exceeds 2,466. If the GMAT has been taken instead of the GRE, the total grade point average multiplied by the GMAT must be at least 1,436.
3. If the applicant does not meet any of the preceding requirements, admission to graduate standing on a **prescribed program** may be considered. A student enrolled in a prescribed program is ineligible for a teaching or research assistantship.

### Doctoral Programs

Upon recommendation from the major department and academic dean, graduates from accredited colleges and universities may be admitted to work toward a Ph.D. or Ed.D. (note exceptions under the Ed.D. section) degree in the Graduate School if they meet the following minimal requirements:

1. An overall GPA of 3.0 or higher on all undergraduate and graduate courses.
2. Satisfactory completion of necessary prerequisites for credits in a chosen major field.
3. An applicant with an overall grade-point average less than 3.0 may apply for admission to a doctoral program with provisional standing. Students approved for provisional standing must complete two consecutive semesters of full-time graduate study in a program approved by the department and the Graduate School. A student may not remain on provisional standing for more than two semesters. Successful completion of the two semesters, with a grade of B or better in each course comprising the 18 credits, qualifies the student to apply for graduate standing. Courses completed while on provisional status may be applied toward an advanced degree with approval of the advisory-examining committee.

## Graduate Special

The graduate special classification is for a student who wishes to take graduate courses but does not plan to pursue a program leading to an advanced degree, or for an applicant who does not meet the requirements for admission to graduate standing. An individual may qualify for the graduate special classification by filing official transcripts, or a degree certification form, with the Office of Admissions and Records showing that the applicant has a baccalaureate degree from a regionally accredited four-year college or university. **Admission to graduate special status does not constitute admission to graduate standing in the Graduate School.** With graduate special classification a student may enroll for undergraduate or graduate credit and may satisfy the teacher certification requirements. Admission to graduate special classification does not imply that students may take every course of their choice, as departmental approval must be secured for every course taken. Each student must be able to demonstrate that the prerequisites are satisfied for each course in which enrollment is sought.

A student with graduate special classification may apply for regular graduate standing by meeting the requirements of the Graduate School.

A maximum of nine graduate semester credits taken prior to admission to graduate standing may be applied to the program of study. Those nine credits include graduate special credits and/or transfer credits. Credits earned during the semester a graduate special student is officially admitted to the graduate standing classification are exempt from the nine credit limitation.

*An international student who holds a student visa is not eligible for admission to the graduate special classification, and cannot register as a graduate special.*

## Transfer Credits

Each graduate standing student who intends to apply graduate credit earned at another university toward an advanced degree at the University of Nevada, Reno, must complete a Graduate Credit Transfer Evaluation Request form available in the Office of Admissions and Records. Results of the evaluation of a student's transcript are distributed to the student, adviser, and graduate dean for reference in graduate program planning.

## Registration For Graduate Courses

Each student who plans to register for graduate courses must be admitted to graduate standing or graduate special classification at the university *prior* to registration, except certain university seniors as authorized by policy.

### Fees

Graduate students are required to pay the application fee, the per credit registration and capital improvement fees, specialized instruction expenses and tuition (for out-of-state students). In addition, there are fees for the Health Service, the Graduate Student Association, the Student Union operating costs and the recre-

ation building use. The summer session fees are as specified in the Fees and Expenses section. Grants-in-aid to cover the per credit and capital improvement fees plus out-of-state tuition may be awarded to graduate assistants, trainees and fellows, provided such conditions are specified in their contracts.

## Undergraduate Students and Graduate Courses

An undergraduate student at the university who is within 14 or less credits of completing the requirements for the bachelor's degree may enroll in 500- or 600-level courses for graduate credit, provided that such credit is requested by the student and approved by the adviser and graduate dean at the time of enrollment and provided that the student is scholastically eligible for admission to graduate standing. The student must complete all requirements for the undergraduate degree in the same semester in which registration for the graduate courses occurs; otherwise, the courses revert to undergraduate credit. Undergraduates taking graduate credit may carry a combined load not to exceed the normal credit load in the department in which the student received the baccalaureate degree. Undergraduate students are not eligible to take 700-level courses.

## Graduate Assistantships

The Graduate School is administratively responsible for approval of graduate student assistantships. Interested students should check with the appropriate department on the availability of assistantships. A graduate assistantship can only be offered after official admission notification of acceptance to graduate standing is received from the Office of Admissions and Records.

# Academic Requirements

Advanced degrees are conferred by the university upon recommendation by the graduate faculty and the graduate dean following the completion of an approved program of study. The approved program of study of each student presents the specific plan of courses, research and related activities of the student. Each kind of advanced degree program has regulations and requirements presented in the description of the degree. The following requirements apply to all graduate programs at the university.

Students must register for an appropriate course load at least one semester or summer session each year, or obtain an *approved leave* from the department. Unless these approved leaves are part of the student's Graduate School records, extensions of the six- and eight-year requirements are not approved by the graduate dean.

## Graduate Courses

Courses numbered 500 and above are for graduate credit (see Numbering System) and are open to only those who have been officially admitted to graduate study. A dual numbered course completed at the 400 level for undergraduate credit may not be retaken at the 600 level for graduate credit.

## Academic Standards

Graduate students must assume full responsibility for complying with the Graduate School's academic standards and must be aware of the consequences of substandard performance. Departments and graduate faculty are responsible for monitoring and documenting graduate student compliance with academic standards. Penalties for failure to meet standards include the following:

1. Graduate students placed on probation are not eligible for appointments as teaching or research assistants.
2. A student who remains on probation for two consecutive semesters is dropped from graduate standing.

Recommendations by departments or advisory-examining committees to place students on probation or to drop them from graduate standing must be submitted to the Graduate School. If approved, the Graduate School notifies the student of the action and, if appropriate, the Office of Admissions and Records that the student is dropped from graduate standing. A student dropped from graduate standing for reasons other than grade point deficiencies may register as a graduate special.

A student who is dropped from graduate standing because of grade-point deficiencies may only enroll as a graduate special student in undergraduate courses. To enroll in graduate-level courses, advance written approval must be obtained from the department concerned and the graduate dean. A student may reapply for graduate standing by removing the existing grade point deficiency and achieving an overall graduate grade point average of 3.0 or higher.

### Grades and Credit

Each graduate course must be completed with a grade of C or higher for the credit to be acceptable toward an advanced degree. Some departments, at their discretion, do not accept any grade lower than B for the fulfillment of a graduate program requirement. In addition, a B average or above must be obtained in all graduate credit attempted at the University of Nevada, Reno. Expiration of the time period for master's degrees does not eliminate course grades from the average, and grades of D or F are included.

### Academic Performance

1. University of Nevada, Reno overall graduate credit GPA of 3.0 or above ..... Good standing
2. University of Nevada, Reno overall graduate credit GPA balance of one to six grade points below 3.0 ..... Probation
3. University of Nevada, Reno overall graduate credit GPA balance of seven or more grade points below 3.0 ..... Dropped from graduate standing

### Limitations on Courses for the Program of Study

A maximum of nine graduate semester credits on the master's degrees, and 24 on the doctor of philosophy degree, from any eligible graduate courses completed prior to admission to graduate standing, may be applied to the program of study .

1. **S/U Grades:** A maximum of three graduate credits for a master's degree (or nine graduate credits for a doctoral degree) of S/U grading, including transfer credits, is acceptable. **A maximum of six graduate credits of S/U grades may apply to the master and doctor of education degrees offered by the College of Education.**
2. **Thesis Credits:** Final credit for thesis or dissertation is not officially recorded until the candidate is approved by the faculty for the graduate degree.
3. **Graduate Special Courses:** A maximum of nine credits for which the student registers while classified as a graduate special student may be used in satisfying requirements for any advanced degree.
4. **Off-Campus Courses:** A maximum of nine credits earned in off-campus courses may be applied toward any advanced degree.
5. **Workshop Courses:** A maximum of six credits of workshop or institute, whether in residence or not, may be included in the total for the degree.
6. **Extension Courses:** Graduate credit earned through extension courses is not accepted for transfer credit.
7. **Correspondence Study:** Graduate credit is not allowed for correspondence study completed at the university or elsewhere.

## Resident Credit

Resident credit on the Reno campus is defined as credit earned by a student who is physically present on the Reno campus for the

entire duration of the scheduled instruction or training period, except in those specific cases (e.g., in agriculture, geology, or biology) where the field becomes, in fact, a campus laboratory and is the only place where adequate instruction and training can take place.

## Student Credit Loads

A full-time graduate student may not register for more than 16 graduate credits in any semester, or more than six graduate credits in any six-week summer session. Registration for graduate assistants is limited to 12 graduate credits per semester.

If the graduate student's registration includes courses taken for undergraduate credit, the student's credit load is calculated on the basis of three undergraduate credits as equivalent to two graduate credits.

Registration in nine graduate credits or more in a semester is considered as full-time. For graduate assistants on a half-time contract, six graduate credits or more constitute full-time study.

To remain in good standing, all graduate students must register for at least one credit each semester until graduation.

## Advisory and Examining Committee

An approved application for graduate standing includes the name of the student's temporary adviser. As soon as practical, the student selects a permanent adviser. The permanent adviser and the student arrange for appointment of the advisory/examining committee, who, with the adviser and department chairman, supervise the student's course of study and examinations.

For candidates for the master's degrees, the advisory/examining committee should be appointed as soon as possible. It consists of at least three members of the graduate faculty, two representing the area of specialization and one from the university-at-large. If a major-minor program is elected, there must be one representing the major, one representing the minor, and one from the university-at-large. (In the MBA program the advisory/examining committee is formed only for students in Plan A.)

For a student going directly from the bachelor's degree to the Ph.D., the advisory/examining committee should be formed prior to the completion of 24 credits in graduate courses. For students entering a Ph.D. program with a master's degree, the advisory/examining committee should be formed during the first semester of enrollment. A member of the faculty should be selected to serve as chairman of the committee and as a permanent adviser. The research adviser may be a different faculty member than the chairman. The committee consists of at least five members: the adviser as chairman, two or more members from the major department or area, one or more from departments in related fields, and at least one member of the graduate faculty representing the university-at-large. Formal approval of a student's advisory/examining committee is made by the graduate dean.

The university-at-large members of committees are to represent the Graduate School, assure compliance to Graduate School regulations and procedures and report to the Graduate School any deviations from prescribed standards. Members of advisory/examining committees must be members of the graduate faculty, unless approved by the graduate dean. A list of university faculty members at the back of this catalog identifies each graduate faculty member by an asterisk following the name.

All committee members are involved in the approval of the student's program and thesis/dissertation topics, and in the design and conduct of all examinations. Changes in the program may be made only with the approval of the entire committee and the graduate dean. When necessary, substitute members of the committee may be appointed by the graduate dean.

## Application for an Advanced Degree

During the first two weeks of the student's final semester or Summer Session (check University Calendar for final dates), each candidate for graduation is required to submit an application for an advanced degree to the Graduate School. This application includes the expected date of the final examination, date of graduation, and the approval of the adviser, academic dean and the graduate dean. Any applicant who files after this date is charged a late fee. Late applications for advanced degrees are not accepted after February 15, June 15 or October 15 in the respective final period in which graduation is sought.

An applicant who does not complete all the degree requirements by the specified deadline must update and resubmit the application during the next appropriate filing period.

## Thesis and Dissertation Regulations

Each student must have an outline (prospectus) of the thesis/dissertation approved by the advisory/examining committee. Subsequent to this approval, a student is expected to complete the thesis/dissertation in a manner satisfactory to the committee.

The candidate should develop the thesis or dissertation while in residence, since close and constant supervision by the director is required. If considerable progress in collecting data, outlining and writing has been made while the student is in residence, the candidate may be permitted to complete the thesis or dissertation away from the campus. Permission to do so first must be arranged with the research adviser and then approved by the graduate dean.

**Registration for Thesis or Dissertation:** A master's candidate who is on a Plan A thesis program must complete a minimum of six credits of thesis; a Ph.D. candidate must complete a minimum of 24 credits of dissertation. Students should plan to have the required thesis and dissertation credits span the entire academic year, since many benefits (G.I. Bill, student loans and housing, visas, for example), require that a student register for at least one graduate credit during each eligibility semester. Any department may require that a student conducting resident research must register for a minimum of one thesis/dissertation credit each semester.

Thesis and dissertation courses are not graded. At the close of each semester of registration for credit in thesis or dissertation courses, a dash is indicated in place of a letter grade on the student's permanent record. These courses are not counted in GPA computations. After the thesis or dissertation is completed, defended, and accepted by the student's committee and by the graduate dean, credit is posted to the student's academic record.

**Dates for Submission of Thesis or Dissertation:** A draft of the thesis or dissertation must be submitted to members of the examining committee not later than eight weeks before the final examination to allow time for corrections and suggestions to be incorporated before final typing. The completed, unbound thesis must be submitted to members of the examining committee at least one week before the date of the final examination, which must be held at least three weeks before the close of the semester or term. The final date for submission of the thesis or dissertation in final form is two weeks before the close of the semester or term. NO EXTENSION OF THIS DEADLINE IS PERMITTED. Final approval of theses and dissertations is by the graduate dean.

**Format:** The thesis or dissertation is to be prepared according to specific directions available at the Graduate School Office. Capitalization, abbreviations, quotations, footnotes, bibliography, and other conventions should conform with good usage as set forth in standard manuals on research writing; practices must be consistent throughout the thesis.

**Copies for Deposit:** When the thesis has been approved by the advisory/examining committee, two acceptable copies, signed by the chairman of the major department and the thesis director, must be submitted unbound to the Graduate School Office.

**Publication and Abstract:** The library staff will arrange for microfilming each thesis and dissertation by University Microfilms, Ann Arbor, Michigan. Publication on microfilm does not preclude other forms of publication. The candidate for the Ph.D. must also submit an abstract, not exceeding 350 words in length. The candidate for the master's degree must submit an abstract, not exceeding 150 words in length. All abstracts must be approved by the examining committee. These abstracts are published in full in *Dissertation Abstracts* or *Master's Abstracts*, journals with international circulation. Copyright registration must be paid by the candidate.

# Master's Degrees

The university offers the degrees of master of arts, master of arts for the teaching of English, master of arts for the teaching of English as a second language, master of arts for the teaching of mathematics, master of business administration, master of education, master of judicial studies, master of music, master of public administration, master of science and master of social work. Some departments offer only a Plan A, in which a six credit thesis is required, and other departments offer, in addition to Plan A, a Plan B with no thesis required.

## Residence and Credit Requirements

1. **Plan A Requirements:** On the thesis program, at least 30 credits of acceptable graduate courses must be completed, and 21 or more must be earned in on-campus courses at the university. Any transfer of credits from another institution must be recommended in the Program of Study by the committee and officially accepted through the Office of Admissions and Records. At least 18 credits of the program of study must be at the 700 level. Six of the 30 credits must be thesis credits.

2. **Plan B Requirements:** In certain departments a nonthesis degree program may be undertaken. This requires the satisfactory completion of at least 32 credits of graduate acceptable courses and satisfactory completion of a comprehensive examination. A minimum of 23 credits must be earned in on-campus courses at the university. At least 15 of the above 32 credits must be at the 700 level.

3. **S/U Grades:** A maximum of three credits of S/U grades, including transfer credits, is acceptable.

4. **Limits on Transfer and Graduate Special Credits:** A maximum of nine graduate credits completed prior to admission to graduate standing may be applied toward the master's degree.

5. **Time Limit:** All requirements for the master's degree must be satisfied within the period of six calendar years immediately preceding the granting of the degree.

6. **Second Master's Degree:** A maximum of nine graduate credits earned in a master's degree program may later be applied toward a second master's degree.

## Course Requirements

For the M.A., M.A.T.E., M.B.A., M.M., M.P.A., or M.S. degree, the following types of programs may be arranged:

**Major Programs:** A minor is not required. In Plan A at least 18 of the 24 graduate credits must be in the major field of study and in Plan B, 23 of the 32 graduate credits must be in the major field of study. The credits may be elected in any department with approval by the advisory committee.

**Major-Minor Programs:** In Plan A at least 12 of the 24 graduate credits must be in a major field of study, with at least six credits in a minor field. The minor may be in a different department, or it may be in a second division of the major department. The minor department has the responsibility of approving the candidate's minor program. Any credits not required for the major or minor may be elected in any department with approval by the advisory committee. Normally these credits are chosen to support the candidate's thesis. In Plan B at least 15 of the 32 graduate credits must be in a major field of study, with at least eight credits in a minor field.

**Area Programs:** An advisory committee with the approval of the dean of the Graduate School may designate an area program which embraces the subject matter of several departments.

**Education Programs:** For the master of arts or master of science in secondary education, the Plan A program must include a minor field of study of at least eight credits in a subject-matter department in a department outside the College of Education, while in Plan B 10 credits are required.

**Foreign Language Requirement:** The Graduate School does not have a language requirement for master's degrees, but any department may require foreign language competencies

## Procedures Toward Master's Degree

During the first semester of enrollment and prior to establishment of the advisory/examining committee, the courses to be taken must be approved by the faculty adviser identified on the admissions certificate.

**Program of Study:** The graduate student's adviser, the department head, and the advisory/examining committee determine the program of studies for each master's degree candidate, including the thesis and the courses acceptable toward the graduate degree program. The program of study documents by title and number all the courses to be completed in fulfilling requirements for the graduate degree. Final approval is by the graduate dean. Subsequent changes may be made at any time, but only with the approval of the committee and the graduate dean.

It is the responsibility of the student and the advisory/examining committee to insure that the graduate courses in the proposed program of study are consistent with the requirements of the Graduate School and the department. (The Master of Business Administration program does not use the usual committee structure. For details, please see the section of this Catalog on graduate programs in the College of Business Administration.)

The student should understand that attaining a graduate degree involves more than the completion of a prescribed number of credits. The student's advisory/examining committee may require a student to take additional courses if, in its opinion, additional training is needed to achieve the level of proficiency expected of one who holds the advanced degree. Students should consult the requirements of individual departments to learn details for completing the master's degree either through Plan A (with a thesis) or Plan B (without a thesis).

**Comprehensive Examination:** Comprehensive examinations are designed to assure the faculty that the student has attained a reasonable level of proficiency and understanding in the chosen field of study. At the master's level, the examinations are administered by the department after most of the course work is completed. In consultation with the major adviser, the student registers for the comprehensive examination without credit on a satisfactory/unsatisfactory basis. All committee members may review the examination. The comprehensive examination must be completed satisfactorily before the student files for candidacy. Unless a grade

of Unsatisfactory (U) or Incomplete (I) is changed to Satisfactory (S) during the subsequent semester, the student will be removed from graduate standing.

**Admission to Candidacy:** Advancement to candidacy confirms that a student has successfully completed departmental course requirements, university residency, and GRE/GMAT requirements. A master's degree student should file for candidacy after completion of the comprehensive examination and doctoral students should file for candidacy not later than eight months prior to graduation. Forms are available in the Graduate Office and require approval of the adviser, chairman of the major department, and the dean of the Graduate School. Admission to candidacy requires each student to have:

1. A B average or higher in all graduate work.
2. Formal approval of the advisory committee for the program of study, including the approach to the thesis.
3. Submitted scores for the Graduate Record Examination or the Graduate Management Admission Test.

A department may, at its discretion, impose additional requirements for admission to candidacy.

## Final Oral Examinations

Many departments require a final oral examination of each master's degree candidate. Students should consult departmental guidelines for details.

Individual departments impose explicit regulations when a student's performance is not satisfactory on the final oral examination. An advisory/examining committee may allow the student to retake the examination, it may recommend that the student be placed on probation, or it may recommend that the student be dropped from graduate standing. These recommendations are made to the graduate dean. Additional information on specialized master's degree programs are published in the department/college sections of this catalog.

# Doctor of Philosophy (Ph.D.) Degree

The doctor of philosophy (Ph.D.) degree is conferred for work of distinction in which the student displays original scholarship and achievement.

A student must exhibit evidence of mastery of a rather broad major field by passing a general examination. After that the student applies for admission to candidacy. A student must also prove ability to design and complete a program of original research by preparing a dissertation that adds to existing knowledge.

## Residence and Credit Requirements

**Time Limitation:** All requirements for the doctoral program, excluding prerequisite graduate coursework or prerequisite master's degrees, must be completed within a period of eight calendar years. The prerequisites required are explicitly defined by the departments concerned, and approved by the Graduate Council.

**Residence:** A minimum of six semesters of graduate study beyond the bachelor's degree is required. At least two successive semesters, excluding summer sessions, must be spent in full-time residence on campus at the University of Nevada, Reno.

**Credits:** A minimum of 72 graduate credits is required of which at least 48 must be in course work.

A maximum of 24 credits in course work with grades of B or better from a master's degree program or previous postbaccalaureate graduate studies program may be allowed toward the Ph.D. degree, with the approval of the major department, the graduate dean, and the Office of Admissions and Records.

**700-level Courses:** A minimum of 30 credits of 700-level courses beyond the baccalaureate, exclusive of dissertation credits, is required for the doctoral degree. A maximum of 18 of these credits may be used from a master's degree.

## Course Requirements

With advance approval of the advisory committee, the following types of Ph.D. programs may be arranged.

**Major Programs:** Major programs may be completed without a minor. In some cases, elective courses may be taken outside the major.

**Major-Minor Programs:** At least two-thirds of the credits, including dissertation research, must be taken in the major field. A minor field, if selected, must be approved by the department offering the minor.

**Area Programs:** An advisory committee consisting of members of several departments, with the approval of the dean of the Graduate School, may designate an area program which embraces the related subject matter of several departments.

## Procedures Toward Ph.D. Degree

**Qualifying Examinations:** The qualifying exam aids in the assessment of the student's current knowledge and defines the departmental requirements still to be completed. Each department will provide explicit guidelines to its students. For the student entering the Ph.D. program without a master's degree, qualifying examinations are to be completed prior to the completion of 24 graduate credits; for the student entering with the master's degree, the exams are to be completed during the first semester of graduate study.

**Program of Study:** As soon as practical after its appointment, the advisory/examining committee should meet to approve the student's program of study and the prospectus for the dissertation, following the same procedures as those outlined for master's degree candidates (see above).

Final acceptance of a student's program of study must be made by the examining/advisory committee prior to the student's filing for candidacy. The student's advisory committee may accept or reject any course or other work the committee deems appropriate or inappropriate to the student's program.

**Foreign Language Requirement:** Individual departments, programs, schools, or colleges may require competency in one or more foreign languages as part of the degree requirements for a doctorate. Students should consult individual departments for details.

**Comprehensive Examination:** This examination should be taken as soon as possible after completion of any language and all course requirements, but no later than eight calendar months before the date of graduation. It may be taken after a minimum of 75 percent of the student's required course work beyond the bachelor's degree is completed. This examination must be oral and written, and test the student's mastery of a broad field of knowledge, not merely the formal course work which has been completed.

The written examination is designed and administered by the department of the major, and the oral examination is conducted and evaluated by the advisory/examining committee.

If more than one negative committee vote is cast, the examination is failed. In case of failure, the examination may be retaken once,

provided the examining board feels that additional study is justified and the student continues such studies for an additional period as determined by the committee.

**Candidacy:** Application for admission to candidacy must be filed not later than eight calendar months before awarding of the degree, and not before completion of residence requirements, the comprehensive examination, any remaining GRE requirements, and the foreign language requirements.

**The Dissertation:** Candidates for the Ph.D. degree must register for at least 24 credits of dissertation work and must submit a dissertation satisfactory to the examining committee. Any exception to the minimum 24 dissertation credits requires the advance written approval of the department of the major and the graduate dean. The dissertation must represent original and independent investigation which is a contribution to knowledge. It should reflect not only a mastery of research techniques, but also the ability to select an important problem for the investigation, study it competently, and express the findings in an acceptable manner. Final approval of the dissertation is by the graduate dean.

Additional information about the Ed.D. and professional degrees are published in the relevant department/college sections of this catalog.

## Special Services

Special services provided by the Graduate School include:

**Statistical consulting:** For graduate students and faculty, a statistical consulting service is available to help with research and proposal development.

**Assistance in proposal writing:** Through the Getchell Library Learning Laboratory, the Graduate School makes available "Winning Grants," a series of 10 audio-visual lectures dealing with all aspects of developing proposals and contracts to potential sponsors.

**Graduate School Instructional Development (GSID):** The Graduate School provides special training for both national and international teaching assistants in various aspects relating to teaching skills.

**Graduate Student Paper Competition:** During the spring semester of each year, the Graduate School coordinates the "Graduate Student Paper Competition," a program sponsored by the Honor Society of Phi Kappa Phi, the Research Society of Sigma Xi, and the Graduate Student Association. Each applicant submits a scholarly research document. Then finalists are invited to give oral presentations of their research findings. Cash prizes are awarded to the winners.

**Graduate Teaching Fellow Award:** Nominations for the outstanding graduate teaching fellow on campus are made by individual departments at the beginning of spring semester each year. Each nominee must be serving in his or her second year as a graduate teaching fellow at the University of Nevada, Reno and must have completed at least 20 credits of graduate work. Before the award is made, student teaching evaluations are scrutinized and finalists are observed in their classrooms.

**Graduate Student Association:** Graduate student participation in university affairs is encouraged through the University of Nevada, Reno Graduate Student Association (GSA). The approval of a new GSA constitution in 1978 provides apportioned graduate student representation from each academic unit offering advanced degree programming. The GSA has voting representation on the Graduate Council and cooperates with the Associated Students of the University of Nevada (ASUN). The GSA president attends University of Nevada System (UNS) Board of Regents meetings. While social activities are provided by the GSA, the major emphasis is placed on improving academic and service programs relating to the specific needs of graduate students. The GSA publishes the Graduate Student Handbook, sponsors invited speakers on a wide variety of topics, helps fund graduate students who present papers at professional meetings, and promotes graduate student participation in campus and community affairs as well as regional and national scholarly meetings.

# Course Information

The assigned letter or number following the departmental designation indicates the appropriate level of instruction for each course:

A,B,C, etc., are special noncredit courses.
1-99 are nonbaccalaureate-level courses.
100-199 are freshman courses.
200-299 are sophomore courses.
300-399 are junior courses.
400-499 are senior courses.
500-599 are graduate courses.
600-699 are graduate courses. Some are dual listed with 400-level courses having a graduate component.
700-799 are graduate courses.

NOTE: Each student is personally responsible for registration in the correct course number and class level as approved by the faculty adviser.

## Symbols

An interpretation of the symbols which appear in the course listings follows:

a, b, c, etc. indicate successive terms of the same course which may be repeated for credit.

(3+0), (1+6), etc. show the number of 50-minute class periods of lecture (or recitation or discussion) plus the total number of periods of laboratory (or workshop or studio) per week. The number of class periods is not necessarily the same as the number of times the class meets. Thus (3+0) means the course meets for three periods of lecture per week and does not have any laboratory periods. Likewise, (1+6) means the course meets for one period of lecture and six periods of laboratory per week; the laboratory may meet twice a week for three periods each or three times a week for two periods each. For more specific information about a particular course, the student should consult the schedule of classes.

1, 2, etc. credits which appear after the parenthesis indicate the number of credits the course carries each semester.

S/U (in italics) means the course is graded Satisfactory or Unsatisfactory only.

## Abbreviations

A SC—Animal Science
ACC—Accounting
AGEC—Agricultural Economics
AGED—Agricultural Education and Communications
AGRO—Agronomy
ANAT—Anatomy
ANTH—Anthropology
ART—Art
B A—Business Administration
B CH—Biochemistry
B V—Beliefs and Values
BASQ—Basque
BIOL—Biology
C E—Civil Engineering
C I—Curriculum and Instruction
C J—Criminal Justice
C S—Computer Science
CEP—Counseling and Educational Psychology
CH E—Chemical Engineering
CHEM—Chemistry
CHS—Community Health Sciences
CIS—Computer Information Systems
CLS—Clinical Laboratory Science
CMB—Cell and Molecular Biology
CMPP—Cellular and Molecular Pharmacology and Physiology
E E—Electrical Engineering
E L—Educational Leadership
E S—Ethnic Studies
EC—Economics
EECB—Ecology, Evolution and Conservation Biology
ENGL—English
ENGR—Engineering
ENV—Environment
FCM—Family and Community Medicine
FLL—Foreign Languages and Literatures
FR—French
G E—Geological Engineering
GEOG—Geography
GEOL—Geology
GER—German
GK—Greek
H P—Historic Preservation
HCS—Human and Community Sciences
HDFS—Human Development and Family Studies
HIST—History
HON—Honors Program
HORT—Horticulture
IMED—Internal Medicine
INTD—Interior Design
IPM—Integrated Pest Management
ITAL—Italian
JAPN—Japanese
JOUR—Journalism
J S—Judicial Studies
LAT—Latin
L SC—Library Science
M E—Mechanical Engineering
MATH—Mathematics
MED—Medicine
METE—Metallurgical Engineering
MGRS—Managerial Sciences
MICR—Microbiology
MIL—Military Science
MINE—Mining Engineering
MUS—Music
NURS—Nursing
NUTR—Nutrition
OBGY—Obstetrics and Gynecology
P SC—Political Science
PATH—Pathology and Laboratory Medicine
PCHY—Psychiatry and Behavioral Sciences
PEDI—Pediatrics
PHAR—Pharmacology
PHIL—Philosophy
PHSY—Physiology
PHYS—Physics
PSY—Psychology
R ST—Religious Studies
RPED—Recreation, Physical Education and Dance
RUSS—Russian
RWF—Range, Wildlife, and Forestry
S W—Social Work
SOC—Sociology
SPA—Speech Pathology and Audiology
SPAN—Spanish
SPCM—Speech Communication
SURG—Surgery
TAM—Textile and Apparel Merchandising
THTR—Theatre
V M—Veterinary Medicine
W S—Women's Studies
W T—Western Tradition

# Course Offerings

## Prerequisites

The prerequisites listed for each course must be satisfied prior to registration, or the advanced approval of the department offering the course must be obtained, for enrollment to be valid.

## Inactive Courses

Certain courses are approved for offering as the need arises but due to their infrequent scheduling are listed as being inactive. Individuals desiring specific information about any inactive course should contact the chair of the department.

## Changes

All courses are subject to change without advance public notice. In addition, the university reserves the right to cancel or limit enrollment in any scheduled class.

## ACCOUNTING (ACC)

**201 INTRODUCTORY ACCOUNTING I** (3+0) 3 credits
Purpose and nature of accounting, measuring business income, accounting principles, assets and equity accounting for external financial reporting.

**202 INTRODUCTORY ACCOUNTING II** (3+0) 3 credits
Forms of business organization; cost concepts and decision making; break-even analysis, fixed and variable costs, budgeting for internal reporting. Prerequisite: ACC 201.

UPPER-DIVISION COURSES: Business students must have satisfactorily completed the entire lower-division business core and CIS 203. (See section on *Upper-Division Courses* in the College of Business Administration section.)

**303 INTERMEDIATE ACCOUNTING I** (3+0) 3 credits
Theory and practice of accounting for cash, receivables, prepaid and accrued items, plant and equipment, intangible assets.

**304 INTERMEDIATE ACCOUNTING II** (3+0) 3 credits
Shareholder's equity, dilutive securities, and investments; issues related to income determination, preparation and analysis of financial statements. Prerequisite: ACC 303.

**307 GOVERNMENTAL AND FIDUCIARY ACCOUNTING** (3+0) 3 credits
Accounting for governmental and not for profit enterprises. Fiduciary accounting for estates, trusts, liquidations and bankruptcies. Accounting for partnerships.

**309 MANAGEMENT ACCOUNTING I** (3+0) 3 credits
Cost analysis applied to decision-making. Materials, labor and overhead, relevant cost, joint and by-products, job order and process costing, budgeting and standard costs.

**311 AUDITING I** (3+0) 3 credits
Auditor's standards and legal responsibilities; statistical sampling and evidence gathering, internal control and audit programs for assets, liabilities, revenue and expenses; preparation of audit reports. Prerequisite or corequisite: ACC 304.

**313 FEDERAL TAX ACCOUNTING I** (3+0) 3 credits
General concepts of federal income taxation, including research methods and planning techniques, with emphasis upon application to individuals as employees and proprietors.

**395-396 INTERNSHIP IN ACCOUNTING** 1 to 3 credits each S/U *only*
Cooperative education wherein students apply knowledge to real situations in program developed by company official and faculty adviser to optimize learning experiences. Term paper required. Prerequisite: first semester seniors only.

**405, 605 ADVANCED ACCOUNTING** (3+0) 3 credits
Accounting for investments in other entities. Consolidated accounts. Conceptual issues in corporate financial reporting. Accounting for price changes. Prerequisite: ACC 304.

**410, 610 MANAGEMENT ACCOUNTING II** (3+0) 3 credits
Continuation of cost accounting concepts; nonmanufacturing costs, relevant costs, inventory valuation, joint and by-products and capital budgeting. Prerequisite: ACC 309.

**414, 614 FEDERAL TAX ACCOUNTING II** (3+0) 3 credits
Survey of income tax principles governing the formation and operation of corporations, partnerships and S-corporations, including liquidating and nonliquidating distributions. Prerequisite: ACC 313.

**420, 620 INTERNATIONAL ACCOUNTING** (3+0) 3 credits
Emphasis on comparative financial reporting systems and managerial reporting problems of multi-national firms. Course fulfills accounting elective or international requirements, but not both. Prerequisite: ACC 304.

**424, 624 COMPUTER-BASED AUDITING** (3+0) 3 credits
Develop control techniques for security and integrity of computer systems and analyze computer audit methods for compliance and substantive testing in batch and online systems. Prerequisite or corequisite: ACC 480 or CIS 461.

**470, 670 TAX PLANNING AND RESEARCH** (3+0) 3 credits
Thorough analysis of the process of tax research. Tax planning concepts through the medium of problem-oriented investigation. Extensive use of library materials. Topical matter will be selected from relevant contemporary issues. Prerequisite: ACC 313.

**480, 680 ACCOUNTING SYSTEMS AND AUTOMATION** (3+0) 3 credits
Accounting information systems with an emphasis on the computer's role in these systems. Topics include data bases, computerized control systems, computer crime and systems study work for a systems revision. Prerequisite: ACC 304, 309, 311, 313.

**490, 690 INDEPENDENT STUDY** 1 to 3 credits
Independent study in selected topics. Maximum of 6 credits.

**493, 693 ACCOUNTING THEORY** (3+0) 3 credits
Review of accounting literature and contemporary accounting problems. Emphasis placed on the development of basic accounting concepts. Prerequisite: ACC 304.

**494, 694 SPECIAL TOPICS** (3+0) 3 credits
Selected contemporary topics in the discipline of accounting.

*Inactive Courses*
412, 612 AUDITING II (3+0) 3 credits
491, 691 CPA PROBLEMS I (3+0) 3 credits

## AGRICULTURAL ECONOMICS (AGEC)

**100 AGRICULTURE AND RESOURCES IN THE ECONOMY** (3+0) 3 credits
Economic principles related to agricultural and natural resources. Topics:

price determination, emphasizing demand; price searching and taking; sources of and prescriptions for fluctuating economy.

202 AGRICULTURAL AND RESOURCE ECONOMICS (3+0) 3 credits
Production principles affecting the allocation of scarce agricultural and renewable resources by individual firms and implications for aggregate supply and resulting price determination.

211 AGRIBUSINESS ANALYSIS (2+2) 3 credits
Use of financial records in planning and analyzing business records.

213 MICROCOMPUTERS IN AGRIBUSINESS (2+3) 3 credits
Introduction to the use of microcomputers. Emphasizes use of word processing, spreadsheets, and data management.

270 INTRODUCTION TO STATISTICS (3+3) 4 credits
Principles of statistics and application to the fields of agriculture and life sciences.

280 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in agricultural and resource economics.

310 PRODUCTION ECONOMICS (3+0) 3 credits
Application of techniques and principles of economics to the problems of production of goods and services. Prerequisite: microeconomics.

312 INTERMEDIATE MICROCOMPUTER COMMUNICATIONS (1+0) 1 credit
Applications of communications software and word processing. Prerequisite: AGEC 213.

313 INTERMEDIATE APPLICATIONS OF SPREADSHEETS (1+3) 2 credits
Use of electronic spreadsheets with applications to financial and production business records. Prerequisite: AGEC 213.

314 INTERMEDIATE DATA BASE MANAGEMENT (1+3) 2 credits
Use of data base management software with applications to financial and production records. Prerequisite: AGEC 213.

315 AGRIBUSINESS FINANCE (3+0) 3 credits
Principles of finance for management of agribusiness enterprises. Financial analysis, planning and forecasting and decisions involving capital assets. Prerequisite: microeconomics.

316, 416 INTERNSHIP 1 to 3 credits S/U *only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

322 COMMODITY FUTURES MARKET (3+0) 3 credits
Activities of commodity futures exchanges, mechanics of trading, hedging and forward pricing; analysis of commodity prices; regulation of trading. Prerequisite: EC 102 or AGEC 202.

332 AGRICULTURAL ECONOMICS POLICY (3+0) 3 credits
Agricultural economic policy in the U.S. Review of past and present policies and evaluation of these policies. Prerequisite: AGEC 202 or EC 102.

350 QUANTITATIVE MODELING FOR AGRIBUSINESS ANALYSIS (3+0) 3 credits
Quantitative methods and models for analyzing resource allocation problems in agricultural economics. Prerequisite: MATH 211.

364 ECONOMICS OF OUTDOOR RECREATION (2+2) 3 credits
Application of economic principles to outdoor recreation problems and policies. Prerequisite: AGEC 202 or EC 102.

386 AGRIBUSINESS FIELD TRIP (0 to 3+6) 1 to 2 credits S/U *only*
Tours of agribusiness enterprises in Nevada or California. A one-week field trip during spring break to observe the management and marketing practices used in successful operations of different agribusiness structures. May be repeated once. Paper required for 2 credits. Prerequisite: AGEC 202 or EC 102.

400 SEMINAR (1+0) 1 credit
Research work and reports on topics of interest in agricultural and resource economics.

411, 611 AGRIBUSINESS DECISION ANALYSIS (2+3) 3 credits
Case study problems related to agribusiness, ranching and farming will be used to study methodologies of decision analysis. Linear programming and risk analysis will be introduced. Prerequisite: AGEC 211, 213 or equivalent.

425 AGRIBUSINESS MARKETING (3+0) 3 credits
Concepts of marketing agricultural food and fiber products. Applications of marketing principles and forecasting emphasizing food and fiber products of local, regional, and national importance. Prerequisite: microeconomics.

428 INTERNATIONAL AGRICULTURAL MARKETING (3+0) 3 credits
Discussion of international trade as it impacts U.S. agriculture. Review U.S. and foreign policies that affect trade and consequential impact on prices of domestic commodities. Prerequisite: AGEC 202.

460, 660 AGRICULTURE AND ECONOMICS OF DEVELOPMENT (3+0) 3 credits
Topic areas include growth models, the role of agriculture in regional or national economies, factor markets, macro and trade policies, natural resources and planning techniques. Prerequisite: AGEC 202; EC 102 or SOC 101.

463, 663 DISCRETE SYSTEMS SIMULATION (3+0) 3 credits
Analysis of discrete-event systems via computer simulation models. Emphasis on model building and the design and analysis of simulation experiments for complex systems.

466, 666 NATURAL RESOURCE AND ENVIRONMENTAL ECONOMICS (3+0) 3 credits
Emphasizes interrelations of economics principles and institutional factors affecting use and value of natural resources. Attention given to special problems of land, water, and environment. Prerequisite: AGEC 202 or EC 102.

470, 670 INTERMEDIATE STATISTICAL METHODS (3+0) 3 credits
Statistical topics including analysis of variance, simple and multiple regression and analysis of enumeration statistics. Emphasizes selection and application of statistical methods to realistic problems. Computers used to assist in statistical analyses. Prerequisite: one course in statistics.

472, 672 REGIONAL ECONOMIC ANALYSIS (3+0) 3 credits
(See EC 472 for description.)

480 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in agricultural and resource economics.

485, 685 SPECIAL TOPICS (1 to 3+0) 1 to 3 credits
Presentation and review of recent research, innovations and developments in agricultural and resource economics. Includes the areas of marketing, production, economics, regional development, resource development and recreation economics. Maximum of 6 credits.

705 ADVANCED STATISTICAL ANALYSIS (2+2) 3 credits
Advanced analysis of variance and covariance, multiple and curvilinear regression, nonparametric statistics and sampling finite populations. Emphasis is given to computer applications. Prerequisite: statistics course.

710 ADVANCED AGRICULTURAL PRODUCTION ECONOMIC (3+0) 3 credits
Production principles applied to allocation of land, labor, capital and management in agriculture. Prerequisite: AGEC 310.

720 AGRICULTURAL PRICES AND MARKETS (3+0) 3 credits
Examination of alternative market structures and determination of agricultural product prices.

730 ADVANCED AGRICULTURAL ECONOMIC POLICY (3+0) 3 credits
Analysis of the effects of alternative economic policies on production, resource allocation and welfare in the agricultural sector. Prerequisite: AGEC 332.

740 RESEARCH METHODOLOGY (1+0) 1 credit
Scientific method applied to research in agricultural economics. Survey of

various schools of thought concerning use of economic theory and methods of measurement in research. Prerequisite: AGEC 310.

750 QUANTITATIVE METHODS IN AGRICULTURAL RESOURCE ECONOMICS (3+0) 3 credits
Application of quantitative methods such as mathematical programming, Markov processes and simulation to problems in agriculture, natural resources and rural development. The computer is used to solve problems encountered by resource managers and administrators.

755 EXPERIMENTAL DESIGN (1+2) 2 credits
Advanced techniques of statistical inference. Design and analysis of experiments in agriculture and related fields and use of computer programming in statistical analysis. Prerequisite: statistics course.

760 ADVANCED NATURAL RESOURCES ECONOMICS (3+0) 3 credits
Applications of economic principles to natural resource development, use, conservation and policy. Prerequisite: EC 321.

790 SEMINAR (1 to 3+0) 1 to 3 credits
Research work and reports on topics of interest in agricultural and resource economics.

793 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in agricultural and resource economics. Maximum of 6 credits.

795 COMPREHENSIVE EXAMINATION 0 credit S/U *only*

796 PROFESSIONAL PAPER 1 to 3 credits S/U *only*
Required of all graduate students who wish to complete the master of science degree under Plan B.

797 THESIS 1 to 6 credits

798 INTERNSHIP 1 to 3 credits S/U *only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

# AGRICULTURAL EDUCATION AND COMMUNICATIONS (AGED)

*All students taking laboratory courses are required to furnish their own safety glasses to meet O.S.H.A. requirements.*

100 FUNDAMENTALS OF AGRICULTURAL AND EXTENSION EDUCATION (3+0) 3 credits
Introduction into methods and materials used in information transfer including vocational agriculture instruction and agricultural extension. Topics include historical development, current programs and trends.

105 AGRICULTURAL AND DOMESTIC STRUCTURES (2+3) 3 credits
Survey of integral components. Theory and operational analysis of structural, electrical, sanitation and environmental subsystems. No mechanical experience necessary.

110 WOODWORKING PRINCIPLES AND TECHNOLOGY (2+3) 3 credits
Fundamental principles and processes of woodworking. Emphasizes techniques used in design and fabrication of wood products.

115 SMALL EQUIPMENT MAINTENANCE (2+3) 3 credits
Familiarization with care, operation and maintenance of mechanical and electrical equipment used in rural and urban activities. Student must furnish engine.

153 AGRICULTURAL POWER TECHNOLOGY (2+3) 3 credits
Principles of management of power sources used in the agriculture industry. Principles of power transfer, hydraulics, pneumatics, efficiencies, diagnostics and machine capabilities. Prerequisite: MATH 115.

280 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in (a) agricultural education, (b) industrial mechanics. Maximum of 6 credits.

312 METALLURGICAL PRINCIPLES AND WELDING TECHNOLOGY (2+3) 3 credits
Current techniques and equipment in working metals. Properties of metals, welding and metal working processes, metals testing procedures, environmental and facilities management. Prerequisite: MATH 115.

331 TILLAGE AND PLANTING MACHINERY (2+3) 3 credits
Principles of operation, preventive maintenance, adjustment and repair of farm tractors, planters, primary and secondary tillage equipment and sprayers. Prerequisite: MATH 110.

332 HARVESTING MACHINERY (2+3) 3 credits
Principles of operation, preventive maintenance, adjustment and repair of farm tractors, hay and forage harvesting machinery and combines. Prerequisite: MATH 110.

333 MACHINE DESIGN TECHNOLOGY (2+3) 3 credits
Functional design and principles to create equipment and machinery. Incorporates principles of technology and systems management to design and fabricate equipment used in industry. Prerequisite: MATH 115.

341 AGRICULTURAL STRUCTURES (2+3) 3 credits
Building materials, planning structures, concrete forms, placement and finishing concrete block construction; framing and pole construction, roof structures and painting relative to agricultural structures. Prerequisite: MATH 110.

342 YOUTH PROGRAMS (1 to 3+0) 1 to 3 credits S/U *only*
Plan, conduct and evaluate the F.F.A. state contests and convention. Maximum of 6 credits.

353 AGRICULTURAL POWER TECHNOLOGY (2+3) 3 credits
Principles of management of power sources used in the agriculture industry. Principles of power transfer, hydraulics, pneumatics, efficiencies, diagnostics, and machine capabilities. Prerequisite: MATH 115.

356 ELECTRICAL POWER AND PROCESSING (2+3) 3 credits
Generation and distribution of electrical power including motors, circuits, controls, sensors materials, processes, and safety. Prerequisite: MATH 115.

360 EXTENSION PROGRAMS IN AGRICULTURE AND HOME ECONOMICS (2+0) 2 credits
Principles and practice in methods used for cooperative extension work. History, organization and philosophy of extension service. Prerequisite: junior standing in agriculture or home economics.

370 CROP HANDLING AND STORAGE FACILITIES (2+3) 3 credits
Design and construction of handling and storage facilities for grain, hay and forage crops. Prerequisite: MATH 110.

371 LIVESTOCK FACILITIES (2+3) 3 credits
Design and construction of livestock and dairy facilities including barns, corrals, fences, as well as farmstead and ranch planning. Prerequisite: MATH 110.

410 AGRICULTURAL LAW (3+0) 3 credits
Examination of more important applications of laws and regulations in management of operations of farms and ranches and the agribusiness firms. Prerequisite: junior standing.

458 SUPERVISED EXTENSION EXPERIENCE (0+2 per credit) 1 to 8 credits
Provides opportunities for senior-level agricultural students in on-site training and work with the Nevada Cooperative Extension Service.

480 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in (a) agricultural education, (b) industrial mechanics. Maximum of 6 credits.

485, 685 SPECIAL TOPICS (1 to 3+0) 1 to 3 credits
Presentation and review of recent research, innovations, and developments in (a) agricultural and vocational education, (b) agricultural mechanics. Maximum of 6 credits.

720 ADVANCED METHODOLOGY IN VOCATIONAL EDUCATION (1+0) 3 credits
Theoretical and applied study of teaching strategies in vocational education.

760 EXTENSION PROGRAM ANALYSIS (2+0) 2 credits
Analysis and development of cooperative extension programs in agriculture, home economics and rural areas development. Prerequisite: graduate standing in agriculture or home economics.

763 INTERNSHIP IN CURRICULUM AND INSTRUCTION (0+2 per credit) 3 to 6 credits
(See C I 750 for description.)

793 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in (a) agricultural education, (b) industrial mechanics. Maximum of 6 credits.

*Inactive Courses*
381 MACHINE TOOL OPERATION (2+3) 3 credits
400 SEMINAR (1+0) 1 credit
700 SEMINAR (1 to 3+0) 1 to 3 credits

# AGRONOMY (AGRO)

100 PRINCIPLES OF PLANT-SOIL-WATER RESOURCE USE (3+0) 3 credits
Introduction to plant, soil and water resources of the world. Use of these resources for the benefit of man.

204 PRINCIPLES OF PLANT PRODUCTION (2+3) 3 credits
Principles underlying the creation and maintenance of a favorable environment for efficient production of plants. Prerequisite: BIOL 111.

205 PRINCIPLES OF PLANT PRODUCTION IN URBAN ENVIRONMENTS (3+0) 1 to 3 credits
Fundamental principles applied to the production and maintenance of plant material in modified urban environments. Topics include soil modification, species selection, water management, and pest control.

222 SOILS (3+3) 4 credits
Physical, chemical and biological properties of soils, soil genesis and classification, plant-soil-water relations. Prerequisite: CHEM 101, 102.

316, 416 INTERNSHIP (1 to 3+0) 1 to 3 credits *S/U only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

327 SOIL FERTILITY AND MANAGEMENT (3+0) 3 credits
Soil as medium for plant growth, essential elements, fertilizers and their use, amendments, salinity, soil fertility evaluation, cropping systems and soil management. Prerequisite: AGRO 222, CHEM 142.

344 IRRIGATION PRINCIPLES AND PRACTICE (3+0 or 3) 3 or 4 credits
Principals and practices underlying efficient use of water in irrigation, irrigation methods, land preparation, salinity, etc. Laboratory optional. Prerequisite: AGRO 222.

355 FORAGE CROPS (2+3) 3 credits
Physiological bases for management of forage crops. Quality and utilization of forages. Greenhouse or laboratory problems relating to production of forages. Identification of important forage seeds and plants. Prerequisite: BIOL 111.

357 CEREAL CROPS (2+3) 3 credits
Physiological basis for management of cereal crops. Quality and utilization of cereals. Greenhouse or laboratory problems relating to production of cereals. Identification of important cereal seeds and plants. Prerequisite: BIOL 111.

400 SEMINAR (1+0) 1 credit
Research work and reports on topics of interest.

406, 606 PLANT BREEDING (2+3) 3 credits
Methods of plant breeding and their application to various crops. Prerequisite: BIOL 313.

412, 612 ADVANCED PLANT PRODUCTION (2+3) 3 credits
Cultural practices and related physiological processes of economic crop growth and development. Physical, chemical and environmental control of crop production. Prerequisite AGRO 204, BIOL 355. or B CH 412.

431, 631 BIOCLIMATOLOGY (3+0) 3 credits
Elements of climatology and microclimatology in relation to living organisms. Effects of man's actions on bioclimates. Equipment for bioclimatic investigations and methods of data summarization and interpretation. Prerequisite: MATH 110 or equivalent.

480 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in bioclimatology, soils, crop production and water science.

485, 685 SPECIAL TOPICS (1 to 3+0) 1 to 3 credits
Presentation and review of recent research, innovations and developments. Includes areas of bioclimatology, crop science, drainage, irrigation, plant breeding or soil science Maximum of 6 credits.

702 SOIL CHEMISTRY (2+3) 3 credits
(See RWF 702 for description.)

715 PLANT WATER RELATIONS (2+0) 2 credits
Integrated study of the role of water in plants in relation to their environment. Topics include soil water, root systems, water and salt absorption, and movement in plants, transpiration, effects of water deficits on plants and measurement of plant water stress. Prerequisite: BIOL 355.

790 SEMINAR (1+0) 1 credit
Research work and reports on topics of interest.

791 SPECIAL TOPICS 1 to 3 credits

*Inactive Courses*
424, 624 SOIL MICROBIOLOGY AND POLLUTANT DECOMPOSITION (3+0) 3 credits
444, 644 IRRIGATION SYSTEM MANAGEMENT (3+0) 3 credits
445, 645 FARM IRRIGATION SYSTEM DESIGN (3+0) 3 credits
446, 646 DRAINAGE OF AGRICULTURAL LANDS (2+3) 3 credits
711 RESEARCH METHODOLOGY (2+3) 3 credits

# ANATOMY (ANAT)

490, 690 INDEPENDENT STUDY 1 to 8 credits S/U *only*

601 HUMAN GROSS ANATOMY AND EMBRYOLOGY (3+9) 6 credits
Presents concepts in gross anatomy and embryology. Laboratories employ use of models and cadaver dissection.

602 HUMAN HISTOLOGY (2+3) 3 credits
Presents concepts of human medical histology and ultrastructural anatomy. Laboratories employ use of microscope slides, models and electron micrographs.

603 HUMAN NEUROANATOMY (3+3) 4 credits
Introduction to the central nervous system. Designed for medical students.

616 SEMINAR IN ANATOMY (1+0 per credit) 1 to 8 credits
Library research and presentation in seminar fashion of a selected topic in any subdiscipline of anatomy.

617 SELECTED TOPICS IN ANATOMY (0+3 per credit) 1 to 8 credits
Comprehensive study by dissection of a selected area or system of the human body.

618 READINGS IN ANATOMY (1+0 per credit) 1 to 8 credits *S/U only*
Readings on selected topics in anatomy; involves library research and

discussions with the anatomy staff; may include preparation and submission of a paper.

619 RESEARCH IN ANATOMY (0+3 per credit) 1 to 8 credits
Individual or independent work on a special problem under the supervision of a member of the anatomy staff with whom the student's interests are closely related.

725 MEDICAL HUMAN ANATOMY (4+12) 8 credits
Schedule in anatomy comparable to that offered in ANAT 601, 602, 603. For students of medicine and graduate students in life sciences.

726 HEAD AND NECK ANATOMY I (2+3) 3 credits
Emphasis on clinical correlation and related aspects of oral biology. Prerequisite: a degree in medicine or dentistry.

727 HEAD AND NECK ANATOMY II (2+3) 3 credits
Continuation of ANAT 726. Detailed anatomy and dissection of the deeper head areas with emphasis on the oral cavity. Neurological implication of lesions of cranial nerves. Prerequisite: ANAT 726.

728 ADVANCED HUMAN NEUROANATOMY AND NEUROPHYSIOLOGY (2+3) 3 credits
Functional anatomy of fiber tracts and nuclear centers of the central nervous system, clinical neurology in terms of lesions of the central and peripheral nervous system; recent findings of neurophysiology in conjunction with neuroanatomy. Prerequisite: a degree in medicine or dentistry.

# ANIMAL SCIENCE (A SC)

100 ELEMENTS OF LIVESTOCK PRODUCTION (3+0) 3 credits
Fundamental concepts in care, management and economics of food producing animals. Includes contributions of the Nevada and U.S. animal industries in providing food on an international basis.

162 BASIC HORSEMANSHIP (1+0) 1 credit
Elementary horse nutrition, health and management, including a study of the horse's anatomy and conformation as related to tiding.

163 HORSEMANSHIP (1+3) 2 credits *S/U only*
Basic equitation theory and principles and their application in English and Western equitation.

200 STABLE MANAGEMENT (1+2) 2 credits
Skill development in the management of a commercial stable including care of horses, budget planning, records, public relations and business considerations. Prerequisite: A SC 162, 163.

201 LIVESTOCK SELECTION (1+3) 2 credits
Evaluation of livestock with major emphasis on beef, swine and sheep. Prerequisite: A SC 100.

203 MEAT TECHNOLOGY (2+3) 3 credits
Principles of conversion of animals to muscle foods. Processing, packaging preservation and sensory evaluation of meat as it relates to the consumer and food service industry.

206 HORSE HUSBANDRY (2+3) 3 credits
Care and management of horses including breeding, disease, nutrition and selection. Prerequisite: A SC 100 or BIOL 111.

208 INTERMEDIATE HORSEMANSHIP (0+3) 1 credit
Advancement of skill levels in theory and practice to the intermediate stages of English and western riding, beginning dressage, equitation over fences, western riding patterns. Prerequisite: A SC 162, 163.

211 FUNDAMENTALS OF ANIMAL NUTRITION (3+0) 3 credits
Basic principles of nutrition including maintenance, growth, reproduction and lactation: Composition of feedstuffs and role of nutrients in the animal's body. Prerequisite: A SC 100, CHEM 101.

280 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in animal science.

305 INTRODUCTION TO DEBOURRAGE (1+4) 3 credits
Schooling of the horse, gentling, longing, bridling, and preliminary and intermediate training at various gaits and movements. Prerequisite: A SC 162, 163, 206.

307 PHYSIOLOGY OF THE DOMESTIC ANIMAL (3+0) 3 credits
Physiology of the neuromuscular, central nervous, circulatory, respiratory, digestive, endocrine, reproductive and excretory systems with special reference to domestic animals. Prerequisite: BIOL 111.

309 PHYSIOLOGY OF REPRODUCTION (3+0) 3 credits
Reproductive organs and their functions, neural and endocrine interrelationships and responses to environmental influences. Prerequisite: CHEM 142, A SC 307 or BIOL 263.

315 ADVANCED HORSEMANSHIP (0+3) 1 credit
Advanced skill development for English and western riders. Combined training, dressage, jumping, flying lead changes, riding patterns, cattle work. Prerequisite: A SC 162, 163, 208.

316, 416 INTERNSHIP (1 to 3+0) 1 to 3 credits *S/U only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

325 ANIMAL GENETICS (2+3) 3 credits
Mechanisms of heredity, variation, methods of selection, systems of mating with special reference to livestock. Prerequisite: BIOL 111.

400 SEMINAR (1+0) 1 credit
Reports on research work and topics of interest in animal science.

406, 606 ADVANCED NUTRITION MANAGEMENT (3+3) 4 credits
Interrelationships between feed composition and nutrient requirements, formulation of rations by computers; ration evaluation and avoidance of imbalances. Prerequisite: A SC 211, CHEM 142 or equivalent.

411, 611 TECHNIQUES IN LIVESTOCK REPRODUCTION (1+3) 2 credits
Evaluation and application of various techniques to control and determine reproductive functions in livestock. Prerequisite: A SC 309 or equivalent.

412 BEEF AND SHEEP PRODUCTION (2+3) 3 credits
Principles of beef and sheep production and the application of breeding, physiology and nutrition to their production under western ranch and farm environments. Prerequisite: A SC 100, BIOL 111.

413, 613 RANGE-LIVESTOCK INTERACTION (3+0) 3 credits
Emphasis on species and breed selection, physiological considerations and alleviating detrimental effects on livestock. Interactions among livestock, wildlife and plant communities. Prerequisite: A SC 100 or BIOL 111.

414, 614 ENDOCRINOLOGY (3+0) 3 credits
Structure and function of endocrine glands and how their secretions regulate biochemical reactions, integrate tissue and organ systems and control behavior. Prerequisite: A SC 307 or BIOL 262, 263. (Same as BIOL 414, 614.)

422, 622 INSECT PESTS OF ANIMALS (3+0) 3 credits
(See IPM 422, 622 for description.)

423 HORSE PRODUCTION (2+3) 3 credits
Principles of equine production and application of breeding, physiology and nutrition to their production and marketing. Prerequisite A SC 206.

424 DAIRY CATTLE PRODUCTION (1+3) 2 credits
Principles of dairy production including management, lactation, nutrition, physiology, milk and by-products. Prerequisite: A SC 100, BIOL 111.

480 INDEPENDENT STUDY 1 to 3 credits
Intensive study of a special problem in animal science. Maximum of 6 credits.

485 SPECIAL TOPICS (1 to 3+0) 1 to 3 credits.
Presentation and review of recent research, innovations and development in various animal science areas including animal breeding, animal health, animal management, meats, nutrition and physiology. Maximum of 6 credits.

700 STATISTICAL METHODS (2+2) 3 credits
Techniques of statistical inference and their application. Prerequisite: AGEC 270.

782 ADVANCED TOPICS IN REPRODUCTION 1 to 3 credits
Intensive study of topics in (a) morphological and functional changes, (b) gamete development and functions, (c) early embryonic development and manipulation, (d) chemical messengers. Maximum of 6 credits.

783 ADVANCED TOPICS IN ANIMAL NUTRITION 1 to 3 credits
Intensive study of topics in (a) energy metabolism, (b) nitrogen metabolism, (c) mineral and vitamin metabolism, (d) laboratory techniques. Maximum of 6 credits.

790 SEMINAR (1+0) 1 credit
Research work and reports on topics of interest in animal science. Maximum of 2 credits.

791 SPECIAL TOPICS 1 to 3 credits
Intensive study of special topics in animal science Maximum of 6 credits.

792 SPECIAL PROBLEMS (2+0) 2 credits
Recent research in various areas in animal science including nutrition, physiology, breeding, meats or animal health is discussed and evaluated. Maximum of 6 credits.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

796 PROFESSIONAL PAPER 1 to 3 credits *S/U only*
Required of all graduate students who wish to complete the master of science degree under Plan B.

797 THESIS 1 to 6 credits

# ANTHROPOLOGY (ANTH)

101 THE HUMAN EXPERIENCE (3+0) 3 credits
Introduction to human culture and society. Understanding human diversity through comparative study of politics, religion, economics, and kinship.

102 INTRODUCTION TO HUMAN ORIGINS AND EVOLUTION (3+1) 3 credits
Biological and evolutionary origins of humans, with consideration of population genetics, living primates, fossil record and human variation. Includes four laboratory experiences.

200 PEOPLES AND CULTURES OF THE OLD WORLD (3+0) 3 credits
Comparative survey of selected cultures of Asia, Africa and Europe. Discussion of processes of cultural change and adaptations to environments. Prerequisite: ANTH 101.

201 PEOPLES AND CULTURES OF THE AMERICAS AND PACIFIC (3+0) 3 credits
Comparative survey of selected cultures of the Americas and Pacific region. Discussion of processes of cultural change and adaptations to environments. Prerequisite: ANTH 101.

202 ARCHAEOLOGY (3+0) 3 credits
Uses of archaeology to understand and interpret major stages of human cultural development from beginnings to first civilizations.

205 ETHNIC GROUPS IN CONTEMPORARY SOCIETIES (3+0) 3 credits
Ethnic relations in the U.S. and other societies where cultural and "racial" pluralism illustrates problems and processes of social interaction. Prerequisite: introductory course in one of the social sciences. (Same as SOC 205.)

210 FOLKLORE, MYTH, AND LEGEND (3+0) 3 credits
Anthropological analysis of the human experience as expressed in myths, legends, folktales, and oral tradition.

212 MALE AND FEMALE: ANTHROPOLOGICAL PERSPECTIVES (3+0) 3 credits
Examination of male and female roles and family organization in human societies from the perspective of human evolutionary theory and comparative ethnographic evidence. Prerequisite: ANTH 101.

215 ANTHROPOLOGICAL FILM (2+2) 3 credits
Historical development and contemporary significance of documentary films about non-western peoples and cultures.

300 BEGINNING FIELD ARCHAEOLOGY (1+6) 3 credits
Practical experience in archaeological survey and excavation. Saturday lectures, exercises, and field trips.

309 MUSEOLOGY (3+0) 3 credits
History and philosophy of museums; their role in contemporary society; museum organization, management, program planning, funding, publications, guest speakers, supervised field trips to museums. (Same as ART 309, BIOL 309, GEOL 309, HIST 309.)

312 COMPARATIVE SOCIAL ORGANIZATION (3+0) 3 credits
Basic institutions of human society; examination of the variability of structure in social system and culture. Prerequisite: ANTH 101.

330 TECHNOLOGY AND CULTURE (3+0) 3 credits
Material culture and manufacturing processes in societies of differing scales and levels of complexity; factors influencing technological development and change.

345 AMERICAN INDIAN ART (3+0) 3 credits
The nature, function and history of American Indian art; formal and esthetic approaches; traditional and contemporary perspectives.

390 HERITAGE OF EARLY CIVILIZATION (3+0) 3 credits
Critical comparisons of technologies, sciences, arts, architectures, ideologies and state systems of early world civilizations and their contributions to the modern world. Prerequisite: W T 202, 203.

400, 600 FIELD SCHOOL IN ARCHAEOLOGY 6 credits
Summer instruction and practice in survey, excavation, and analysis. Prerequisite: special advance application.

401, 601 THEORY IN ARCHAEOLOGY (3+0) 3 credits
Past and current theories in archaeological interpretation.

402, 602 LABORATORY METHODS IN ARCHAEOLOGY (1+3) 2 credits
Techniques for cleaning, repairing and storing artifacts from archaeological collections. Management of archaeological laboratories and collections, including data retrieval systems. Prerequisite: ANTH 102, 202.

403, 603 COLLECTIONS RESEARCH IN ANTHROPOLOGY (1+3) 2 credits
Practicum in anthropological theory and method. Ethnographic, archaeological or similar collections are described, analyzed and interpreted under close supervision. Prerequisite: ANTH 101.

404, 604 ENVIRONMENTAL ARCHEOLOGY (3+0) 3 credits
Topics selected from paleoecology, taphonomy, geoarcheology, and dating methods; lectures, readings, and field trips cover advanced principles, method and theory, and practical applications.

405, 605 ANTHROPOLOGICAL LINGUISTICS (3+0) 3 credits
Distribution of languages of the world. Descriptive techniques and theoretical concepts in linguistics; their application to specific problems in anthropology. Prerequisite: ANTH 101.

406, 606 MEDICAL ANTHROPOLOGY (3+0) 3 credits
Application of anthropological theory and methods to human health, illness, and healing. Practioners, clients, and comparative medical systems.

408, 608 ARCHAEOLOGICAL METHODS (2+3) 3 credits
Development and applications of archaeological research designs, sampling strategies and field recording methods.

409, 609 ARCHAEOLOGY OF THE OLD WORLD (3+0) 3 credits
Survey of current archaeological knowledge about a particular area of the Old World to be selected from Africa, Asia and Europe. May be repeated once. Prerequisite: ANTH 102 or 202.

**410, 610 ETHNOGRAPHIC FIELD METHODS** (2+4) 4 credits
Preparation of research designs, techniques of collecting data in the field, work with informants; organization and analysis of data, research aids. Prerequisite: ANTH 312.

**411, 611 LINGUISTICS** (3+0) 3 credits
(See ENGL 411 for description.)

**414, 614 HISTORICAL LINGUISTICS** (3+0) 3 credits
(See ENGL 414 for description.)

**415, 615 PHONEMICS AND COMPARATIVE PHONETICS** (3+0) 3 credits
(See ENGL 415 for description.)

**416, 616 LINGUISTIC FIELD METHODS** (2+3) 3 credits
Procedures in eliciting, recording and analyzing language. Students work with informants. Prerequisite: ANTH 405 or 411 or 415. (Same as ENGL 416.)

**420, 620 AMERICAN INDIAN LANGUAGES** (3+0) 3 credits
Classification of American Indian languages; history of research in this field, structural features of representative languages; survey of research problems. Prerequisite: ANTH 429.

**423, 623 ARCHAEOLOGY OF NORTH AMERICA** (3+0) 3 credits
New world prehistory with emphasis on North America; early man, influences from middle America and cultural sequences of western North America. Lecture and discussion of methodology and field problems. Prerequisite: ANTH 102.

**424, 624 HISTORICAL ARCHAEOLOGY** (3+0) 3 credits
European exploration and colonization of the New World, Africa, Asia, and the Pacific after 1492. Archaeology of shipwrecks, cities, and industry. Prerequisite: ANTH 101.

**425, 625 ARCHAEOLOGY OF ANCIENT NEW WORLD CIVILIZATIONS** (3+0) 3 credits
Comparative study of indigenous civilizations in Mexico, Central America, and South America prior to the European conquest.

**426, 626 INDUSTRIAL ARCHAEOLOGY** (3+0) 3 credits
Comparative and historical study of industrial technology, communities, and landscape in America and Europe through physical remains.

**429, 629 LANGUAGE AND CULTURE** (3+0) 3 credits
Nature of language in light of anthropological research, diversity of the world's languages, relation of language to social organization and world view. Prerequisite: ANTH 101.

**430, 630 PROBLEMS IN PHYSICAL ANTHROPOLOGY** (3+0) 3 credits
Theories of human evolution, study of fossil hominids, racial classification and genetics, anthropometry. Prerequisite: ANTH 102.

**431, 631 PRIMATE EVOLUTION** (3+0) 3 credits
Detailed consideration of the record of primate and human evolution and paleobiology; review of contributions from paleontology, geology, behavioral biology, and ecology. Prerequisite: ANTH 102.

**435, 635 PRIMATE BEHAVIOR** (3+0) 3 credits
Behavior and social organization of the nonhuman primates; comparisons with human populations, implications for human evolution. Prerequisite: ANTH 101 or 102.

**436, 636 PHYSICAL ANTHROPOLOGY** (3+0) 3 credits
Variation, adaptation and evolution of human populations. Processes evolution, taxonomy and classification, human genetics, adaptation and acclimatization, mating systems and population dynamics and paleoanthropology. Prerequisite: ANTH 102.

**440, 640 HISTORY OF ANTHROPOLOGY** (3+0) 3 credits
Anthropological ideas about humanity and culture in Western social thought comparison of contemporary theories of culture and society. Required of majors in senior year.

**450, 650 PEASANT SOCIETY** (3+0) 3 credits
Evaluation of concept of "peasantry" as social type in light of cross-cultural comparison of the world peasantries (including materials from Europe, Latin America, Asia and Africa); emphasis upon the economic, political and religious relationships between the peasant and urban sectors of national cultures; examination of the role of the peasantry in the modernization of developing nations. Prerequisite: ANTH 101.

**452, 652 POLITICAL ANTHROPOLOGY** (3+0) 3 credits
Comparative study of the political organization of band, tribal and state-level societies. Analysis of the modernization of traditional regions and of peasant and primitive warfare, rebellion and revolutions. Prerequisite: ANTH 101.

**455, 655 INTRODUCTION TO BASQUE LINGUISTICS** (3+0) 3 credits
(See BASQ 455 for description.)

**460, 660 SEMINAR IN CULTURAL ANTHROPOLOGY** (1 to 3+0) 1 to 3 credits
Consideration of selected topics in ethnology, ethno-linguistics or social anthropology. Topics vary from semester to semester. Maximum of 6 credits.

**461, 661 INDIANS OF THE GREAT BASIN** (3+0) 3 credits
Intensive study of indigenous cultures of the intermontane region of western North America; tribal distribution, problems in culture areas, social organization and change.

**462, 662 INDIANS OF NORTH AMERICA** (3+0) 3 credits
Culture areas of North America and related areas of Meso-America. Comparative culture institutions and material from representative groups; review of theoretical problems in North American ethnology. Prerequisite: ANTH 101.

**463, 663 INDIANS OF SOUTH AMERICA** (3+0) 3 credits
Culture areas of South America and related areas of Meso-America. Comparative cultural institutions and material from representative groups; review of theoretical problems in South American ethnology. Prerequisite: ANTH 101.

**464, 664 CONTEMPORARY LATIN AMERICAN SOCIETY** (3+0) 3 credits
Survey of the structural features of Latin American society from the time of Luso-Hispanic contact to the present; emphasis upon cultural pluralism within national structures, race relations and processes of social change. Prerequisite: ANTH 101.

**465, 665 CULTURE AND PERSONALITY** (3+0) 3 credits
Examination of significant studies on the role of culture in the formation of personality. Prerequisite: ANTH 101 or PSY 101 or SOC 101.

**466, 666 OLD WORLD BASQUE CULTURE** (3+0) 3 credits
(See BASQ 466 for description.)

**467, 667 PEOPLES AND CULTURES OF SOUTHEAST ASIA** (3+0) 3 credits
Analysis of representative cultures of southeast Asia, their origins and development. Prerequisite: ANTH 101.

**468, 668 PEOPLES AND CULTURES OF THE PACIFIC** (3+0) 3 credits
Prehistory, recent cultures and problems of change among the peoples of Oceania. Prerequisite: ANTH 101.

**469, 669 PEOPLES AND CULTURES OF EUROPE** (3+0) 3 credits
Culture history and contemporary ethnography of European peasant societies. Prerequisite: ANTH 101.

**470, 670 ANTHROPOLOGY AND ECOLOGY** (3+0) 3 credits
Introduction to processes of biological and cultural adaptation to selected environments. Relevant topics include hominid ecology, resource exploitation, patterns of subsistence and the modes and rates of adaptation to changing environments.

**475, 675 ANTHROPOLOGY AND EDUCATION** (3+0) 3 credits
Patterns of learning and transmission of culture in literate and nonliterate societies; the education process and cultural factors such as values, goals, world-view, language, and leadership. Recommended for teachers and others in multiethnic situations. Prerequisite: ANTH 101 or equivalent.

**476, 676 ZOOARCHAEOLOGY** (3+3) 3 credits

Principles and techniques of analysis of bones from archaeological and Quaternary paleontological contexts.

**480, 680 MUSEUM TRAINING FOR ANTHROPOLOGISTS** (3+0) 3 credits
Apprentice curatorship in anthropology; processing and preservation of anthropological collections; design of exhibits; curatorial responsibilities; museum research; relationship to public, state and federal agencies.

**488, 688 PEOPLES AND CULTURES OF THE MIDDLE EAST** (3+0) 3 credits
Survey of the ethnic, religious and linguistic groups of the middle East with attention to historical development. Prerequisite: ANTH 101.

**489, 689 PEOPLES AND CULTURES OF AFRICA** (3+0) 3 credits
African culture history; analysis of social systems and cultural distributions; emergence of modern nations. Prerequisite: ANTH 101.

**491, 691 ANTHROPOLOGY OF RELIGION** (3+0) 3 credits
Nature and functions of religion in various societies, the development of theoretical concepts in the anthropological study of religious and magical phenomena. Prerequisite: ANTH 101.

**493, 693 COMPARATIVE ART** (3+0) 3 credits
Nature and functions of art and aesthetic values in various societies, the techniques and forms of art; esthetics and art in anthropological theory. Prerequisite: ANTH 101.

**499, 699 SPECIAL PROBLEMS IN ANTHROPOLOGY** (1 to 6+0) 1 to 6 credits.
Research or reading to be carried out under supervision. Maximum of 6 credits.

**701 INDIVIDUAL READING** 1 to 6 credits
Supervised reading with regular conferences between student and instructor. Maximum of 6 credits.

**702 GRADUATE RESEARCH** 1 to 6 credits
Research projects in anthropology carried out under suspension. Maximum of 6 credits.

**703 GRADUATE SEMINAR IN CULTURAL ANTHROPOLOGY** (3+0) 3 credits
Close examination of basic concepts and theories of social and cultural anthropology.

**704 GRADUATE SEMINAR IN PHYSICAL ANTHROPOLOGY** (3+0) 3 credits
Selected reading and discussion of topics in human biological evolution.

**705 GRADUATE SEMINAR IN ARCHAEOLOGY AND PREHISTORY** (3+0) 3 credits
Selected reading and discussion of topics in archaeological methods and theory.

**706 SEMINAR IN ANTHROPOLOGICAL PROBLEMS** (3+0) 3 credits
Detailed examination of selected issues in cultural anthropology, physical anthropology, anthropological linguistics or archaeology. Maximum of 6 credits.

**707 METHODS IN CULTURAL ANTHROPOLOGY** (3+0) 3 credits
Examination of methods used to collect and analyze data in social and cultural anthropology.

**708 ADVANCED SEMINAR IN QUATERNARY STUDIES** (3+0) 3 credits
Intensive examination of methods, theories, and interpretations of selected topics, including peopling of the new world, environmental change, or taphonomy of middle-range research.

**713 PROBLEMS IN LANGUAGE** (3 or 4+0) 3 or 4 credits
(See ENGL 713 for description.)

**720 PRINCIPLES OF PALYNOLOGY** (2+3) 3 credits
Theory and methods of pollen analysis and applications in reconstructions of cultural, ecological and environmental histories.

**737 TEACHING METHODS IN ANTHROPOLOGY** (1+0) 1 credit
Course objectives and organization, lecture, presentation, examination procedures and related problems in teaching the subject matter of anthropology.

**750 REGIONAL STUDIES IN ANTHROPOLOGY** (3+0) 3 credits
Selected topics focusing upon a particular region of the world. Maximum of 6 credits.

**760 INTERNSHIP** (0+9) 3 credits
Supervised professional work experience in archaeology or one of the other subfields in anthropology. Work in local governmental or private organizations under direction of professionals. Maximum of 6 credits. Prerequisite: admission to candidacy for the M.A. in anthropology.

**780 GRADUATE TUTORIAL** (1 to 3+0) 1 to 3 credits
Tutorial reading and discussion of selected topics in anthropological research, methods or theory. Prerequisite: admission to doctoral program and approval of department graduate program chairman. Maximum of 12 credits.

**793 INDEPENDENT STUDY** 1 to 3 credits
Limited to students in the doctoral program. Maximum of 9 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 3 credits *S/U only*
Required of all graduate students who wish to complete the master of art's degree under Plan B.

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
492, 692 PROCESSES OF SOCIAL AND CULTURAL CHANGE (3+0) 3 credits

# ART (ART)

*Many studio courses require special expenses for materials and equipment in addition to registration and laboratory fees.*

**100 VISUAL FOUNDATIONS** (1+4) 3 credits
Explores visual forms and contemporary concepts through a variety of media, presentations and discussions.

**111 ART EXPERIENCES** (1/2+1 or 2+2) 1 or 3 credits *S/U only*
Introduction, lecture-studio course using art of the past and present as the basis for exploration of both traditional and experimental materials and techniques. Maximum of 6 credits.

**116 SURVEY OF THE ART OF WESTERN CIVILIZATION I** (3+0) 3 credits
Art of the western world from prehistoric times through the Gothic period.

**117 SURVEY OF THE ART OF WESTERN CIVILIZATION II** (3+0) 3 credits
Art of the western world from the Renaissance to the present.

**121 DRAWING** (0+6) 3 credits
Introduction to concepts of drawing based on visual observations.

**135 PAINTING** (0+6) 3 credits
Introduction to concepts of painting including color, form and composition.

**150 BEGINNING PHOTOGRAPHY** (1+4) 3 credits
Analytical and critical approach to the creative possibilities of photography including instruction in the basics of photographic techniques and materials.

**163 SCULPTURE** (0+6) 3 credits
Introduction to the concepts of three-dimensional composition.

**175 CERAMICS** (1+4) 3 credits
Introduction to ceramics emphasizing characteristics of various clay bodies.

**185 PRINTMAKING** (0+6) 3 credits
Introduction to processes emphasizing relief, intaglio and screen processes.

**212 PORTRAIT IN WESTERN ART** (2+0) 2 credits
Portrait painting and portraiture in sculpture from the Egyptian period through modern time.

**213 INTRODUCTION TO CONTEMPORARY ART** (3+0) 3 credits
Trends, issues, and development in art from the 1970s to the present.

**214 SURVEY OF AMERICAN ART** (3+0) 3 credits
General survey of art and architecture of America from the colonial period to the present.

**221-222 DRAWING** (0+6) 3 credits each
Intermediate courses designed to develop expression and discipline in drawing with emphasis on materials. Prerequisite: ART 100, 121.

**235-236 PAINTING** (0+6) 3 credits each
Intermediate course in painting, emphasizing various materials and methods. Prerequisite: ART 100, 135.

**250-251 INTERMEDIATE PHOTOGRAPHY** (1+4) 3 credits
Lecture/study with emphasis on improving basic technical and conceptual skills. Prerequisite: ART 100, 150.

**252 VIDEOGRAPHY** (1+4) 3 credits
Lecture/studio study using broadcast quality video as a means of personal expression. Prerequisite: ART 150, 250.

**256 CINEMA I/THE SILENT ERA** (3+0) 3 credits
History of film from beginning to introduction of sound, emphasizing development of forms and techniques. Film showings, lectures and discussions.

**257 CINEMA II/THE SOUND ERA** 1 to 3 credits
History, of the film from the introduction of sound with specific emphasis on particular time blocks and possible social/psychological relevance and/or influence. Maximum of 6 credits.

**258-259 GRAPHIC DESIGN** (1+4) 3 credits each
Design and production of camera-ready art. Emphasis on layout, mechanicals, illustrations, typography, trademark, packaging and product promotion. Prerequisite: ART 100 and a two-dimensional art course.

**260 NEW MEDIA** (1+4) 3 credits
Exploration of alternative concepts and media that may include video, performance art, audio and other experimental processes. Maximum of 6 credits.

**263-264 SCULPTURE** (0+6) 3 credits each
Intermediate emphasis on processes, concepts and materials. Prerequisite: ART 100, 163.

**275-276 CERAMICS** (1+4) 3 credits each
Intermediate emphasis on history, materials, methods and techniques with special attention to sculptural aspects. Lecture-laboratory method is employed with emphasis on research. Prerequisite: ART 100, 175.

**285-286 PRINTMAKING** (0+6) 3 credits each
Studio instruction concerned with professional printmaking processes including intaglio, relief and screen process. Prerequisite: ART 100, 185.

**287 PAPERMAKING** (1+4) 3 credits
Introduction to formation of paper sheets and casting pulp.

**300 WALLWORKS** (1+4) 3 credits
Making two and three-dimensional art designed for architectural installations. Murals and related art from cave painting to contemporary street art. Prerequisite: 6 credits of 200-level or above studio course work.

**309 MUSEOLOGY** (3+0) 3 credits
(See ANTH 309 for description.)

**314 MEDIEVAL ART** (3+0) 3 credits
Detailed study of arts of the Middle Ages from 300 to 1400, including early Medieval art, Carolingian. Ottonian, Romanesque and Gothic. Prerequisite: ART 116.

**315 ITALIAN RENAISSANCE ART** (3+0) 3 credits
History of Italian art in the 15th and 16th centuries.

**316 SOUTHERN BAROQUE ART** (3+0) 3 credits
History of Italian and Spanish art from 1600 to 1750.

**317 NORTHERN RENAISSANCE ART** (3+0) 3 credits
History, of Northern European art in the 15th and 16th centuries.

**318 NORTHERN BAROQUE ART** (3+0) 3 credits
History, of Northern European art from 1600 to 1750.

**319 FIELD STUDY** 1 to 3 credits
Student-faculty seminar including group travel to art centers within the U.S. and abroad for field study experience. Maximum of 6 credits.

**321-322 ADVANCED DRAWING** (0+6) 3 credits each
Continuation of ART 221-222 offered to develop maturity of expression in a broad range of media. Prerequisite: ART 222.

**335-336 PAINTING** (0+6) 3 credits each
Continuation of ART 235-236. Prerequisite: ART 121, 236.

**337-338 WATERCOLOR** (0+6) 3 credits each
Intermediate course involving comprehensive problems in painting with transparent and opaque watercolors. Prerequisite: ART 121, 135.

**342 ART EDUCATION: ELEMENTARY SCHOOLS** (2+2) 3 credits
Theoretical foundations of art education including a planned program of media investigation and experience in areas suitable for elementary and beginning middle school programming.

**346 ART EDUCATION: SECONDARY SCHOOLS** (0+6) 3 credits
Philosophical foundations and methods of curriculum planning and implementation for secondary art programming. A planned program of media investigation, classroom observation, and prestudent teaching experience. Prerequisite: senior standing and completion of art department major requirements.

**349 ELEMENTARY ART EDUCATION / SPECIAL WORKSHOP**
1 to 3 credits
Designed for the professional teacher in the field, emphasizing art and its relationship to the curriculum according to contemporary, and current philosophy.

**350 ADVANCED PHOTOGRAPHY I** (1+4) 3 credits
Refinement of technical and visual skills. Lecture/study of historical and contemporary photographic processes and their creative possibilities. Prerequisite: ART 251.

**351 COLOR PHOTOGRAPHY** (1+4) 3 credits
Surveys studio and field work, investigating color light theory. Portfolio development and a study color as a means of creative expression. Prerequisite: ART 251.

**352 ADVANCED VIDEOGRAPHY** (1+4) 3 credits
Lecture/studio study designed for advanced work using broadcast video as a means of creative expression. Emphasis on producing a final project available for broadcast video as a means of creative expression. Prerequisite: ART 150, 250, 252.

**355 HISTORY OF PHOTOGRAPHY** (3+0) 3 credits
Survey of the historical, technical, and social foundations of photography including emphasis on individual photographers and their work.

**357 CINEMA III/THE SOUND ERA** 1 to 3 credits
Historical and critical development of specific genres, styles and directors; investigating film as a developing art form and means of mass communication. Maximum of 6 credits. Prerequisite: ART 256 or 257.

**363-364 SCULPTURE** (0+6) 3 credits each
Individual concepts of sculptural form with emphasis on personal development. Prerequisite: ART 264.

**375-376 CERAMICS** (0+6) 3 credits each
Continuation of ART 275-276 with emphasis on sculpture, pottery and independent investigation of the materials. Advanced technical and aesthetic aspects of clay, clay bodies and glazes. Prerequisite: ART 276.

**381 HISTORY AND PRACTICE OF PRINTING** (0+6) 3 credits
(See L SC 381 for description.)

**384 HISTORY OF THE PRINT** (2+0) 2 credits
Historical, technical and curatorial foundations of printmaking. Field trips to regional print collections.

**385-386 PRINTMAKING** (0+6) 3 credits each
Sustained exploration in one or more of the basic print processes with emphasis on technical problems related to inks, papers and presses. Prerequisite: ART 286.

**403 POSTGRADUATE ORIENTATION** (2+0) 2 credits
Orientation to career possibilities in the field of art. Required of all art majors.

**404 GALLERY MANAGEMENT** (1+2) 2 credits
Principles and practice of traditional and alternative fine art gallery operations. Directed experiences in gallery management, curatorial and exhibit preparation techniques. Field trips.

**408, 608* INDIVIDUAL STUDIES** 1 to 3 credits
Individual studies in areas of two- or three-dimensional work and art history. Maximum of 6 credits.

**417, 617 19TH CENTURY ART** (3+0) 3 credits
Detailed study of the Neo-Classic, Romantic, Realist and Impressionist movements in Western art including aspects of the architectural evolution. Prerequisite: ART 116, 117.

**418, 618 20TH CENTURY ART** (3+0) 3 credits
Detailed study of visual arts from 1880 to present time discussing major movements of the period. Attention also given to 20th century architecture. Prerequisite: ART 116, 117.

**419, 619* PROBLEMS IN THE HISTORY OF ART** 3 credits
Tutorial on independent basis arranged with departmental tutor/adviser.

**428, 628* PROBLEMS IN DRAWING** 3 credits
Tutorial on independent basis arranged with departmental tutor/adviser. Student exhibits work as part of course requirement. Maximum of 6 credits. Prerequisite: 12 credits in drawing.

**435-436 ADVANCED PAINTING** (0+6) 3 credits each
Integration of form, space and color in advanced problems using still life, figure and landscape as points of departure. Prerequisite: ART 335-336.

**438,638 PROBLEMS IN PAINTING** 3 credits
Tutorial on independent basis arranged with departmental tutor/adviser. Student will exhibit work as part of the course requirement. Maximum of 6 credits. Prerequisite: 18 credits in painting.

**450 ADVANCED PHOTOGRAPHY II** (1+4) 3 credits
Development of individual photographic expression. Exploration of a variety of manipulative photographic materials through lecture and experimentation. Prerequisite: ART 350.

**451 ADVANCED COLOR PHOTOGRAPHY** (1+4) 3 credits
Studio instruction and concentration with an in-depth emphasis on developing a visual concept/idea within a portfolio. Prerequisite: ART 351.

**453 SEMINAR IN PHOTOGRAPHY** (1+0 per credit) 1 to 3 credits
Scheduled sections deal with in-depth investigation of a specific aspect of photography. Maximum of 6 credits. Prerequisite: ART 150, 250.

**458, 658 PROBLEMS IN PHOTOGRAPHY** 3 credits
Tutorial on an independent basis arranged with tutor/adviser. Students exhibit work as part of course requirement. Maximum of 6 credits. Prerequisite: 21 credits in photography.

**463-464 ADVANCED SCULPTURE** (0+6) 3 credits each
Advanced concepts of sculptural form and individual problem solving. Prerequisite: ART 363-364.

**468, 668* PROBLEMS IN SCULPTURE** 3 credits
Tutorial on an independent basis arranged with tutor/adviser. Students exhibit work as part of course requirement. Maximum of 6 credits. Prerequisite: 18 credits in sculpture.

**475-476 ADVANCED CERAMICS** (0+6) 3 credits each
Continuation of ART 375-376 with special emphasis on clay compounds, glazes and glaze formulation, kiln firing and temperature control. Prerequisite: ART 375-376.

**478, 678* PROBLEMS IN CERAMICS** 3 credits
Tutorial on an independent basis arranged with tutor/adviser. Students exhibit work as part of course requirement. Maximum of 6 credits. Prerequisite: 18 credits in ceramics.

**485-486, 685-686 ADVANCED PRINTMAKING** (0+6) 3 credits each
Emphasis on development of individual graphic expression through experimentation and refinement of one or any combination of the print processes. Prerequisite: ART 385-386.

**487, 687 PAPERMAKING WORKSHOP** 1 to 3 credits
Exploration of various approaches to paper forming. Mold building, pulp preparation, and two and three dimensional methods.

**488, 688* PROBLEMS IN PRINTMAKING** 3 credits
Tutorial on an independent basis arranged with tutor/adviser. Students exhibit work as part of the course requirement. Maximum of 6 credits. Prerequisite: 18 credits in printmaking.

**490 INTERNSHIP** (0+6) 3 credits
Supervised professional work experience in one of the following areas: (a) graphic design; (b) museum management; (c) arts administration; (d) studio operations. Prerequisite: ART 403 for all internships with addition of ART 259 for (a), ART 309 for b and 9 credits in art studio courses related to specific medium for (d). Maximum of 6 credits.

**498, 698 SEMINAR IN VISUAL ARTS** 1 to 3 credits
Encourages the student of art to synthesize their formal training and to integrate their specialization into the framework of liberal arts. Maximum of 6 credits.

*Inactive Courses*
191 CRAFTS (1+4) 3 credits
210 SURVEY OF MEXICAN ART (2+0) 2 credits
215 SURVEY OF PRIMITIVE ART (2+0) 2 credits
218 SURVEY OF ORIENTAL ART (2+0) 3 credits
293 JEWELRY (0+6) 3 credits
294 CREATIVE DESIGN WITH FABRIC (0+6) 3 credits
303-304 ART STRUCTURE AND PICTORIAL COMPOSITION (0+4) 2 credits each
313 SYMBOLIST ART (2+0) 2 credits
358-359 ADVANCED GRAPHIC DESIGN (0+6) 3 credits each
393 JEWELRY (0+6) 3 credits
394 ADVANCED CREATIVE DESIGN WITH FABRIC (0+6) 3 credits
416-616 HISTORY OF AMERICAN ART (3+0) 3 credits

## BELIEFS AND VALUES (B V)

*Inactive Course*
264 SCIENCE AND RELIGION (3+0) 3 credits

## BIOCHEMISTRY (B CH)

**150 BIOTECHNOLOGY: SCIENCE AND THE CITIZEN** (3+0) 3 credits
Acquaints the non-science major with the language and techniques of biotechnology Visiting speakers discuss related political and social problems.

**280 INDEPENDENT STUDY** 1 to 3 credits
Intensive study of a special problem. Maximum of 6 credits.

*Registration within any independent study course is permitted upon written request to the department which includes three copies of a statement of objectives, the specific goals and indicates the scope of the student's plans. A paper, a full report or an exhibit of work produced is required.

**355 PLANT PHYSIOLOGY** (3+0) 3 credits
(See BIOL 355 for description.)

**400, 600 INTRODUCTORY BIOCHEMISTRY** (4+0) 4 credits
Major metabolic pathways and control mechanisms for carbohydrates, lipids and amino acids, includes energetics, photosynthesis, vitamins, cell organization, carbohydrate and lipid structure, protein and nucleic acid structure and biosynthesis, enzyme kinetics and regulation of gene function. Meets requirements for a single semester survey of metabolism. Prerequisite: CHEM 102 ; 142 or 344 for B CH 400; CHEM 344 for B CH 600.

**403, 603 BIOLOGICAL CHEMISTRY LABORATORY I** (0+6) 2 credits
Selected experiments illustrating methodology used in investigating the chemistry of living systems. Prerequisite or corequisite: B CH 400.

**404, 604 BIOLOGICAL CHEMISTRY LABORATORY II** (0+6) 2 credits
Selected experiments illustrating methodology used in investigating the chemistry of living systems. Prerequisite or corequisite: B CH 403 or 603 and 413 or 417.

**407 ADVANCED BIOCHEMISTRY LABORATORY I**
(0+9) 3 credits *S/ U only*
For biochemistry, majors only. Senior thesis laboratory. Prerequisite: B CH 404.

**408 ADVANCED BIOCHEMISTRY LABORATORY II** (0+9) 3 credits
For biochemistry majors only. Senior thesis laboratory. Prerequisite: B CH 404, 407.

**412, 612 PLANT BIOCHEMISTRY** (3+0) 3 credits
Plant metabolism with emphasis on reactions unique to plants such as photosynthesis, alkaloid biosynthesis, nitrogen fixation. Prerequisite: B CH 400 or equivalent

**413, 613 BIOCHEMISTRY OF MACROMOLECULES** (4+0) 4 credits
In-depth examination of the structure and function of lipids and membranes, proteins and enzymes, carbohydrates and nucleic acids. Includes molecular genetics and enzyme kinetics. Prerequisite: B CH 400, CHEM 344, 354 or 451 and a course in biology.

**417, 617 METABOLIC REGULATION** (4+0) 4 credits
In-depth examination of metabolism and regulation of carbohydrates, lipids, proteins, enzymes, nucleic acids, relationship of metabolism to the life processes of the whole organism. Prerequisite: B CH 400, CHEM 344 and a course in biology.

**420-421 PROSEMINAR** (1+0) 1 credit each *S/U only*
Emphasizes biochemical literature and provides practice in the oral presentation of scientific material. Prerequisite or corequisite: B CH 413, 417. B CH 420 is required for B CH 421.

**432, 632 ENVIRONMENTAL TOXICOLOGY** (3+0) 3 credits
Chemistry and toxicology of toxicants in the environment, particularly pesticides. Other topics include metals, food additives and hazardous wastes. Prerequisite: CHEM 101, 102, 142.

**450 RADIOTRACER TECHNIQUES** (1+3) 2 credits
Introduction to the use of radioactive materials as tracers with special reference to agricultural application. Prerequisite: CHEM 330.

**460, 660 RADIATION AND LABORATORY SAFETY**
(1 or 2+0) 1 or 2 credits
Latest regulations and techniques in laboratory safety; including sections on biohazards, toxic chemical materials, CPR and radiological materials. Prerequisite: CHEM 102 or 330. Corequisite: BIOL 111.

**480, 680 INDEPENDENT STUDY** 1 to 3 credits
Intensive study of a special problem. Maximum of 6 credits.

**601 HUMAN BIOCHEMISTRY I** (4+6) 5 credits
Emphasis on application in medicine. Includes macromolecular chemistry, intermediate metabolism and biochemical regulation, mechanisms in health and disease. Prerequisite: limited to M.D. students only.

**602 HUMAN BIOCHEMISTRY II** (3+6) 4 credits
Emphasis on application in medicine. Includes macromolecular chemistry, intermediate metabolism and biochemical regulation, mechanisms in health and disease. Prerequisite: limited to M.D. students only.

**701-702 EXPERIMENTAL BIOCHEMISTRY I and II** (0+9) 3 credits each
Intensive laboratory in biochemical research methodology. Oral and written reports on each research project required. Prerequisite: biochemistry, major, B CH 400, 404.

**705 MOLECULAR GENETICS** (4+0) 4 credits
Molecular view of procaryotic and eucaryotic genes. Structure, expression and regulation of genes. Genetic engineering and somatic cell genetics. Techniques used in study of genetic information. Prerequisite: CHEM 142, 344, two semesters of general biology; B CH 400. Prerequisite or corequisite: B CH 413, 613.

**710 RADIOTRACER METHODOLOGY** (1+3) 2 credits
Use of radioactive materials as tracers. Prerequisite: CHEM 330. Recommended: B CH 400. Not available for students having completed B CH 450.

**711-712 BIOCHEMICAL TECHNIQUES** (0+4 or 8) 1 or 2 credits each
Introduction in depth to details of biochemical techniques and equipment. Prerequisite: B CH 400.

**718 PLANT METABOLISM** (3+0) 3 credits
Study of metabolic pathways unique to plants and to include currently significant topics. Prerequisite: B CH 400.

**722 METABOLISM** (3+0) 3 credits
Consideration at the molecular level of selected anabolic and catabolic processes. Prerequisite: B CH 417.

**731 PHYSICAL BIOCHEMISTRY** (3+0) 3 credits
Physical chemistry of biochemical systems. Prerequisite: B CH 413; CHEM 354.

**740 ENZYMOLOGY** (3+0) 3 credits
Enzyme kinetics, specificity, mechanisms, inhibition, structure, formation and control. Prerequisite: B CH 413.

**751 NUCLEIC ACIDS** (3+0) 3 credits
Structure, synthesis, isolation and biological role of DNA and RNA and enzymes relating to these compounds. Prerequisite: B CH 413.

**752 MITOCHONDRIAL STRUCTURE AND FUNCTION** (3+0) 3 credits
Respiratory chain, phosphorylation, compartmentation, metabolic control, ultrastructure, ion translocation, energy coupled changes in volume and structure and theories of biogenesis. Prerequisite: B CH 417.

**790 SEMINAR** (1+0) 1 credit
Report by students and faculty on topics of interest in biochemistry Maximum of 3 credits

**793 INDEPENDENT STUDY** 1 to 3 credits
Independent study in a specialized area. Maximum of 6 credits.

**794 COLLOQUIUM** (1+0) 1 credit
Presentation and analysis of original research in (a) carbohydrate metabolism, (b) lipid metabolism, (c) oxidative stress, (d) bioenergetics, (e) polynucleotide chemistry, (f) supramolecular systems, (g) enzyme kinetics, (h) biocatalytic mechanisms, (j) natural products chemistry, (k) protein chemistry, (m) molecular genetics, (n) plant biochemistry, (p) nutritional biochemistry, (q) bioactive compounds, and (r) photosynthesis. Maximum of 8 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits
Thesis may be written in any area of biochemistry.

**799 DISSERTATION** 1 to 24 credits

*Inactive Course*
760 MINERAL METABOLISM (3+0) 3 credits

# BIOLOGY (BIOL)

**100 BIOLOGY: PRINCIPLES AND APPLICATIONS** (2+2) 3 credits
Basic biological concepts, interpretation and application of scientific meth-

ods, effects of biological advances on society. Core curriculum science course; can not be used for credit toward field of concentration in biology.

111 ORGANISMAL BIOLOGY (3+3) 4 credits
Study of diversity within living systems, both plant and animal. Emphasis will be on taxonomic groups and their adaptations to common problems.

112 CELL AND MOLECULAR BIOLOGY (3+3) 3 credits
Structure and function of cells. Major molecules of life; composition and physiology of cellular organelles; cell metabolism, reproduction, motility, gene function. Prerequisite: CHEM 101.

251 MICROBIOLOGY (2+3) 3 credits
Bacteria and related microorganisms. Morphology, physiology, classification, economic and medical importance considered. Prerequisite: BIOL 112.

262 HUMAN ANATOMY AND PHYSIOLOGY I (2+3) 3 credits
The body as a whole. Integumentary, skeletal, muscular, circulatory-lymphatic and respiratory systems of man. Primarily for nursing, physical education and home economics majors. Prerequisite: BIOL 111 or 112.

263 HUMAN ANATOMY AND PHYSIOLOGY II (2+3) 3 credits
Digestive, urogenital, nervous, sensory and endocrine system. Primarily for nursing, physical education and home economics majors. Prerequisite: BIOL 262.

303 HUMAN GENETICS (3+0) 3 credits
Fundamentals of genetics and their application to biology and human welfare: chromosome related abnormalities, their medical and social implications; chromosome structure, identification and function. Prerequisite: BIOL 313, some training in chemistry and mathematics.

309 MUSEOLOGY (3+0) 3 credits
(See ANTH 309 for description.)

310 MUSEUM TRAINING FOR BIOLOGIST (1+6) 3 credits
Collecting, preparing and curating plant and animal specimens for museum collections and exhibits in Nevada State Museum and Biology Department Museum.

313 PRINCIPLES OF GENETICS (3+0) 3 credits
Biological basis of heredity and variations among higher and lower organisms using modern and classical concepts of structure, function and organization of the genetic material. Prerequisite: BIOL 111, 112.

314 ECOLOGY AND POPULATION BIOLOGY (3+0) 3 credits
Basic ecological principles, with emphasis on population dynamics, population genetics, and interactions between species. Prerequisite: BIOL 111, 112; MATH 115.

320 EXPERIMENTAL FIELD ECOLOGY (2+3) 3 credits
Intensive summer course in Little Valley. Introduction to the area's natural history and to techniques for field study of plants and animals; individual and group projects. Prerequisite: BIOL 314, 394.

325 COMPUTER ACQUAINTANCE FOR BIOLOGICAL SCIENCES (2+2) 3 credits
Introduction to the computer and its applications. BASIC programming, word processing, data file management, use of statistical packages, and other applications. Prerequisite: elementary algebra.

330 PLANT DIVERSITY (3+3) 3 credits
Evolutionary survey or organisms commonly called plants. Includes Monera, plant-like Protoctista, vascular and non-vascular plants, and fungi. Prerequisite: BIOL 111.

333 SYSTEMATIC BOTANY OF FLOWERING PLANTS (3+0) 3 credits
Morphology, taxonomy and evolution of the principal plant orders, families, and genera. Emphasis on morphological and evolutionary adaptations. Local flora recognition included. Prerequisite: BIOL 111.

334 SYSTEMATIC BOTANY OF FLOWERING PLANTS LABORATORY (0+6) 2 credits
Optional laboratory to accompany BIOL 333.

347 PLANT ECOLOGY (3+3) 4 credits
Plant-environment interactions at the individual, population, community, and ecosystem levels. Prerequisite: BIOL 111, 314, 394. (Same as RWF 347.)

355 PLANT PHYSIOLOGY (3+0) 3 credits
Basic physiological processes in plants, nutrition, metabolism, growth and development. Prerequisite: BIOL 111 or CHEM 142. (Same as B CH 355)

356 PLANT PHYSIOLOGY LABORATORY (0+3) 1 credit
Optional laboratory to accompany BIOL 355.

368 PARASITOLOGY (3+0) 3 credits
Parasitic animals of medical, veterinary and wildlife importance.

370 ENTOMOLOGY (2+3) 3 credits
Origins, evolution, taxonomy, biogeography, morphology, physiology, behavior, and ecology of insects. Laboratory includes identification, experiments, and field study. Prerequisite: BIOL 111.

372 ICHTHYOLOGY (2+0) 2 credits
Systematics, ecology and biology of fishes. Prerequisite: BIOL 111.

373 ICHTHYOLOGY LABORATORY (0+3) 1 credit
Optional laboratory to accompany BIOL 372. Prerequisite: BIOL 111.

376 ORNITHOLOGY (3+0) 3 credits
Origins, evolution, taxonomy, biogeography, morphology, physiology, behavior, and ecology of birds. Prerequisite: BIOL 111.

377 FIELD ORNITHOLOGY (0+4) 1 credit
Optional course to accompany BIOL 376. Bird identification, behavior and ecology in the field. Corequisite: BIOL 376.

378 MAMMALOGY (3+3) 4 credits
Origins, evolution, taxonomy, biogeography, morphology, physiology, behavior, and ecology of mammals. Laboratory includes identification, experiments, and field studies. Prerequisite: BIOL 111.

393 LABORATORY IN GENETICS AND CELL BIOLOGY (1+3) 2 credits
Research techniques and investigative approaches. Prerequisite or corequisite: BIOL 313.

394 LABORATORY IN ECOLOGY AND POPULATION BIOLOGY (1+3) 2 credits
Research techniques and investigative approaches in field and laboratory studies. Prerequisite or corquisite: BIOL 314.

401, 601 BIOLOGY JOURNAL SEMINAR (1+0) 1 credit
Survey of periodical literature of biology. Oral and written reports by the student will give experience in searching and interpreting literature. Maximum of 6 credits.

404, 604 POPULATION GENETICS (4+0) 4 credits
Genetics of populations and mechanisms of evolution. Includes equilibrium conditions and forces altering gene frequencies and polygenic and quantitative inheritance. Prerequisite: BIOL 313.

408, 608 CYTOGENETICS (CHROMOSOMAL MECHANISMS (2+3) 3 credits
Origin, transmissibility and effects of numerical and structural alterations of chromosomes; their role in understanding basic cytogenetic problems, evolution and practical breeding. Prerequisite: BIOL 313.

414, 614 ENDOCRINOLOGY (3+0) 3 credits
(See A SC 414, 614 for description.)

415, 615 EVOLUTION (3+1) 4 credits
Pattern and process in the evolution of life on earth. Prerequisite: BIOL 111, 112, 313, 314; CHEM 142.

420, 620 AQUATIC ECOLOGY (2+3) 3 credits
Biological, chemical, and physical characteristics of aquatic environments with particular emphasis on ecological processes. Prerequisite: BIOL 111; CHEM 101 or 201.

434, 634 BIOGEOGRAPHY (3+0) 3 credits
(See GEOG 434 for description.)

446, 646 DESERT AND MONTANE ECOSYSTEMS (3+0) 3 credits
Extended field trip to acquaint students with the biota of selected desert or

montane areas. Maximum of 6 credits. Prerequisite: BIOL 314.

460, 660 COMPARATIVE PHYSIOLOGY (3+0) 3 credits
Comparative examination of the function of animal systems. Prerequisite: CHEM 142 or 344; BIOL 263.

468, 668 HISTOLOGY (3+3) 4 credits
Microscopic anatomy of tissues and organs with emphasis on mammals. Prerequisite: BIOL 111; a course in vertebrate or mammalian anatomy.

475, 675 NEUROBIOLOGY (3+3) 4 credits
Basic neurosciences: characteristics of excitable tissues, central nervous mechanisms in sensation, neural control of movement, functional neuroanatomy. Prerequisite: a course in animal physiology or anatomy.

480, 680 DEVELOPMENTAL BIOLOGY (3+0) 3 credits
Developmental patterns, mechanisms of cellular differentiation and cell interactions. Prerequisite: BIOL111, 112.

481, 681 PRINCIPLES OF ANIMAL BEHAVIOR (3+0) 3 credits
(See PSY 481, 681 for description.)

482, 682 ANIMAL BEHAVIOR LABORATORY (0+3) 1 credit
(See PSY 482, 682 for description.)

485, 685 POPULATION ECOLOGY (3+0) 3 credits
Characteristics, dynamics and interactions of plant and animal populations. Prerequisite: BIOL 314.

486, 686 COMMUNITY ECOLOGY (3+0) 3 credits
Characteristics, dynamics and interactions of communities of organisms. Prerequisite: BIOL 314.

491, 691 SPECIAL PROBLEMS 1 to 3 credits
Independent study or research in selected topics in biology. Maximum of 8 credits.

492-493 RESEARCH 3 credits each
Directed research course for biology majors under the guidance of a faculty member. Design and conduct original research leading to the presentation of a paper. Prerequisite: recommendation of a biology faculty member.

495, 695 SEMINAR 1 credit
Presentation by students of reviews and discussion of assigned reports of research in biological literature. Maximum of 2 credits. Prerequisite: 9 credits of biology.

702 SUPERVISED TEACHING IN COLLEGE BIOLOGY (1+0) 1 credit
Methods and creative approaches for improving quality of undergraduate teaching of biological science.

705 CURRENT TOPICS IN CELL AND MOLECULAR BIOLOGY (2 or 3+0) 2 or 3 credits
Review and analysis of recent literature on selected topics concerning the molecular basis of cell structure and function. Maximum of 9 credits.

706 ADVANCED MICROBIOLOGY (3+0) 3 credits
Review and discussion of recent research involving cell structure, physiology, taxonomy, genetics, and/or ecology of microorganisms. Prerequisite: BIOL 251.

708 ADVANCED CYTOGENETICS (2+0) 2 credits
Structure, duplication and functioning of chromosomes and nucleolus. Emphasis is on spontaneous and induced chromosome aberrations as related to chromosome structure and reproduction.

710 CELLULAR PHYSIOLOGY (3+0) 3 credits
Includes consideration of structure and function of cellular membranes and associated transport systems, properties of intracellular physical and chemical systems and cellular environment. Prerequisite: BIOL 355 or 460.

711 ADVANCED CELLULAR BIOLOGY (3+0) 3 credits
Critical analysis of selected topics. Emphasis on molecular mechanisms of intracellular protein trafficking.

712 SYSTEMS MODELING IN ECOLOGY (3+0) 3 credits
Structure and functions of natural ecosystems are simulated by models in a systems analysis approach to ecological problems. Prerequisite: BIOL 347, or 485; a course in calculus.

713 TOPICS IN ECOLOGY (3+0) 3 credits
Critical analysis of selected ecological topics. Offered on a continuing basis; topics and instructors vary. Maximum of 6 credits. Prerequisite: BIOL 314.

717 SEMINAR IN ARID LANDS ECOLOGY (3+0) 3 credits
Presentation and analysis of original research by students, faculty and research guests on a variety of ecological topics related to arid lands. Maximum of 6 credits. Prerequisite: BIOL 314.

720 INSECT ECOLOGY (3+0) 3 credits
(See IPM 720 for description.)

760 VERTEBRATE REPRODUCTIVE BIOLOGY (3+0) 3 credits
Current research on morphology and physiology of reproductive systems in vertebrates, including reproductive cycles and their regulatory mechanisms. Prerequisite: BIOL 480 or equivalent courses.

762 ZOOLOGICAL SYMBIOSIS (3+0) 3 credits
Physiological and ecological study of symbiotic relationships among animals.

764 CURRENT RESEARCH IN DEVELOPMENTAL BIOLOGY (3+0) 3 credits
Review and discussion of recent literature concerned primarily with experimental analysis of problems in developmental biology.

766 UTERUS, PLACENTA, AND FETUS (3+0) 3 credits
Fetal-maternal association which exists during the intrauterine development of viviparous vertebrates.

769 CURRENT TOPICS IN ANIMAL PHYSIOLOGY (3+0) 3 credits
Selected topics dealing with current research in animal physiology. Subjects considered will depend on student interest. Maximum of 6 credits.

776-777 ADVANCED ORNITHOLOGY (2+3) 3 credits each
Recent developments in avian biology as described by current ornithological literature. The laboratory consists of an original research problem by each individual. Prerequisite: an introductory course in ornithology or equivalent.

781 ADVANCED ANIMAL ECOLOGY (2+3) 3 credits
Selected topics in physiological, community and ecosystem ecology in conjunction with related topics in bioenergetics. Prerequisite: BIOL 314 or equivalent.

782 ADVANCED POPULATION ECOLOGY (2+3) 3 credits
Seminars and group or individual research projects in current problems of population ecology. Prerequisite: BIOL 485 or equivalent.

783 ADVANCED WILDLIFE ECOLOGY (2 or 3+0) 2 or 3 credits
Seminars and/or lectures in current problems of wildlife ecology. Emphasis on current literature. Prerequisite: BIOL 314 or equivalent. Credit hours determined by department.

792 SPECIAL PROBLEMS 1 to 3 credits
Independent study or research in selected graduate-level topics in biology. Maximum of 6 credits.

794 COLLOQUIA (1+0) 1 credit *S/U only*
Presentation of original research by visiting scientists, UNS faculty, and graduate students completing masters and doctoral degrees. Maximum of 2 credits for masters or 4 credits for Ph.D.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 24 credits

# BUSINESS ADMINISTRATION (B A)

480, 680 SMALL BUSINESS INSTITUTE (SBI) (1+6) 3 credits
Students provide management assistance counseling to the small business community for qualified cases designated by the U.S. Small Business Administration.

*Graduate standing is required as a prerequisite for all 700-level courses in the College of Business Administration.*

700 STATISTICS FOR DECISION MAKING (3+0) 3 credits
Statistical inference and hypothesis testing; multivariate regression and analysis of variance; emphasis on applied methods and computer applications.

701 PRODUCTION/OPERATIONS MANAGEMENT (3+0) 3 credits
Problems of manufacturing goods and services; production applications of linear programming, scheduling, quality control and materials management; CAD, CAM and international issues. Prerequisite: B A 700.

706 SEMINAR IN QUANTITATIVE RESEARCH METHODS (3+0) 3 credits
Advanced techniques for analysis of time series and cross sectional data. Topics include time series modeling, distributed lags, simultaneous equation models, forecasting, Logit/Probit models. Prerequisite: MBA core.

710 FINANCIAL AND MANAGERIAL ACCOUNTING (3+0) 3 credits
Basic structure of accounting, income determination, asset valuation, liability recognition, equity accounting, cost behavior analysis, budgeting procedures and segments in international accounting and computers.

711 SEMINAR IN CONTROL ISSUES (3+0) 3 credits
Decision making uses of accounting information in national and international management. Prerequisite: MBA core.

720 MANAGEMENT AND ORGANIZATIONAL SCIENCE (3+0) 3 credits
Individual and group behavior in organizations, and organizational design and communication strategies. Interaction of structural, technological and human resource components. International focus emphasized.

721 MANAGEMENT THEORY AND ORGANIZATIONAL DEVELOPMENT (3+0) 3 credits
Strategies for studying organizations, organizational structure and design, the impact of the environment and relaetd management problems. Examination of the functions of management from classical and behavioral viewpoints. Domestic and international cases. Prerequisite: completion of Tier I unless enrolled in an approved joint-degree program.

729 SEMINAR IN MANAGERIAL AND HUMAN RESOURCE ISSUES (3+0) 3 credits
Selected topics in management, both national and international. Prerequisite: MBA core.

730 ECONOMICS OF THE FIRM (3+0) 3 credits
Economic analysis of the business firm, particularly with respect to price, output and investment decisions; the effect of domestic and international policy on business firm behavior.

740 SEMINAR IN MONETARY AND FINANCIAL ECONOMICS (3+0) 3 credits
Selected topics on monetary and financial issues, with international finance and policy coordination. Prerequisite: MBA core.

741 FINANCIAL MANAGEMENT (3+0) 3 credits
Capital budgeting, capital structure and dividend policy decisions, valuation, cost of capital, working capital management, financial analysis and planning for corporations in the global financial environment. Computer use required. Prerequisite: B A 700, 710.

742 FINANCIAL MANAGEMENT THEORY AND PRACTICE (3+0) 3 credits
Theory of financial management with applications to problems of financial managers through analysis and discussion of case problems. Domestic and international cases. Prerequisite: MBA core.

749 SEMINAR IN FINANCE (3+0) 3 credits
Selected topics in finance Maximum of 6 credits. Prerequisite: B A 741.

750 MANAGING COMPUTER DECISION SYSTEMS (3+0) 3 credits
Analysis of computer-aided systems engineering technologies, systems development life cycle, telecommunication networks, databases, security, and strategic information systems planning for managing computer information systems.

759 SEMINAR IN INFORMATION RESOURCE MANAGEMENT ISSUES (3+0) 3 credits
Selected topics at national and international levels, such as IS organization structures, application delivery strategies, strategic information systems, etc. Prerequisite: B A 750 or equivalent.

760 MARKETING MANAGEMENT (3+0) 3 credits
Analyses and decision-making procedures in market measurement, product development, pricing, promtion and distribution. Environmental factors, including cultural differences at domestic and global levels.

761 ADVANCED MARKETING MANAGEMENT (3+0) 3 credits
Problem-solving and decision-making from the viewpoint of the marketing executive; national and international perspective. Prerequisite: MBA core.

769 SEMINAR IN MARKETING ISSUES (3+0) 3 credits
Selected topics in marketing with national and international emphasis. Prerequisite: B A 760.

772 CHANGING ENVIRONMENTS OF BUSINESS (3+0) 3 credits
Legal, ethical, cultural, economic, political and global environment. Approaches to continual monitoring and managing complex interactions between business and its changing environments. Prerequisite: MBA core.

780 BUSINESS AND PUBLIC POLICY (3+0) 3 credits
Relationship of public policy both nationally and internationally to business organizations. Development, current status and future outlook of specific public policy issues are considered. (Same as EC 780.)

781 STRATEGIC MANAGEMENT FOR EXECUTIVES (3+0) 3 credits
Strategy and policy in the business enterprise. Strategic management process and systematic analysis of complex organization-wide issues faced by general management. Case studies, both national and international. Prerequisite: MBA core.

791 SPECIAL TOPICS 1 to 3 credits
Advanced study in selected topics. Maximum of 6 credits.

792 FIELD PROJECT (3+0) 3 credits
Study, in consultation with a professor, of a complex business issue and prepare and present a paper on the results of the study. Prerequisite: MBA core; 9 hours of the breadth requirements.

793 INDEPENDENT STUDY 1 to 3 credits
Advanced study and research in selected topics. Requires selecting topic design of experimental approach and derivating specific conclusions. Maximum of 6 credits. Prerequisite: MBA core.

797 THESIS 1 to 6 credits

*Inactive Course*
705 RESEARCH DESIGN AND ANALYSIS (3+0) 3 credits

# CELL AND MOLECULAR BIOLOGY (CMB)

701, 702, 703 LABORATORY PRACTICUM I, II, III (0+9) 3 credits
Intensive laboratory experience in molecular biology research methods. Written reports on each research project required. Prerequisite: B CH 400.

710 MOLECULAR CELL BIOLOGY (4+0) 4 credits
Essential elements of cell structure and function. Comprehensive and experimental approach to the molecular view of the cell.

790 GRADUATE SEMINAR (1+0) 1 credit *S/U only*
Reports by students on topics of interest in cell and molecular biology. For cell and molecular biology majors only. Maximum of 2 credits.

793 INDEPENDENT STUDY 1 to 6 credits
Prerequisite: cell and molecular biology majors only.

794 COLLOQUIM GENE REGULATION (1+0) 1 credit
Presentation and analysis or original research in (a) gene regulation, (b) virology, (c) molecular biology methodology, (d) neoplasia, (e) hormone

and drug receptors, (f) immunology. Maximum of 6 credits. For cell and molecular biology majors or advance approval.

797 THESIS 1 to 6 credits
For cell and molecular biology majors in the master's program only.

799 DISSERTATION 1 to 24 credits
For cell and molecular biology majors in the doctoral program only.

## CELLULAR AND MOLECULAR PHARMACOLOGY AND PHYSIOLOGY (CMPP)

730 CELLULAR AND MOLECULAR PHARMACOLOGY (3+0) 3 credits
Basic topics in cellular physiology and molecular mechanisms of drug action. Prerequisite: PHAR 601.

740 NEUROEFFECTOR PHARMACOLOGY (3+0) 3 credits
Basic topics in neurotransmission including neuromuscular pharmacology and autonomic pharmacology. Methods and current problems applied to the study of neuroeffector systems including nerves and muscles.

790 SEMINAR (1+0) 1 credit
Reports of current research. Prerequisite: major in cellular and molecular pharmacology and physiology or cell and molecular biology. Maximum of 8 credits.

794 COLLOQUIM (1+0) 1 credit
Presentation and analysis of original research. Prerequisite: major in cellular and molecular pharmacology and physiology or cell and molecular biology. Maximum of 8 credits.

797 THESIS 1 to 6 credits
Prerequisite: major in celluar and molecular pharmacology and physiology or cell and molecular biology.

799 DISSERTATION 1 to 24 credits
Prerequisite: major in cellular and molecular pharmacology and physiology or cell and molecular biology.

## CHEMICAL ENGINEERING (CH E)

101 INDUSTRY ORIENTATION LECTURES (1+0) 1 credit
Introduction to practices and careers in modern process engineering. Field trip required.

232 PRINCIPLES OF METALLURGICAL AND CHEMICAL ENGINEERING (3+0) 3 credit
(See METE 232 for description.)

361 THERMODYNAMICS (4+0) 4 credits
Thermodynamic principles and their application to problems involving physical and chemical changes. Prerequisite: MATH 217, CH E 232.

372 FLUID MECHANICS LABORATORY (0+3) 1 credit
Experiments emphasizing fluid flow equipment and operations of chemical engineering. Practice in technical report writing. Corequisite: CH E 373.

373 FLUID MECHANICS (3+0) 3 credits
Fundamentals of momentum transport, incompressible and compressible flow, element of non-Newtonian flow of fluids through commonly used chemical and metallurgical process equipment with applications to design. Prerequisite: CH E 232, MATH 320 or equivalent. (Same as METE 373.)

410 EXTRACTIVE METALLURGY I-PYROMETALLURGY (3+0) 3 credits
(See METE 410 for description.)

423 SURFACE CHEMISTRY IN MINERALS (3+0) 3 credits
(See METE 423 for description.)

434, 634 REAL TIME COMPUTING SYSTEMS (3+0) 3 credits
Principles of real time computing with applications to process control and laboratory data acquisition. Introduction to real time languages and operating systems. A number of computing projects are to be completed for credit using laboratory hardware and software. (Same as E E 434.)

440, 640 CHEMICAL REACTOR DESIGN (3+0) 3 credits
Reaction rates and the factors controlling them. Design of reactors for chemical processing is emphasized. Prerequisite: CH E 232, MATH 320, CHEM 353.

441 HEAT TRANSFER LABORATORY (0+3) 1 credit
Experiments emphasizing heat transfer equipment and operations of chemical engineering. Provides practice in technical report writing. Corequisite: CH E 484.

442 MASS TRANSFER LABORATORY (0+3) 1 credit
Quantitative experiments emphasizing mass transfer unit operations commonly employed in chemical industries. Corequisite: CH E 493.

443 INDUSTRIAL INSTRUMENTATION (2+3) 3 credits
Analysis and specification of industrial instrumentation systems- element of process control strategies and analysis. Experiments on industrial investments and final control element. Computer use in data logging. Prerequisite: CH E 373.

450 TECHNIQUES OF PROCESS DESIGN AND ECONOMICS (3+0) 3 credits
Principles of chemical engineering process design. Economics and organization of process design, process synthesis, flow sheets, heat and mass balances, precedence ordering, computer and optimization techniques applied to design. Prerequisite: C S 113. Corequisite: CH E 493. (Same as METE 450.)

451, 651 CONTROL OF PROCESS SYSTEMS (3+0) 3 credits
Modeling and control of chemical and metallurgical processes, introduction to digital and analog process control, process control techniques and practices. Prerequisite: CH E 493.

462, 662 THERMODYNAMICS OF IRREVERSIBLE, PROCESSES (3+0) 3 credits
(See METE 462 for description.)

470 PROCESS EQUIPMENT DESIGN (3+0) 3 credits
Design methods for chemical engineering process equipment with emphasis on fluid mechanics, heat and mass transfer systems Prerequisite: CH E 450.

482 DESIGN PROJECT (1+6) 3 credits
Individual projects in the design of processes and plant components. Prerequisite: CH E 470. (Same as METE 482.)

484, 684 HEAT TRANSFER (3+0) 3 credits
Chemical engineering heat transfer with applications to design. Fundamentals of thermal transport, steady and unsteady state thermal conduction, convection and radiant heat exchange with applications to thermal recuperators and regenerators, computer methods in design. Corequisite: CH E 373. (Same as METE 484.)

485 COMPUTER SOLUTIONS TO CHEMICAL AND METALLURGICAL ENGINEERING PROBLEMS (3+0) 3 credits
Theory and techniques of FORTRAN 77 used in programming chemical and metallurgical engineering problems encountered in industry and research. Prerequisite: C S 113. Corequisite: CH E 493.

493, 693 MASS TRANSFER (3+0) 3 credits
Diffusional processes, mass transfer coefficients, multiphase equilibris; design and specification of gas-liquid, liguid-liquid and solid-liquid operations; single and multistage operations. Prerequisite: CH E 484. (Same as METE 493, 693).

**494, 694 EQUILIBRIUM STAGE OPERATIONS** (3+0) 3 credits
Basic concepts and calculation methods required for the design of continuous and batch stage-wise contacting devices. Prerequisite: CH E 493.

**495 SPECIAL PROBLEMS** 1 to 3 credits
Individual problems in chemical engineering. Maximum of 6 credits.

**660 FLUID PHASE EQUILIBRIA** (3+0) 3 credits
Applications and synthesis of thermodynamics and physical chemistry for the solution of phase equilibrium problems in chemical engineering. Prerequisite: CH E 361, MATH 320 or M E 300.

**675 TRANSPORT PHENOMENA** (3+0) 3 credits
In-depth development of the basic concepts and equations for momentum, heat, and mass transfer systems. Extensive problem solving of fundamental and practical natures. Prerequisite: CH E 373, 484, 493 or equivalent.

**686 HETEROGENEOUS CATALYSIS** (3+0) 3 credits
Fundamental theories and applications of heterogeneous catalysis; adsorption isotherms, catalyst characterization, mass transfer limitations on reaction rates, development of kinetics and reaction models. Prerequisite: CHEM 354.

# CHEMISTRY (CHEM)

*Laboratory courses require special expenses for materials and equipment in addition to regular registration fees.*

**100 MOLECULES AND LIFE IN THE MODERN WORLD** (3+0) 3 credits
Introduction to chemistry. Structure and properties of matter. Role of chemistry in life processes, man's environment and society. Prerequisite: MATH 105.

**101 GENERAL CHEMISTRY** (3+3 or 4+3) 4 or 5 credits
Fundamental principles of chemistry including nomenclature, atomic structure, chemical bonding, molecular structure, states of matter and solutions. Students with no high school chemistry or with Math ACT scores 18 or less should register for 5 credits which includes recitation.

**102 GENERAL CHEMISTRY** (3+3 or 4+3) 4 or 5 credits
Fundamental principles of chemistry, properties and fuses of the common metals, their compounds, elementary chemistry of carbon and introductory qualitative and quantitative analysis. Students with no high school chemistry or with mathematics ACT scores of 20 or less should register for 5 credits, which includes recitation. Prerequisite: CHEM 101.

**142 INTRODUCTORY ORGANIC CHEMISTRY** (3+0) 3 credits
Fundamental principles of carbon chemistry. Prerequisite: CHEM 101 or 201. Credit not allowed in both CHEM 142, 343.

**143 INTRODUCTORY ORGANIC CHEMISTRY LABORATORY** (0+3) 1 credit
Techniques employed in the preparation, separation and identification of organic compounds. Prerequisite or corequisite: CHEM 142.

**201 GENERAL CHEMISTRY FOR SCIENTISTS AND ENGINEERS** (3+3) 4 credits
Fundamental principles of chemistry including stoichiometry, atomic structure, periodic table, chemical bonding, molecular structure, kinetic theory of gases, gas laws, solutions, colligative properties, equilibrium, electrochemistry. Prerequisite: 28 or above on the Math ACT examination and/or a year of high school chemistry. Credit allowed in only one of the following: CHEM 101, 201 .

**202 GENERAL CHEMISTRY FOR SCIENTISTS AND ENGINEERS** (3+3) 4 credits
Continuation of CHEM 201 including thermodynamics, thermochemistry, redox systems, chemical kinetics, nuclear chemistry, metals and nonmetals, coordination compounds, qualitative and quantitative analysis, organic chemistry, biochemistry. Prerequisite: CHEM 201, or a grade of A or B in CHEM 101. Credit allowed in only one of the following: CHEM 102, 202.

**330 ANALYTICAL CHEMISTRY** (2+6) 4 credits
Principles and techniques of quantitative chemical analysis including an introduction to instrumental methods. Prerequisite: CHEM 102 or 202.

**343 ORGANIC CHEMISTRY** (3+0) 3 credits
Integrated treatment of aliphatic compounds embracing nomenclature, structure, general methods of preparation and a mechanistic interpretation of typical reactions. Prerequisite: CHEM 102 or 202.

**344 ORGANIC CHEMISTRY** (3+0) 3 credits
Continuation of CHEM 343 including a more advanced treatment of snythetic procedures. Prerequisite: CHEM 343.

**345 ORGANIC CHEMISTRY LABORATORY** (0+6) 2 credits
Introduction to laboratory techniques, analytical and preparative methods, identification of organic compounds. Prerequisite: CHEM 343. Corequisite: CHEM 344. Credit allowed in only one of the following: CHEM 345, 347.

**347-348 LABORATORY TECHNIQUES OF ORGANIC CHEMISTRY** (0+6) 2 credits each
Develops laboratory skills and an understanding of the techniques and principles involved in the preparation, separation and identification of organic compounds. Prerequisite or corequisite: CHEM 343-344. Laboratories must be taken in sequence. Credit allowed in only one of the following: CHEM 345, 347.

**349 CHEMICAL APPLICATIONS OF SPECTROSCOPY** (2+0) 2 credits
Interpretation of chemical spectra with an emphasis on applications to structure determination. Prerequisite: CHEM 344, 345 or 344, 348.

**353 PHYSICAL CHEMISTRY I** (3+0) 3 credits
First semester of a two-semester course on fundamental principles. Second course is CHEM 354 or 357. Prerequisite: two years of college chemistry; PHYS 151-152 or 201-202; MATH 216.

**354 PHYSICAL CHEMISTRY II** (3+0) 3 credits
Continuation of CHEM 353 for physical sciences and engineering majors. Prerequisite: CHEM 353.

**355 PHYSICAL CHEMISTRY LABORATORY** (0+9) 3 credits
Training in physico-chemical laboratory techniques provided by experimental verification of the principles of physical chemistry. Prerequisite or corequisite: CHEM 353 .

**357 BIOPHYSICAL CHEMISTRY** (3+0) 3 credits
Continuation of CHEM 353 for biological science majors. Prerequisite: CHEM 353.

**387 CHEMICAL LITERATURE AND UNDERGRADUATE COLLOQUIUM** (1+0) 1 credit
Introduction to chemical information retrieval, includes oral and/or written reports. Recommended to be taken concurrently with CHEM 391 or CHEM 497.

**391 SPECIAL PROBLEMS** 1 to 3 credits
Laboratory and/or literature course giving training in a field not covered in scheduled courses. Maximum of 3 credits.

**415, 615 ADVANCED INORGANIC CHEMISTRY** (3+0) 3 credits
Atomic structure; types of bonding; periodic relationships between structure, physical properties, and reactivity of the elements; preparation and application of the elements and their compounds. Prerequisite: CHEM 354.

**434, 634 INSTRUMENTAL ANALYSIS** (2+3) 3 credits
Critical examination of the process of quantitative chemical measurement entailing a systematic treatment of instrument design and instrumental methods. Prerequisite or corequisite: CHEM 330, 354.

**442, 642 ADVANCED ORGANIC CHEMISTRY** (3+0) 3 credits
Organic reactions not generally covered in introductory courses in organic chemistry. Emphasis on both snythetic utility and reaction mechanisms. Prerequisite: CHEM 344, 354.

**443, 643 MODERN METHODS OF ORGANIC ANALYSIS** (2+3 or 6) 3 or 4 credits
Identification of unknown organic compounds by spectroscopic techniques (IR, NMR, W, mass spectrometry) and wet laboratory methods; microtechniques; separations of mixtures (GLC, TLC, HPLC). Prerequisite: CHEM 344, 345 or 348.

**450, 650 ADVANCED PHYSICAL CHEMISTRY** (3+0) 3 credits
Selected topics (thermodynamics, kinetics, molecular structure, chemical

statistics, etc.) at an intermediate level. Prerequisite: CHEM 354, 355, MATH 320 or equivalent.

**451, 651 THE ELEMENTARY PHYSICAL CHEMISTRY OF MACROMOLECULES** (3+0) 3 credits
Elementary physical chemistry and physical characterization methods applicable to synthetic and biological macromolecules in solution and in the bulk phase. Prerequisite or corequisite: CHEM 354 or 357.

**456, 656 ADVANCED PHYSICAL CHEMISTRY LABORATORY** (0+6) 2 credits
Interpretation of data from, and the basic theory behind, modern research instrumentation. Representative topics include optical spectroscopy, mass spectroscopy, and magnetic resonance. Prerequisite or corequisite: CHEM 354, 355.

**461, 661 CHEMICAL SYNTHESIS** (1+6) 3 credits
Advanced laboratory techniques used in inorganic and organic synthesis. Prerequisite: CHEM 345 or 348.

**462, 662 POLYMER CHEMISTRY** (3+0) 3 credits
Synthesis, characterization, morphology, bulk and solution properties of polymers; polymerization mechanisms. Prerequisite: CHEM 344, 354.

**497 SENIOR PROBLEMS** (0+6) 2 credits
Introduction to research methods using a problem chosen from inorganic analytical, organic or physical chemistry. Problem director may be chosen by student. Prerequisite: three years of college chemistry. Maximum of 6 credits.

**700 SUPERVISED TEACHING IN COLLEGE CHEMISTRY** (1+0) 1 credit *S/U only*
Methods and creative approaches for teaching chemical science to undergraduates.

**711 THEORETICAL INORGANIC CHEMISTRY** (3+0) 3 credits
Atomic structure, chemical bonding and molecular structure; applications of group theory to inorganic spectroscopy. Prerequisite: CHEM 615.

**712 THE LESS FAMILIAR ELEMENTS** (3+0) 3 credits
Survey of the chemistry of the less familiar elements including the lanthanides and actinides with emphasis on periodic correlations. Prerequisite: CHEM 615.

**713 ORGANOMETALLIC CHEMISTRY** (3+0) 3 credits
Synthesis, properties and reactivity of organometallic compounds; applications to organic synthesis and homogeneous catalysis with an emphasis on mechanisms. Prerequisite: CHEM 615.

**714 SPECIAL TOPICS IN INORGANIC CHEMISTRY** (3+0) 3 credits
Selected topics of current interest. Prerequisite: CHEM 615. May be repeated only in different subject areas to a maximum of 6 credits.

**740 ADVANCED ORGANIC SYNTHESIS** (3+0) 3 credits
Survey of reactions of value in synthesis. Prerequisite: CHEM 642.

**741 ADVANCED ORGANIC STRUCTURE ELUCIDATION** (3+0) 3 credits
Methods used for structure elucidation. Prerequisite: CHEM 643 or equivalent.

**742 THEORETICAL ORGANIC CHEMISTRY** (3+0) 3 credits
Elementary quantum mechanics including molecular orbital theory, Huckel theory, aromaticity, and orbital symmetry rules; molecular mechanics calculations; reaction mechanisms. Prerequisite: CHEM 642.

**743 SPECIAL TOPICS IN ORGANIC CHEMISTRY** (3+0) 3 credits
Topics of current interest in organic chemistry. May be repeated only in different subject areas to a maximum of 6 credits. Prerequisite: CHEM 642.

**744 STEREOCHEMISTRY AND CONFORMATIONAL ANALYSIS** (3+0) 3 credits
Stereoisomerism, molecular symmetry, chirality, optical activity, torsional isomerism, conformations of cyclic and acyclic molecules, stereoselectivity and stereospecificity, chiral discrimination, stereochemical methods. Prerequisite: CHEM 642.

**745 CHEMISTRY OF NATURAL PRODUCTS** (3+0) 3 credits
Chemistry of naturally occurring compounds with emphasis on isolation, structure determination, synthesis, biogenesis and physiological importance. Prerequisite: CHEM 642.

**750 THEORETICAL PHYSICAL CHEMISTRY** (3+0) 3 credits
Thermodynamics, kinetic theory of gases, quantum theory, statistical mechanics and related subjects. Prerequisite: CHEM 650 or equivalent.

**751 SPECIAL TOPICS IN PHYSICAL CHEMISTRY** (3+0) 3 credits
Selected topics of current interest. Prerequisite: CHEM 650 or 750. May be repeated only in different subject areas to a maximum of 6 credits.

**752 CHEMICAL KINETICS** (3+0) 3 credits
Rate processes, factors influencing reaction rates and the correlation of kinetics and mechanisms of reaction. Prerequisite: CHEM 650 or equivalent.

**753 PHYSICAL CHEMISTRY OF MACROMOLECULES** (3+0) 3 credits
Advanced considerations in polymer chain statistics, structural and dynamical models. Solution and thermodynamic properties of nonelectrolyte and polyelectrolyte polymers. Advanced characterization methods. Prerequisite: CHEM 650.

**755 STATISTICAL THERMODYNAMICS** (3+0) 3 credits
Molecular approach to the study of fundamental thermodynamic energy relationships. Prerequisite: CHEM 750.

**757 QUANTUM CHEMISTRY** (3+0) 3 credits
Intensive study of the general aspects of quantum mechanics and its application to chemistry. Prerequisite: CHEM 750.

**790 SEMINAR** (1+0) 1 credit
Maximum of 4 credits.

**793 INDEPENDENT STUDIES** 1 to 6 credits
Maximum of 12 credits.

**794 COLLOQUIA** (1+0) 1 credit *S/U only*
Presentation of original research in (a) inorganic chemistry, (b) organic, (c) physical. Maximum of 8 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
110 CHEMISTRY OF MAN'S ENVIRONMENT (3+0) 3 credits
171 LIFE SCIENCE CHEMISTRY I (3+3) 4 credits
172 LIFE SCIENCE CHEMISTRY II (3+3) 4 credits
250 PHYSICAL PRINCIPLES OF CHEMISTRY (3+0) 3 credits
271 PHYSIOLOGICAL CHEMISTRY (3+0 or 3) 3 or 4 credits
291 SCIENTIFIC GLASSBLOWING (0+3) 1 credit
435,635 RADIOCHEMISTRY (2+0 or 3) 2 or 3 credits
471-472, 671-672 GENERAL BIOCHEMISTRY (3+0) 3 credits each
473-474,673-674 GENERAL BIOCHEMISTRY LABORATORY (0+6) 2 credits each
771-772 ADVANCED BIOCHEMISTRY (3+0) 3 credits each
773 EXPERIMENTAL TECHNIQUES IN BIOCHEMISTRY (1+6) 3 credits
774 SPECIAL TOPICS IN BIOCHEMISTRY (3+0) 3 credits

# CIVIL ENGINEERING (C E)

**101 ENGINEERING GRAPHICS** (0+6) 2 credits
Drafting and graphical presentation of engineering material. Use of graphs and maps. Aspects of descriptive geometry. Introduction to computer aided design. Prerequisite: trigonometry.

**140 INTRODUCTION TO CIVIL ENGINEERING** (1+0) 1 credit
History and overview of civil engineering including: environmental, geotechnical, materials, structural, transportation and water resources engineering.

**141 ENGINEERING MEASUREMENTS** (2+3) 3 credits
Introduction to the theory of engineering measurements and instruments

used. Introduction to the theory of errors, statistics, field astronomy and topographic surveying. Prerequisite: trigonometry.

**150, 250, 350, 450 SUMMER COOPERATIVE TRAINING** (1+0) 1 credit
Preparation of written reports based on summer cooperative program assignments. Required of all students in civil engineering cooperative training programs.

**204 TECHNOLOGY, ENVIRONMENT AND SOCIETY** (3+0) 3 credits
Introduction to scientific principles required for enhancement of quality of environment with emphasis on the role of technology and its interrelationships with society. Prerequisite: ENGL 101.

**241 STATICS** (3+0) 3 credits
Static force systems. Topics include resolution and composition of forces, equilibrium of force systems, friction, centroids, moments of inertia, cables, beams, fluid statics, work. Prerequisite: PHYS 201. Corequisite: MATH 216. (Same as M E 241.)

**243 COMPUTER PROGRAMMING FOR CIVIL ENGINEERS** (2+3) 3 credits
Use of computers in civil engineering. Programming principles of FORTRAN and BASIC Applications. Prerequisite: C E 140; MATH 215.

**246 CONSTRUCTION MATERIALS** (3+0) 3 credits
Consideration of metals, wood, agregate, portland cement concrete and asphalt concrete. Prerequisite: C E 241.

**360 SEMINAR** (1+0) 1 credit
Preparation of written reports and/or delivery of oral presentations. Guest lectures. Maximum of 3 credits.

**364 ENGINEERING HYDROLOGY** (2+0) 2 credits
Fundamental principles of hydrology for engineers. Quantitative hydrology; application of statistics to prediction of runoff; ground water flow. Corequisite: M E 367; C E 389.

**366 HIGHWAY/TRANSPORTATION ENGINEERING** (3+0) 3 credits
Engineering problems encountered in the planning and design of highway transportation facilities. Prerequisite: C E 141, 246. Corequisite: C E 388.

**368 FLUID MECHANICS LABORATORY** (0+3) 1 credit
Exemplifies the principles studied in M E 367. Prerequisite or corequisite: M E 367.

**369 CONCRETE AND ASPHALT LABORATORY** (0+3) 1 credit
Physical properties of aggregate, portland cement, portland cement concrete, asphalt and asphalt concrete. Prerequisite: C E 246.

**372 STRENGTH OF MATERIALS** (3+0) 3 credits
Effects of axial loads, temperature changes, torsion and bending on structural elements; analysis of stress and strain, beam deflections, introduction to buckling and statically indeterminate structures. Prerequisite: C E 241.

**374 METALS AND TIMBER LABORATORY** (0+3) 1 credit
Physical properties or metals and timber relevant to civil engineering practice. Prerequisite: C E 246, 372.

**381 STRUCTURAL ANALYSIS I** (3+0) 3 credits
Development of the principles and techniques of structural mechanics and their application to the analysis of statically determinate and indeterminate structures. Prerequisite: C E 372.

**388 ENGINEERING ECONOMY** (2+0) 2 credits
Consideration of various economic calculations such as present worth, benefit-cost and rate of return analyses in engineering decision making.

**389 PROBABILITY AND STATISTICS FOR CIVIL ENGINEERS** (2+0) 2 credits
Statistics, probability distributions and regression analysis with civil engineering applications. Prerequisite: MATH 217.

**390 WATER AND WASTE TREATMENT** (3+0) 3 credits
Water quality and contaminant characteristics; introduction to water treatment design and hazardous waste control. Prerequisite: CHEM 101. Corequisite: M E 367.

**410, 610 HYDRAULICS OF OPEN CHANNELS** (3+0) 3 credits
Advanced study of the flow of water through open channels. Prerequisite: M E 367.

**411, 611 ENVIRONMENTAL LAW** (3+0) 3 credits
Examination of current federal laws, rules and regulations concerning the environment. Emphasis on court decisions and interpretations of the law. (Same as RWF 411.)

**415, 615 WATER RIGHTS** (3+0) 3 credits
Riparian doctrine and appropriation doctrine along with some of the federal aspects of water rights. Study to include both statutory law and case law.

**420, 620 ADVANCED PORTLAND CEMENT CONCRETE** (2+3) 3 credits
Detailed consideration of concrete mix design; study of the effects of aggregate characteristics, mix design variables, admistures and exposure of all types upon concrete properties; quality control and special problems related to use. Prerequisite: C E 369.

**429, 629 TIMBER STRUCTURES** (3+0) 3 credits
Fundamentals of design of timber structures and application to simple structures. Prerequisite: C E 381.

**431, 631 PAVEMENT DESIGN, REHABILITATION AND MAINTENANCE** (3+0) 3 credits
Stresses in flexible and rigid pavements, materials characterization, overlay design, interlayers, seals, maintenance materials, selection of rehabilitation alternatives, life cycle costing, pavement management. Prerequisite: C E 366, 369.

**460, 660 CONSTRUCTION ENGINEERING** (3+0) 3 credits
Construction practices and methods; job planning and scheduling; selection of equipment. Problems of management and related topics. Prerequisite: C E 366.

**461 FORM AND FALSEWORK DESIGN** (2+0) 2 credits
Planning, materials, loads, pressures, design, erection, and use for concrete formwork. Prerequisite: C E 429.

**462 CONSTRUCTION COST ESTIMATING** (3+0) 3 credits
Quantity take-off, labor cost, material cost, equipment costs, subcontracts, overhead costs, profit, and bidding. Corequisite: C E 460.

**463 PROJECT SCHEDULING** (3+0) 3 credits
Project planning, order of project completion, scheduling basics, types of schedules, schedule outputs and reports, project progress, special topics.

**464 CONSTRUCTION LAW** (2+0) 2 credits
Bids and bid mistakes, contracts and contract documents, performance, liens, bonds, and arbitration vs. litigation, including case studies.

**465 CONSTRUCTION COST ACCOUNTING** (2+0) 2 credits
Direct material costs, direct labor costs, other direct costs, indirect costs, progress billings. profit on jobs, profitability and economic survival. Prerequisite: ACC 201.

**466 CONSTRUCTION MANAGEMENT** (2+0) 2 credits
On-site productivity, productivity climate, system productivity, and safety issues. Prerequisite: C E 388.

**471 MATHEMATICAL METHODS IN CIVIL ENGINEERING** (1+0 per credit) 1 to 3 credits
Application of the principles of higher mathematics to typical problems in the analysis and design of civil engineering projects. Prerequisite: C E 243, 372; M E 300.

**479, 679 EARTHQUAKE ENGINEERING** (3+0) 3 credits
(See G E 479 for description.)

**483, 683 STRUCTURAL ANALYSIS II** (3+0) 3 credits
Classical methods of structural analysis for static and dynamic loads and structural stability including matrix formulation for application of electronic computers. Prerequisite: C E 381.

**484, 684 STRUCTURAL STEEL DESIGN** (3+0) 3 credits
Load-resistance factor design of steel structures including beams, columns, beam-columns, tension members and plate girders; welded and bolted connections. Prerequisite: C E 381.

**485, 685 REINFORCED CONCRETE DESIGN I** (3+0) 3 credits
Analysis and design of reinforced concrete members by the strength method and an introduction to the working stress method. Prerequisite: C E 369, 381.

**486, 686 REINFORCED CONCRETE DESIGN II** (3+0) 3 credits
Continuation of C E 485 with emphasis upon the total design of reinforced concrete structures. Prerequisite: C E 485.

**487, 687 COMPUTER-AIDED DESIGN OF STRUCTURES** (3+0) 3 credits
Application of microcomputer and main frame software in complete design of reinforced concrete, steel and timber structures. Prerequisite: C E 483, 484, 485 .

**489, 689 WATER RESOURCES ENGINEERING I** (3+0) 3 credits
Principles for the design of municipal water systems and wastewater collection systems; introduction to water reuse and water conservation. Prerequisite: C E 364, 390.

**490, 690 WATER RESOURCES ENGINEERING II** (3+0) 3 credits
Conventional engineering economic analysis of multipurpose water resources projects and a study of components of systems which provide for principal beneficial uses of water. Prerequisite: C E 489.

**491, 691 CONTRACTS, SPECIFICATIONS** (2+0) 2 credits
Elementary presentation of engineering aspects of contracts, specifications, and supporting documents for materials and services associated with construction of private and public works. Prerequisite: senior standing in engineering.

**492, 692 FUNDAMENTALS OF GEOTECHNICAL ENGINEERING** (3+0 or 3) 3 or 4 credits
Use of soil mechanics in engineering practice: weight-volume relationships and soil compaction; permeability and seepage; consolidation and settlement; shear strength and its application to lateral earth pressure, bearing capacity and slope stability. Prerequisite: C E 372.

**493, 693 GEOTECHNICAL ENGINEERING: FOUNDATIONS** (3+0) 3 credits
Geotechnical analysis of footings, mats, piers, piles and related fill and excavation operations. Consideration of stress distribution, settlement, time rate of settlement and load capacity. Prerequisite: C E 492.

**494, 694 GEOTECHNICAL ENGINEERING: RETAINING STRUCTURES** (3+0) 3 credits
Application of geotechnical theory to analysis of rigid and flexible earth retaining structures: retaining wall, anchored bulkhead, braced cut, tieback cut, slurry trench wall, reinforced earth wall and cofferdam. Prerequisite: C E 492.

**495 SPECIAL PROJECTS** 1 to 3 credits
Study and/or experimentation in areas of special interest to the student. Maximum of 6 credits.

**497, 697 INTRODUCTION TO ENVIRONMENTAL QUALITY AND ANALYSIS** (2+3) 3 credits
Analytical and physical chemistry and microbiology applied to water quality and hazardous waste control. Laboratory includes gravimetric, electrometric, spectrophotometric, chromatographic and microblological analyses. Prerequisite: BIOL 111, CHEM 102.

**498, 698 WATER QUALITY MANAGEMENT** (3+0) 3 credits
Water quality criteria for beneficial uses and methodology for establishing water quality standards. Changes in water quality attributes through beneficial uses and through natural and engineered systems. Systems analysis applications to models to provide optimal water quality management for selected water resources systems. Prerequisite: C E 390.

**499, 699 HAZARDOUS WASTE MANAGEMENT AND CONTROL** (3+0) 3 credits
Hazardous waste sources, regulations, chemodynamics and toxicology; site assessment and pathway receptor analyses; treatment processes for spills, ultimate disposal and uncontrolled waste sites. Prerequisite: CHEM 102, C E 390.

**704 APPLIED FINITE ELEMENT ANALYSIS** (3+0) 3 credits
Basic concepts, formulation and application of finite element techniques for numerical solution of problems in structural and continuum mechanics, geotechnical and water resources engineering. Prerequisite: C E 243, M E 300 or MATH 320.

**720 ADVANCED STRUCTURAL ANALYSIS AND DESIGN I** (3+1) 3 credits
Advanced methods and problems in structural analysis and design. Prerequisite: C E 483, 484, 485.

**721 ADVANCED STRUCTURAL ANALYSIS AND DESIGN II** (3+0) 3 credits
Continuation of C E 720. Prerequisite: C E 720.

**722 LIMIT DESIGN IN STRUCTURAL STEEL AND CONCRETE** (3+0) 3 credits
Plastic design and behavior, limit analysis, mechanisms, virtual work. Prerequisite: C E 483, 484, 485.

**723 ADVANCED REINFORCED CONCRETE** (3+0) 3 credits
Special problems in reinforced concrete. Prerequisite: C E 483, 486.

**724 APPLIED ELASTICITY I** (3+0) 3 credits
Development of three-dimensional equations of elasticity, analysis of stress and strain, compatibility, stress-strain relations, plane stress, plane strain, and torsion. A study of the stresses and displacements in rectangular, circular, and ring-shaped plates and cylinders. Prerequisite: C E 372 and MATH 320 or M E 300.

**725 APPLIED ELASTICITY II** (3+0) 3 credits
Continuation of C E 724 with emphasis on the variation principles of mechanics including the principles of stationary potential and complimentary energy. Hamilton's principle and methods of Ritz and Galerkin. Prerequisite: C E 724.

**726 THEORY OF PLATES AND SHELLS** (3+0) 3 credits
Analysis of plates and shells by classical and numerical methods including the finite difference and finite element methods. Prerequisite: C E 372. Corequisite: C E 704.

**727 MATRIX METHODS IN STRUCTURAL ANALYSIS** (3+0) 3 credits
Formulation of displacement and force methods for structural systems using matrix techniques. Introduction to efficient computer methods in analysis of structures. Prerequisite: C E 483.

**730 DYNAMICS OF STRUCTURES** (3+0) 3 credits
Analysis of single and multidegree of freedom systems for time dependent loadings, with particular attention to earthquake excitation and response spectrum techniques. Prerequisite: C E 381.

**731 ADVANCED DYNAMICS OF STRUCTURES** (3+0) 3 credits
Advanced methods of analysis and design of structural systems subjected to dynamic loads. Elastic and inelastic analysis of single and multi-degree systems. Introduction to random vibration and Fourier transform methods. Design application to building, badges and reservoirs. Prerequisite: C E 730.

**732 BITUMINOUS MATERIALS AND MIXTURES** (2+3) 3 credits
Physical and chemical properties of asphalts and agregates, design and construction of asphalt mixtures, skid resistance, and performance. Prerequisite: C E 246, 366, 369.

**733 ADVANCED PAVEMENT DESIGN AND MANAGEMENT** (3+0) 3 credits
1985 AASHTO design procedure; mechanistic design; pavement evaluation; in-situ testing and interpretation, visual surveys, failure criteria; pavement management systems; rehabilitation types and selection. Prerequisite: C E 431, 631.

**734 SOIL STABILIZATION AND SITE IMPROVEMENT** (3+0) 3 credits
Lime, portland cement and asphalt stabilization; use of pozzolans, sand drains, hydraulic fills, deep compaction, electro-osmosis, thermal stabilization, grouting. Prerequisite: C E 246, 366, 369.

**741 GEOTECHNICAL ENGINEERING: SEEPAGE, SLOPES, EMBANKMENTS** (3+0) 3 credits
Seepage effects and control; flow net. Stability of natural and man-made slopes under various loading conditions. Design and construction of earth dams and embankments. Prerequisite: C E 492.

**742 ADVANCED SOIL MECHANICS** (3+0) 3 credits
Advanced and theoretical treatment of soil stress-strain relationships, consolidation and shear-strength concepts. Prerequisite: C E 493 or 494.

**743 ADVANCED SOIL MECHANICS LABORATORY** (0+3) 1 credit
Advanced soil testing techniques used in geotechnical engineering. Prerequisite: C E 742.

**745 GEOTECHNICAL EARTHQUAKE ENGINEERING** (3+0) 3 credits
Dynamic soil properties, ground response analysis, soil-structure interaction, soil liquefaction, dynamic analysis of earth dams, settlement from earthquakes and dynamic lateral earth pressure. Prerequisite: C E 493 or 494, 730.

**746 ADVANCED FOUNDATION ENGINEERING** (3 to 4+0) 3 to 4 credits
Advanced topics dealing with shallow and deep foundations, including mat foundations, laterally loaded piles and culverts. Prerequisite: C E 493. Additional material dealing with machine foundation design requires prerequisite C E 745 for additional credit.

**750 GRADUATE SEMINAR** 1 to 3 credits
Study and discussion of important new developments in particular fields of civil engineering. Prerequisite: graduate standing in civil engineering.

**751 BIOLOGICAL UNIT OPERATIONS** (4+0) 4 credits
Process kinetics, theory, design and operation for fixed film and suspended growth erobic, anoxic and anaerobic biological processes. Prerequisite: C E 752.

**752 PHYSICOCHEMICAL UNIT PROCESSES** (4+0) 4 credits
Process kinetics, theory, design and operation for coagulation, flocculation sedimentation, filtration, disinfection, oxidation, adsorption and membrane processes. Prerequisite: C E 390, 497.

**754 UNIT OPERATIONS AND PROCESSES LABORATORY** (1+6) 3 credits
Laboratory investigation of reactor hydraulics, coagulation, sedimentation filtration, disinfection, adsorption and activated sludge.

**755 INDUSTRIAL WASTE TREATMENT** (2+0) 2 credits
Theory, design and operation of pilot and full-scale systems for the control of aqueous industrial waste streams. Prerequisite: CHEM 142.

**756 ENVIRONMENTAL CHEMISTRY** (3+0) 3 credits
Kinetics and thermodynamics applied to water, wastewater, and other environmental media including acid-base relationships, complexation, precipitation, and oxidation-reduction. Prerequisite: C E 497 or 498.

**761 PLANNING AND SCHEDULING OF CONSTRUCTION PROJECTS** (2+0) 2 credits
Planning, scheduling, and progress control of construction projects with emphasis on Critical Path Method, including network diagramming and calculations and resource leveling. Basics of the PERT system are investigated.

**771 SPECIAL ENGINEERING PROBLEMS** 1 to 3 credits
Specialized study in any of the subjects pertaining to civil engineering. Subject matter may be arranged after conference with staff members and administrative officers concerned. Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 1 to 3 credits *S/U only*
Report of professional quality, based on engineering experience and independent study or investigation. May be required for completion of plan B, M.S. program.

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
244 CIVIL ENGINEERING II (2+3) 3 credits
342 ADVANCED SURVEYING (3+0) 3 credits
347 ENGINEERING REPORTS (1+0) 1 credit
373 STRENGTH OF MATERIALS LABORATORY (0+3) 3 credits
401, 601 CITY AND REGIONAL PLANNING I (2+3) 3 credits
402, 602 CITY AND REGIONAL PLANNING II (3+0) 3 credits
416, 616 EMINENT-DOMAIN LAW AND CONDEMNATION PROCEDURE (2+0) 2 credits
419, 619 SNOW AND ICE SCIENCE (2+0) 2 credits
451, 651 TRANSPORTATION ENGINEERING (3+0) 3 credits
452, 652 INTRODUCTION TO TRAFFIC ENGINEERING (2+3) 3
473, 673 DECISION MAKING TECHNIQUES (3+0) 3 credits
703 AIRPORT PLANNING AND DESIGN (3+3) 3 credits
711 WATER RESOURCES SYSTEMS ANALYSIS (3+0) 3 credits
712 WATER RESOURCES PROJECTS (3+0) 3 credits
714 ADVANCED WATER RESOURCES TOPICS 1 to 4 credits
717 STATISTICAL METHODS IN HYDROLOGY (3+0) 3 credits
718 ADVANCED HYDROLOGY I (3+0) 3 credits
719 ADVANCED HYDROLOGY II 1 to 4 credits
728 EXPERIMENTAL STRESS ANALYSIS (2+3) 3 credits
753 AIR POLLUTION CONTROL 2 credits

## CLINICAL LABORATORY SCIENCE (CLS)

**111 MEDICAL TERMINOLOGY** (1+0) 1 credit
Self-learning approach to terminology used in medical professions. Emphasis on understanding of word roots and building vocabulary.

**161 MEDICAL LABORATORY PRINCIPLES I** (2+0) 2 credits
Introduction to basic medical laboratory principles including urinalysis and other body fluids. Content areas deal with quality control, venipuncture, use of analytical equipment, laboratory safety, supplies and laboratory records. Prerequisite: CHEM 101 or equivalent, MATH 115.

**162 MEDICAL LABORATORY PRINCIPLES II** (0+3) 1 credit
Laboratory and clinical applications in microscopy, analytical methods, venipuncture, quality control, urinalysis analysis of other body fluids. Corequisite: LTE 110B at TMCC.

**215 INSTRUMENTATION** (1+0) 1 credit
Basic principles of laboratory instrumentation including basic laboratory computer applications and electronics. Prerequisite: CLS 161, 162.

**216 APPLIED INSTRUMENTATION** (0+3) 1 credit
Principles of clinical laboratory instrumentation. Corequisite: CLS 215. Prerequisite: CLS 161, 162.

**221 PRINCIPLES OF DISEASE I** (1+0) 1 credit
Mechanisms of disease production are correlated with anatomic structures physiologic processes and cellular requirements of body systems. Corequisite BIOL 262.

**222 PRINCIPLES OF DISEASE II** (1+0) 1 credit
Continuation of body systems not covered in CLS 221. Corequisite: BIOL 263.

**241 CLINICAL CHEMISTRY** (3+0) 3 credits
Basic principles of methodology in clinical chemistry by analyzing chemical substances in biological fluids. Prerequisite: CHEM 102, 142, 143; CLS 161, 162, 215, 216.

**242 APPLIED CLINICAL CHEMISTRY** (0+9) 3 credits
Quantitative analysis of chemical components in biologic substances. Corequisite: CLS 241 .

**251 IMMUNOLOGY/IMMUNOHEMATOLOGY** (2+0) 2 credits
Overview of the immune response with emphasis on serologic principles. Discussion of identification of blood group antigens and antibodies and their clinical significance in transfusion therapy. Prerequisite: CHEM 142, 143.

**252 APPLIED IMMUNOLOGY/IMMUNOHEMATOLOGY** (0+6) 2 credits
Serological and immunohematological laboratory procedures; grouping, typing, compatibility testing, pregnancy testing, titers, cold agglutinins, quality control. Corequisite: CLS 251.

**271 CLINICAL MICROBIOLOGY** (2+0) 2 credits
Characteristics, medical significance and laboratory identification of clinically important bacteria. Prerequisite: CLS 161, 162.

**272 APPLIED CLINICAL MICROBIOLOGY** (0+9) 3 credits
Collecting and processing specimens; cultivation and identification of

clinically important bacteria; staining methods; media preparation; safety measures; susceptibility testing. Corequisite: CLS 271.

**281 PARASITOLOGY/MYCOLOGY/VIROLOGY** (1+0) 1 credit
Characteristics, medical significance and laboratory identification of human parasites, fungi and viruses. Prerequisite: CLS 161, 162.

**282 APPLIED PARASITOLOGY/MYCOLOGY** (0+3) 1 credit
Specimen collection and processing; identification of parasites; cultivation and identification of medically significant fungi. Corequisite: CLS 281.

**291 HEMATOLOGY** (2+0) 2 credits
Development, identification and function of cellular and humoral elements in whole blood. Principles of laboratory assays used in the diagnosis of hematologic disorders. Prerequisite: CLS 161, 162, BIOL 262 or equivalent.

**292 APPLIED HEMATOLOGY** (0+6) 2 credits
Slide preparation and staining; manual and automated assays of whole blood components; cell identification; coagulation tests and special hematology procedures. Corequisite: CLS 291.

**296 CLINICAL PRACTICUM** (1+6) 3 credits *S/U only*
A ten-week integration experience in hematology, microbiology, blood bank, serology, urinalysis and chemistry to include theory review and clinical rotations. Case history project required. Prerequisite: CLS 161,162, 215, 216, 241, 242, 251, 252, 271, 272, 281, 282, 291, 292.

**301 BIOMETRY** (1+0) 1 credit
Discussion on quality control and biostatistical principles useful to health professionals. A nontheoretical approach to descriptive and inferential techniques for solving and illustrating statistical problems. Prerequisite: MATH 115.

**317 PRINCIPLES OF LABORATORY SUPERVISION/MANAGEMENT** (2+0) 2 credits
Overview of health care delivery; principles and policies related to budget preparation, capital expenditures, reimbursement and personnel management.

**352 ADVANCED INNUNOHEMATOLOGY LABORATORY** (0+3) 1 credit
Advanced, specialized techniques used to identify abnormal antibodies as well ascoverage of component separation, preparation, and therapy. Prerequisite: CLS 296.

**371 ADVANCED CLINICAL MICROBIOLOGY** (2+0) 2 credits
Selection, interpretation and evaluation of clinical microbiology laboratory tests and their role in the diagnosis of infectious diseases. Prerequisite: CLS 296.

**372 ADVANCED CLINICAL MICROBIOLOGY LABORATORY** (0+6) 2 credits
Selection and performance of a variety of laboratory techniques to identify all types of microorganisms found in clincial specimens. Corequisite: CLS 371.

**390 INDEPENDENT STUDY** 1 to 3 credits
Individualized in depth study of a specific area of medical technology, e.g. clinical chemistry, hematology, immunology, immunohematology, microbiology, urinalysis, laboratory administration, and education. Maximum of 6 credits.

**391 ADVANCED HEMATOLOGY** (2+0) 2 credits
Hematologic disorders to include anemias, white cell dyscrasias, abnormal hemostasis, clinical presentation and laboratory findings associated with these conditions. Prerequisite: CLS 296.

**392 ADVANCED HEMATOLOGY LABORATORY** (0+3) 1 credit
Specialized and advanced hematologic procedures applied to the diagnosis blood dyscrasias and hemostatic disorders. Corequisite: CLS 391.

**415, 615 ADVANCED INSTRUMENTATION** (1+0) 1 credit
Fundamental principles of specialized clinical laboratory instrumentation. Prerequisite: CLS 296; PHYS 152; CHEM 330.

**431, 631 IMMUNOLOGY** (3+0) 3 credits
Principles of cellular and humoral mechanism of immunity including host-parasite interrelationships, antibody structure and function, hypersensitivity, tolerance, transplantation, immunity, and diseases of immune origins. Prerequisite or corequisite: B CH301 and knowledge of basic immunologic principles.

**432, 632 SEROLOGY LABORATORY** (0+3) 1 credit
Practical application of fundamentals in cellular and humoral immunity using laboratory techniques commonly performed in detection of disease states. Corequisite: CLS 431 or 631.

**441, 641 CLINICAL CHEMIST RY** (3+0) 3 credits
Critical examiantion of metabolism, methodology and clinical significance of chemical compounds in biological fluids. Prerequisite: CLS 296; CHEM 330; B CH 400 for CLS 441 and CHEM 343 for CLS 641.

**442, 642 CLININCAL CHEMISTRY LABORATORY** (0+3) 1 credit
Quantitative analysis of biological substances from blood, urine and body fluids with emphasis on special meth ods aind instrumentation applying a quality program. Corequisite: CLS 441, 641.

**461 PATHOPHYSIOLOGY FOR CLINICAL LABORATORY SCIENCE** (1+3) 2 credits
Correlation of clinical laboratory results with disease mechanisms. Literature review and seminar presentations of specified disease syndrome. For clinical laboratory majors in the preclinical semester.

**490 INDEPENDENT STUDY** 1 to 3 credits
Individualized in-depth study of a specific area of medical technology,e.g. clinical chemistry, hematology, immunology, immunohematology, microbiology, urinalysis, laboratory administration and education. Maximum of 6 credits.

**496 CLINICAL PRACTICUM** 3 to 15 credits *S/U only*
Supervised clinical experience in all hospital laboratory departments: clinical chemistry, clinical microbiology, hematology, immunology, and urinalysis and body fluids. Twenty-six weeks work experience, including elective, with emphasis on interpretation of laboratory results and clihical correlation. Prerequisite: successful completion of all professional (CLS) courses. For CLS majors only.

# COMMUNITY HEALTH SCIENCES (CHS)

**300 COMMUNICATION SKILLS IN HEALTH CARE** (2+2) 3 credits
Analysis and methods of communications. Strategies for dealing with specific behavioral and psychosocial issues in the professional setting.

**301 AGING: AN INTERDISCIPLINARY APPROACH** (2+2) 3 credits
Theories, methods, policies and programs pertinent to the aged. Includes exploration of an individual's ability to age successfully. Prerequisite: PSY 101 or S W 220.

**325 FOUNDATIONS OF HEALTH EDUCATION** (3+0) 3 credits
History, philosophy, theory. Settings and roles for health educators. Prerequisite: HCS 101.

**335 TEAM APPROACH TO SOCIAL WORK AND HEALTH CARE** (3+0) 3 credits
Interdisciplinary studies of teamwork issues. Teams observe care providers and decision making in community settings. Prerequisite: CHS 300.

**354 PERSONAL HEALTH AND LIFE STYLES** (3+0) 3 credits
Focus on health, illness prevention and health-care decision making. Examination of stress, life style, environmental influences, chronic disorders, nutrition, fitness and family health. (Same as RPED 354.)

**378 CONTEMPORARY ISSUES IN HEALTH** (1 to 3+0) 1 to 3 credits
Analysis of current trends in health and health care issues. Topics may vary each semester. Maximum of 6 credits.

**400 CULTURE AND ETHICS** (3+0) 3 credits
Analysis of the constraints on applied decision making, including the role that religion, family and society play in the formation of values.

**420, 620 HEALTH ASPECTS OP GERONTOLOGY** (3+0) 3 credits
Physiological aspects of the aging process; normal and pathological health changes in relation to aging.

**440, 640 LEADERSHIP TRAINING IN THE SOCIAL AND HEALTH PROFESSIONS** (3+0) 3 credits
Theory and practice relevant to professionals. Supervised experimental learning provided. Prerequisite: CHS 300 or 475.

**452, 652 HEALTH SYSTEMS AND POLICY** (3+0) 3 credits
Emphasis on contemporary issues/problems in health care and potential solutions, including those drawn from health care strategies of other countries. Prerequisite: HCS 101.

**462, 662 EPIDEMIOLOGY** (3 + 0) 3 credits
Nature of disease patterns and occurrences. Etiology, recognition, transmission, pregvention and principles used in the control of disorders affecting human health. Prerequsite: BIOL 262, 263; MATH 105.

**464, 664 AIDS: PSYCHOSOCIAL AND HEALTH CARE CONCERNS** (3+0) 3 credits
Clinical, public health, psychosocial, ethical, legal, economic, education, prevention and control issues affecting the health care delivery system, social services and society. Prerequisite: BIOL 111 or equivalent.

**470 HEALTH EDUCATION SEMINAR** (3+0) 3 credits
Program development, major issues and innovations. Prerequisite: HCS 101; CHS 325.

**471, 671 HEALTH OF THE SCHOOL-AGED CHILD** (3+0) 3 credits
Major health problems encountered in school-age children. An interdisciplinary approach to health management and health awareness programs for children and youth. Prerequisite: S W 220 or research course.

**472, 672 WOMEN: SOCIAL AND HEALTH CARE CONCERNS** (3+0) 3 credits
Community resources, health care, sexism and problems unique to women in American society. Prerequisite: S W 220 or PSY 101. (Same as S W 472, 672.)

**473, 673 ETHNIC AND RACIAL MINORITIES SOCIAL AND HEALTH CARE CONCERNS** (3+0) 3 credits
(See S W 473, 673 for description.)

**474, 674 SOCIAL INTERVENTION IN ALCOHOL AND DRUG ABUSE** (3+0) 3 credits
Identification, treatment, prevention and control of drug addiction and alcoholism. (Same as S W 474, 674.)

**475, 675 HUMAN VALUES AND PROFESSIONAL ETHICS** (3+0) 3 credits
Focuses on value systems and major ethical issues in social and health care such as confidentiality, truth-telling and codes of professional behavior.

**476 SPECIAL ISSUES** (1+0) 1 credit
Specific topic areas designed to help health professional students to focus on areas of interest.

**482, 682 FIELD WORK IN GERONTOLOGY** (0+9) 3 credits
Supervised field experience in community agencies. Provides students work experience with the aged in actual field situations. Prerequisite: H R 301. Maximum of 6 credits.

**488 FIELD EXPERIENCE IN HEALTH CARE** 1 to 3 credits
Special health problems as identified by health agencies. For preprofessional majors only. Maximum of 6 credits.

**489 FIELD EXPERIENCE IN HEALTH EDUCATION** 3 to 6 credits
Supervised field experience in community agencies. Designed to give students work experience in actual field situations. Prerequisite: CHS 470.

**495, 695 GERONTOLOGY RESEARCH: DIRECTED INDEPENDENT STUDY** (0+9) 3 credits
Guided research in the area of gerontology of mutual interest to the student and faculty. Prerequisite: CHS 301. Maximum of 6 credits.

**496, 696 DIRECTED INDEPENDENT RESEARCH** 1 to 3 credits
Guided research in an area of mutual interest to the student and faculty. Maximum of 6 credits

**498, 698 SPECIAL PROBLEMS** 1 to 3 credits Maximum of 6 credits.

**499, 699 INDIVIDUAL READING** 1 to 3 credits
Supervised reading with regular conferences between student and faculty. Maximum of 6 credits.

# COMPUTER INFORMATION SYSTEMS (CIS)

**201 INTRODUCTION TO COMPUTER INFORMATION SYSTEMS** (3+0) 3 credits
Computer-based management information systems. Includes computer hardware and software, business applications, computers in organizations, systems theory, application development methods, and computer security and privacy issues. Corequisite: CIS 202.

**202 COMPUTER INFORMATION SYSTEMS LABORATORY** (0+2) 1 credit
Introduction to microcomputer applications and mainframe computing with emphasis on operating systems, spreadsheet, word processing, database, and statistical package software. Corequisite: CIS 201.

**203 MICROCOMPUTERS IN BUSINESS** (3+0) 3 credits
Use of microcomputers in solving management problems. Includes introduction to computer programming using procedural languages. Prerequisite: CIS 201, 202.

**251 INTRODUCTION TO COMPUTER INFORMATION SYSTEMS DEVELOPMENT** (3+0) 3 credits
Basic concepts of business information systems development using the COBOL language. Emphasis on logic structures, programming design, system testing and documentation. Prerequisite: CIS 203.

**253 COMPUTER APPLICATIONS USING RPG** (3+0) 3 credits
Programming in RPG. Parallel emphasis of on-line business application systems, especially accounting and inventory control. Prerequisite: CIS 201, 202 .

**UPPER-DIVISION COURSES:** Business students must have satisfactorily completed the entire lower-division business core and CIS 251. (See section on *Upper-Division Courses* in the College of Business Administration section.)

**451, 651 ADVANCED COMPUTER INFORMATION SYSTEMS DEVELOPMENT** (3+0) 3 credits
Advanced concepts of business information systems development using the COBOL language. Emphasis on software engineering; data structures; file, screen, report design; and interactive system creation. Prerequisite: CIS 251.

**461, 661 INFORMATION SYSTEMS ANALYSIS** (3+0) 3 credits
Theory of systems development. Emphasis on structured analysis and logical design using analysis tools and techniques; life cycle concepts; user relationships; cost benefit analysis. Prerequisite: CIS 251.

**475, 675 NETWORKS AND DATA COMMUNICATION** (3+0) 3 credits
Case studies and problems relating to the analysis and design of business data communication systems. Evaluation of centralized, decentralized and distributed processing systems.

**484, 684 DATABASE MANAGEMENT AND OPERATING SYSTEMS** (3+0) 3 credits
Database management systems and features of supporting operating system environments. Evaluation of business database systems including application program development within database structures. Prerequisite: CIS 451, 461.

**485, 685 INFORMATION SYSTEMS DESIGN AND IMPLEMENTATION** (3+0) 3 credits
Project course utilizing a comprehensive workbench package. Emphasis on pro. gram and physical system design; design of program structures, subsystems, user interfaces; implementation and conversion problems. Prerequisite: CIS 484.

**487, 687 DECISION SUPPORT SYSTEMS** (3+0) 3 credits
Taxonomy of DSSs and decision models; development of DSSs using higher-level programming languages, packages, quantitative models and data bases. Prerequisite: MGRS 352.

**488, 688 SPECIAL TOPICS** (3+0) 3 credits
Special topics in selected information systems problems.

**490, 690 INDEPENDENT STUDY** 1 to 3 credits
Independent study in selected topics. Maximum of 6 credits.

**495, 695 INTERNSHIP IN COMPUTER INFORMATION SYSTEMS** (1+0 per credit) 1 to 3 credits *S/U only*
Cooperative education wherein students apply knowledge to real business problems developed jointly by company officials and faculty adviser.

*Inactive Course*
150 BASIC (1+0) 1 credit

# COMPUTER SCIENCE (C S)

**105 COMPUTERS IN THE INFORMATION AGE** (2+2) 3 credits
Overview of computer systems: hardware and software concepts, history, modern applications, impact on society, ethical considerations. Modular laboratory instruction emphasizing hands-on skills using personal computers.

**113 COMPUTER APPLICATIONS FOR ENGINEERS AND SCIENTISTS** (1+3) 2 credits
Introduction to programming in FORTRAN 77 and applications software using individual computers. Elementary numerical and symbolic methods to solve problems in engineering and science. Corequisite: MATH 213 or 215.

**183 INTRODUCTION TO COMPUTER SCIENCE I** (3+2) 4 credits
Computer organization, algorithms, data representation, history. Exposure to computer applications from word processing to numerical problems. Emphasis on structured programming using PASCAL. Prerequisite: MATH 115 or satisfactory score on qualifying examination.

**233 PC ASSEMBLY LANGUAGE SYSTEMS PROGRAMMING** (3+0) 3 credits
Intel 8086/286/386/486 family, systems programming under the DOS operating system, input/output, interfacing control, experimentation, Motorola 68000 family assembly languages. Prerequisite: C S 183.

**283 INTRODUCTION TO COMPUTER SCIENCE II** (3+0) 3 credits
Structured program design using PASCAL. Applications drawn from elementary numerical methods, data structures and nonnumeric algorithms such as searching, sorting and Polish notation conversion. Prerequisite: C S 183 or equivalent.

**284 APPLICATION COMPUTER LANGUAGES** (1+0) 1 credit
Development of programming skills and training in selected applications in a single programming language chosen from C, FORTRAN, APL, Ada. Prerequisite: C S 283 or equivalent. May be repeated for 1 credit in each language.

**285 INTRODUCTION TO COMPUTER SYSTEMS** (3+0) 3 credits
Computer structure, assembly language programming, machine language. Representation of data, subroutines, coroutines, recursion. Macro definition, data structures, symbolic debugging. Prerequisite: C S 283.

**286 C PROGRAMMING** 2 or 3 credits
For programmers: structured data types, expressions, control flow, functions, pointers, I/O, use of libraries, system calls, files. Often taught in a Unix environment. Prerequisite: C S 183 or equivalent.

**333 COMPUTER LOGIC DESIGN** (3+0) 3 credits
Techniques for analysis and design of combinatorial and sequential switching networks, boolean algebra, elements of code theory, function minimization, computer subsystems, arithmetic and logic algorithms, asynchronous sequential networks, simple computer operation. Prerequisite: MATH 217. (Same as E E 333.)

**336 MICROPROCESSORS** (3+0) 3 credits
(See E E 336 for description.)

**386 COMPUTER PROGRAMMING LANGUAGES** (3+0) 3 credits
Syntax and semantics of programming languages. Algorithmic simulation, list processing and string manipulation languages. Run-time representation of program and data structures. Formal specification of data structures. Prerequisite: C S 285.

**387 INTRODUCTION TO THE THEORY OF COMPUTATION** (3+0) 3 credits
Regular, context free, and type 0 languages and grammars; finite state, pushdown, and Turing automata; unsolvability; complexity, and NP completeness. Prerequisite: MATH 381; C S 386.

**431, 631 DIGITAL COMPUTER ARCHITECTURE AND DESIGN** (3+0) 3 credits
(See E E 431, 631 for description.)

**437, 637 COMPUTER GRAPHICS** (3+1) 3 credits
Software, hardware and mathematical tools for the representation, manipulation and display of two- and three-dimensional objects: applications of these tools to specific problems. Prerequisite: C S 183. (Same as E E 437, 637.)

**480, 680 COMPUTER APPLICATIONS IN EDUCATION** (1+0 per credit) 1 to 3 credits
Microcomputer technology, computer science instruction and computer based instruction in the classroom. Evaluation of software packages. Practical experience with microcomputer systems. Not applicable for mathematics majors. Prerequisite: MATH 173 or 174. Does not satisfy the university core mathematics requirement. (Same as MATH 480, 680.)

**481, 681 INTRODUCTION TO NONPROCEDURAL PROGRAMMING TECHNIQUES** (3+0) 3 credits
(a) Functional programming; application and implementation, (b) LISP processing and macro techniques, (c) logic programming; patterns and styles; (d) object oriented descriptive programming. Prerequisite: C S 386. Maximum of 12 credits—3 in each topic.

**482, 682 DATA COMMUNICATIONS AND COMPUTER NETWORKS** (3+0) 3 credits
Digital modulation, transmission and synchronization, coding, error detection, interfacing, computer networks, ISO model, circuit/packet switching, local area networks. Prerequisite: C S 183, 333. (Same as E E 482, 682.)

**483, 683 NUMERICAL METHODS I** (3+0) 3 credits
(See MATH 483, 683 for description.)

**484, 684 NUMERICAL METHODS II** (3+0) 3 credits
(See MATH 484, 684 for description.)

**485, 685 ANALYSIS OF ALGORITHMS** (3+0) 3 credits
Analysis and design of algorithms on sequences, sets, graphs, and trees. Geometric, algebraic, and numeric algorithms, FTTs, reductions. Parallel algorithms. Prerequisite: C S 387.

**486, 686 PRINCIPLES OF COMPUTER OPERATING SYSTEMS** (3+0) 3 credits
Concurrent processes, interprocess communication, processor management, virtual and real memory management, deadlock, file systems, disk management, performance issues, case studies. Practical experience with UNIX. Prerequisite: C S 333, 485.

**487, 687 COMPUTER DATABASE MANAGEMENT SYSTEMS** (3+0) 3 credits
An overview of existing systems; physical data organization; relational, network and hierarchical models; data manipulation languages, data definition languages; database protection; database applications using INGRES. Prerequisite: C S 386.

**488, 688 TOPICS IN ARTIFICIAL INTELLIGENCE** (3+0) 3 credits
(a) Survey of artificial intelligence, (b) programming techniques in artificial intelligence. Prerequisite: C S 386 for (a); C S 481b for (b). Maximum of 6 credits—3 in each topic.

**489, 689 TOPICS IN COMPUTER SCIENCE** (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as computer networks, compilers, graphics, computability, analysis of algorithms, software design, functional programming and denotational semantics. Maximum of 6 credits.

**493, 693 INDEPENDENT STUDY IN COMPUTER SCIENCE** 1 to 3 credits
Directetd study and/or research in areas of mutual interest to student and faculty. Maximum of 6 credits.

**495, 695 SOFTWARE ENGINEERING** (3+0) 3 credits
Requirements specifications, structured analysis, modeling, top down design, testability, maintainability, portability, verification and validation,

modification, configuration, management, reliability, efficiency, complexity, compatibility, modularity, interfacing, hardware and language issues. Prerequisite: senior standing and junior-level course work in computing.

496 SENIOR PROJECTS 2 to 4 credits
Faculty-supervised individual or small-group projects with emphasis on research, design, or tutorial study. Prerequisite: C S 486. Maximum of 8 credits.

703 COMPUTABILITY AND FORMAL LANGUAGES (3+0) 3 credits
Turing machines, recursive functions, computability and undecidability. Formal languages and their decision problems. Prerequisite: MATH 381. (Same as MATH 703.)

704 NONPROCEDURAL PROBLEM SOLVING TECHNIQUES (3+0) 3 credits
(a) Knowledge based systems, (b) PROLOG problem solving. Maximum 6 credits—3 in each topic. Prerequisite: C S 488b.

705 COMPILERS AND TRANSLATORS (3+0) 3 credits
Context-free and regular grammars, lexical analyzers. LL(k) and LR(k) parsars, syntax directed translation, code generation, optimization; practical experience with compiler writing tools of UNIX. Prerequisite: C S 486, 686.

706 ADVANCED OPERATING SYSTEMS CONCEPTS (3+0) 3 credits
(a) Design and implementation, (b) computer networks. Maximum of 6 credits —3 in each topic. Prerequisite: C S 486, 686. (Same as MATH 706.)

709 TOPICS IN ADVANCED COMPUTER SCIENCE (3+0) 3 credits
(a) Algorithms and complexity, (b) software project management and development, (c) discrete systems simulation. Maximum 9 credits—3 in each topic. Prerequisite: MATH 381 or 435 for (a); C S 486 for (b) and (c).

732 THEORY OF PARALLEL AND DISTRIBUTED PROCESSING (3+0) 3 credits
(See E E 732 for description.)

733 MACHINE INTELLIGENCE (3+0) 3 credits
(See E E 733 for description.)

790 SEMINAR 1 to 3 credits
Maximum of 6 credits.

791 SPECIAL TOPICS 1 to 3 credits

793 INDEPENDENT STUDY 1 to 3 credits

796 PROFESSIONAL PAPER 2 credits *S/U only*

797 THESIS 1 to 6 credits

# COUNSELING AND EDUCATIONAL PSYCHOLOGY (CEP)

122 ENHANCING ACADEMIC SUCCESS (1+0) 1 credit *S/U only*
Improving competence in such areas as time management, interpersonal communication, goal setting, decision-making, test-taking strategies and concepts related to the achievement of academic success.

123 CAREER DEVELOPMENT (2+1) 2 credits *S/U only*
Occupational choice processes leading to control over one's own life/career development by planning and decision-making.

330 EDUCATIONAL PSYCHOLOGY (3+0) 3 credits
Overview of the psychology of learning, motivation, growth and development, personality dynamics and social adjustment. Field experience required during course. Prerequisite: PSY 101.

331 EDUCATIONAL PSYCHOLOGY EXPERIENCE (0+2) 1 credit *S/U only*
Field experience to assist students to apply basic helping principles of educational psychology to tutoring and school situations. Prerequisite or corequisite: CEP 330.

400, 600 INTRODUCTION TO COUNSELING AND GUIDANCE (3+0) 3 credits
Overview of personnel services that include counseling, individual appraisal, occupational information, group procedures, referral and follow-up. Prerequisite: PSY 101. Meets teacher certification requirements.

401, 601 INTRODUCTION TO ELEMENTARY SCHOOL GUIDANCE (3+0) 3 credits
Overview of personnel services at the elementary school and preschool levels. The teacher's role emphasized. Meets teacher certification requirements.

410, 610 INTRODUCTION TO EMPLOYMENT COUNSELING (3+0) 3 credits
Principles, procedures, techniques, backgrounds of public and private employment agencies. Emphasis on employment records, tests (General Aptitude Test Battery), occupational information, referral, placement, employer relations. Prerequisite: CEP 400.

412, 612 CORRECTIONS COUNSELING (3+0) 3 credits
Overview of services provided by counselors of public offenders, including juvenile and adult probation, imprisonment, and parole. Prerequisite: CEP 400.

417, 617 INTRODUCTION TO REHABILITATION COUNSELING (3+0) 3 credits
Philosophy, procedures, staff and professional relationships employed in the rehabilitation process including evaluation, interviewing, planning and placement. Prerequisite: CEP 400.

420, 620 THE INFORMATION SERVICES (3+0) 3 credits
Procurement, evaluation and utilization of occupational, educational and personal-social information within the context of a guidance program, includes the follow-up and community surveys, placement and referral agencies. Prerequisite: CEP 400 or 401.

422, 622 CAREER EDUCATION (3+0) 3 credits
Career education encompasses the career development experiences for kindergarten through twelfth-grade instructional sequences. The goal is self and environmental awareness by approaching subject matter from the standpoint of vocational utility. Designed for the classroom teacher. Prerequisite: CEP 330.

431, 631 BEHAVIORAL ANALYSIS (3+0) 3 credits
Interaction analysis of groups and diagnosis of individual behavior. Prerequisite: CEP 330.

436, 636 TEACHING FOR CRITICAL THINKING (3+0) 3 credits
Emphasized knowledge and understanding of the field of critical thinking and methods and procedures required to teach critical thinking at various age levels.

440, 640 EDUCATIONAL MEASUREMENTS AND STATISTICS (3+0) 3 credits
Basic statistical methods in the field of education and related disciplines. Emphasis on role of statistics in behavioral research; meets certification requirements for those areas in education requiring a background in statistical understandings.

442, 642 INDIVIDUAL APPRAISAL I (3+0) 3 credits
Selection, administration, interpretation and statistical understanding of standardized aptitude, achievement and personal-social adjustment tests. Prerequisite: CEP 400 or 401.

456, 656 INTRODUCTION TO SEX EDUCATION (1+0) 1 credit
Introduces concerns relating to sexual anatomy, vocabulary, values, pregnancy, abuse, rape, disease, homosexuality, and curricular programs

460, 660 GROUP PROCESS (3+0) 3 credits
Theory and techniques in understanding group behavior and the development of experiences that lead to self-insight. Prerequisite: CEP 400 or 401.

465, 665 CHILD AND FAMILY GUIDANCE (3+0) 3 credits
Principles of child behavior at home and school are studied with actual teachers, children and families involved. Application for counselors and teachers is emphasized. Prerequisite: CEP 400 or 401.

490, 690 WORKSHOP IN COUNSELING AND GUIDANCE (1+0 per credit) 1 to 4 credits

Specialized instruction in counseling and guidance designed to develop depth in understanding of a current guidance problem. Maximum of 4 credits.

491, 691 SPECIAL TOPICS WORKSHOP (1 to 3+0) 1 to 3 credits *S/U only*
Specialized instruction designed to develop breadth of understanding in current counseling topics. Maximum of 6 credits.

499, 699 SPECIAL PROBLEMS IN COUNSELING 1 to 6 credits
Specialized instruction in counseling and guidance personnel services designed to develop depth in understanding of current counseling problems of the in-service counselor. A maximum of 6 credits accepted in special problems for graduate degree programs.

614 COLLEGE STUDENT DEVELOPMENT SERVICES (3+0) 3 credits
Characteristics of college students' goals, values, attitudes and relationships. Student personnel systems designed to facilitate personal, social, academic and vocational growth. Prerequisite: CEP 400.

632 GROUP GUIDANCE (3+0) 3 credits
Human relations, psychological education, and structured developmental group guidance activities and skills featured. Overview of the emotional aspects of learning, valuing, and communicating. Prerequisite: CEP 600.

700 INTRODUCTION TO EDUCATIONAL RESEARCH (3+0) 3 credits
Introduction course required for all students preparing for an advanced degree. Emphasis on the purpose, general procedures and types of educational research. Designed for research practitioners and consumers.

715 SEMINAR IN COLLEGE STUDENT DEVELOPMENT (3+0) 3 credits
Student personnel functions of developing, implementing and evaluating to include: programs in higher education financial aids, career planning and placement, enrollment planning, residential life, counseling, student activities, academic advising, and administration.

716 COUNSELING IN HIGHER EDUCATION (3+0) 3 credits
Focus on the psychological, intellectual, emotional development aspects of both late adolescents and transitional adults and their counseling needs as students in higher education institutions. Prerequisite: CEP 750.

721 THEORIES OF OCCUPATIONAL CHOICE (3+0) 3 credits
Analysis of the relationships among theoretical constructs, counselor behavior and vocational counseling services. Prerequisite: CEP 400 or 401.

738 LEARNING THEORIES IN EDUCATION (3+6) 3 credits
Problem-solving, cognitive processes, concept formation and creativity from the viewpoint of major learning theorists as applied to the educational and classroom setting. Conditions and processes of behavior modification. Prerequisite: CEP 631.

740 ADVANCED EDUCATIONAL MEASUREMENTS AND STATISTICS (3+0) 3 credits
Second course designed for the student planning to contribute research findings of their own design. Refinement of inferential statistical methods introduced in CEP 440. Prerequisite: CEP 440 or 640 or equivalent.

742 INDIVIDUAL APPRAISAL II (3+0) 3 credits
Techniques and interpretation of personality appraisal with an emphasis on school age children. Includes self report inventories, projective techniques, and rating scales. Prerequisite: CEP 642.

744 INDIVIDUAL APPRAISAL III (4+6) 6 credits
Selection, administration, and interpretation of individually administered scales of mental capacity and emotional analysis. Prerequisite: CEP 742, 770.

749 CASE STUDY SEMINAR (2+3) 3 credits
Study, diagnosis, planning and evaluation of program of services provided counselees and students. Instructional processes include staff-study in demonstration of cooperative interprofessional relationships. Prerequisite: CEP 750 plus 18 graduate credits in CEP courses.

750 THE COUNSELING PROCESS (3+0) 3 credits
Theory and techniques of therapeutic counseling; self-theory emphasized with dyadic relationships the focus. Prerequisite: CEP 400 or 401.

751 COUNSELING THE CULTURALLY DIFFERENT (3+0) 3 credits
Special relational problems and processes in the counseling setting in effectively dealing with counselees from non-middle class and/or non-Caucasian backgrounds. Values, attitudes and beliefs of various subcultures. Prerequisite: CEP 750.

752 ADVANCED COUNSELING THEORY (3+0) 3 credits
Depth investigation of major theoretical positions related to professional counseling services. Ethical and procedural components stressed. Prerequisite: CEP 770.

753 COUNSELING THE OLDER WORKER (3+0) 3 credits
Concerns of older persons preparing for retirement and life-style changes; agency counseling assistance programs; special relational skills and intervention systems when dealing with the aging person. Prerequisite: CEP 750.

754 SUBSTANCE ABUSE COUNSELING (3+0) 3 credits
Physical and psychological aspects of substance abuse; specific counseling and treatment approaches. Prerequisite: CEP 750.

755 SEMINAR IN ELEMENTARY SCHOOL COUNSELING (3+0) 3 credits
Directed seminar format considering roles and relationships of pupil personnel specialists within grades kindergarten through sixth. Case studies illustrate interprofessional functioning between school and community agencies. Pupil, parental and faculty concerns explicated. Prerequisite: CEP 642, 660, 750.

756 SEXUAL ISSUES IN COUNSELING (3+0) 3 credits
Counseling problems and techniques related to major current sexually-related concerns such as sexual roles and dysfunctions, unwanted pregnancy and sexually transmitted diseases.

761 GROUP COUNSELING (3+0) 3 credits
Theories and techniques of small group counseling with an emphasis on developing group counseling leadership skills. Prerequisite: CEP 750.

764 GROUP COUNSELING THEORY (1+0 per credit) 2 or 3 credits
Group counseling processes provided for small groups. Includes co-counseling designs: (a) family groups, (b) employment groups, (c) need groups. Prerequisite: CEP 660 plus 15 graduate credits in CEP courses.

765 THEORY AND PRACTICE OF MARRIAGE COUNSELING (3+0) 3 credits
Study of therapy systems to aid intimate partnerships, their formation, maintenance and termination. Prerequisite or corequisite: CEP 770.

766 ADVANCED FAMILY COUNSELING (3+0) 3 credits
Study of therapeutic intervention systems over the life span of developing families. Prerequisite: CEP 765.

769 COUNSELING LABORATORY (0+6) 3 credits *S/U only*
Counseling experience and practice under supervision. Corequisite: CEP 750.

770 PRACTICUM IN COUNSELING (1-1/2+6) 3 credits
Supervised counseling internship. May be repeated to a maximum of 6 credits per advanced degree. Written applications required by July 1 for fall and December 1 for spring. (a) Elementary schools; (b) secondary schools; (c) higher education; (d) employment service; (e) vocational rehabilitation; (f) private agencies. Prerequisite: CEP 620 or 721, 642, 660, 750.

772 PRACTICUM IN GROUP COUNSELING (1-1/2+6) 3 credits
Supervised counseling internships with small groups. Written applications required one month prior to registration. Maximum of 6 credits. Prerequisite: CEP 770.

773 PRACTICUM IN FAMILY COUNSELING (1+4 per credit) 3 or 6 credits
Supervised counseling internship with families. Written applications are required by July 1 for fall and December 1 for spring. Prerequisite: CEP 770.

774 COLLEGE STUDENT DEVELOPMENT LABORATORY (0+9) 3 credits
Supervised work experience at a professional level. (a) recruitment and retention, (b) academic advising, (c) orientation, (d) international student affairs, (e) administration. Prerequisite: 15 graduate CEP credits appropriate to the assignment.

**775 DOCTORAL RESEARCH SEMINAR** (3+0) 3 credits
Advanced considerations relating to the materials, procedures and write-up techniques involved in educational research. Special attention on analysis of various social science approaches to the study of education problems. Doctoral research area should be identified before enrolling: concurrently, the student must be registered for at least 3 credits of CEP 799. Prerequisite: doctoral candidacy plus CEP 640 and 700 or equivalent.

**776 GUIDANCE LABORATORY** (1-1/2+6) 3 credits
Supervised guidance work experience at a professional leadership level. (a) financial aids and graduate placement, (b) residence halls and college housing, (c) occupational information and vocational placement, (d) career education, (e) consulting, (f) appraisal, (g) substance abuse. Prerequisite: 12 graduate CEP credits appropriate to the task activities.

**779 PRACTICUM IN SCHOOL PSYCHOLOGY** (1/2+2 per credit) 3 to 6 credits
Directed experiences in the administration, interpretation, consultation and counseling pertaining to assessment and school psychological services. Written applications required one month prior to registration. Maximum of 12 credits. Prerequisite: CEP 744.

**782 CONSULTATION AND SUPERVISION IN COUNSELING SERVICES** (3+0) 3 credits
Theoretical and practical counseling methods for assisting the change process in individuals and organizations. Includes the theory and practice of supervision techniques for counseling services. Prerequisite: completion of 18 CEP graduate credits.

**784 STRUCTURE AND SUPERVISION OP PUPIL PERSONNEL PROGRAMS** (2+0) 3 credits
Assessing the need, determining the structure, supervising the specialists and evaluating the functions of pupil and student personnel programs. Emphasizes procedures for incorporating guidance services within the educational setting. Meets certification requirements for school counselors. Prerequisite: CEP 750.

**790 SEMINAR** 2 to 4 credits Maximum of 4 credits.

**791 SPECIAL TOPICS** 1 credit
Selected basic problems related to counseling and guidance personnel services. Maximum of 4 credits.

**794 COLLOQUIA IN COUNSELING** (1+0 per credit) 1 to 3 credits *S/U only*
Emphasis on current and pertinent topics. Presentations by prominent professionals in the field.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**798 COUNSELING INTERNSHIP** (0+2 per credit) 1 to 6 credits
A program of professional counseling services in one of the following areas: (a) elementary schools, (b) secondary schools, (c) higher education, (d) employment service, (e) vocational rehabilitation, (f) private agencies, (g) marriage and family. Prerequisite: 6 counseling practicum credits.

**799 DISSERTATION** 1 to 12 credits

# CRIMINAL JUSTICE (C J)

**110 INTRODUCTION TO CRIMINAL JUSTICE** (3+0) 3 credits
Introduction to the history, philosophy and functions of community, state and federal agencies or services involved in the criminal justice system. Chronological process of procedures from incident to final disposition.

**120 CRIMINAL LAW** (3+0) 3 credits
General introduction to the substantive law of crimes, emphasizing historical development; types and elements of crime; criminal responsibility; justification and defense; anticipatory offenses.

**211 POLICE IN AMERICA** (3+0) 3 credits
Historical development, roles, socialization and problems of police work. Prerequisite: C J 110.

**220 CRIMINAL PROCEDURE** (3+0) 3 credits
Origin, development and rationale of the structural and procedural aspects of America's criminal justice system and arrest, search-seizure, confessions and related legal issues.

**231 CORRECTIONS** (3+0) 3 credits
Overview of development of corrections, recent innovations and future correctional systems structure and programs. Prerequisite: C J 110.

**232 COMMUNITY CORRECTIONS** (3+0) 3 credits
Philosophy of community corrections, alternatives to confinement, the role of corrections in the community, evaluation of existing programs and administration of and planning for community corrections. Prerequisite: C J 231.

**312 ADMINISTRATION** (3+0) 3 credits
Theory of management and motivation; bureaucracy; labor law and relations; financial administration; criminal justice agency administration. Prerequisite: C J 110.

**313 CRIMINAL JUSTICE AND COMMUNITY RELATIONS** (3+0) 3 credits
Current issues and theories in relationships between the criminal justice system and the community. Prerequisite: C J 110.

**320 LEGAL SEMINAR I** (3+0) 3 credits
Elements of criminal law, procedure and evidence. Prerequisite: C J 110, 120, 220. Limited to criminal justice majors and minors only.

**324 PRINCIPLES OF CRIMINAL INVESTIGATION** (3+0) 3 credits
Fundamental principles of criminal investigation including crime scene work, collection and analysis of physical evidence, sketching, forensic photography and identification techniques. Prerequisite: completion of all required lower-division criminal justice courses. Open only to criminal justice majors and minors.

**326 JUVENILE JUSTICE** (3+0) 3 credits
Decision-making processes; theories of delinquent behavior; court decisions and problems affecting the administration of justice during childhood and adolescence. Prerequisite: C J 110.

**328 STATISTICS FOR CRIMINAL JUSTICE** (3+0) 3 credits
Study and practice with statistical methods which are useful in the collection, processing and utilization of data relative to criminal justice work. Prerequisite: completion of all required lower-division criminal justice courses.

**330 PROFESSIONAL PAPER-RESEARCH PROBLEM** 2 credits
Prerequisite: C J 110.

**331 THE CORRECTIONAL INSTITUTION** (3+0) 3 credits
Analysis of the administration and societies of the prison community. Prerequisite: C J 110, 231.

**332 PROBATION AND PAROLE** (3+0) 3 credits
Scope and functions of probation and parole, decision-making processes, differences in supervision of clients, management of resources, use of volunteers and current trends in these fields. Prerequisite: C J 231.

**336 JUVENILE CORRECTIONS** (3+0) 3 credits
Overview of development of juvenile corrections, nature of the offender, processing, treatment and aftercare facilities. Prerequisite: C J 110.

**366 CRIMINOLOGY** (3+0) 3 credits
(See SOC 366 for description.)

**367 PENOLOGY** (3+0) 3 credits
(See SOC 367 for description.)

**368 CRIME AND CRIMINAL TYPOLOGIES** (3+0) 3 credits
Analysis of behavior patterns and career variables in selected offenses, including serial murders and white collar, sex, organized, corporate and violent criminals. Prerequisite: C J 366.

**410 CRIMINAL JUSTICE SEMINAR** (3+0) 3 credits
Intensive study of the theory, and operation of the entire criminal justice system. Open only to criminal justice majors.

411 COMPARATIVE CRIMINAL JUSTIC SYSTEMS (3+0) 3 credits
Survey of selected international criminal justice systems, to include police, courts and corrections subsystems; human rights issues; offender treatment; and geographical, historical and ctural perspectives. Prerequisite: C J 110.

412 ADVANCED ORGANIZATION AND ADMINISTRATION (3+0) 3 credits
Advanced concepts and theories of criminal justice organization and administration. Prerequisite: C J 110.

413 DILEMMAS IN LAW AND LAW ENFORCEMENT (3+0) 3 credits
Legal, moral and social implications of issues including police discretion, deadly force, victimless crimes, surveillance, entrapment, plea bargaining, judicial discretion and other controversial issues. Prerequisite: C J 110.

420 LEGAL SEMINAR II (3+0) 3 credits
Continuation of C J 320. Prerequisite: C J 320.

424 CRIMINALISTICS (2+3) 3 credits
Gathering and presentation of evidence. Preparation of evidence for forensic use. Prerequisite: C J 324. Open only to criminal justice majors and minors.

425 ADVANCED CRIMINAL INVESTIGATION (2+3) 3 credits
Continuation of C J 324 with emphasis on crime scene work and use of the crime laboratory. Prerequisite: C J 324.

431 LEGAL ASPECTS OF CORRECTIONS (3+0) 3 credits
Post-conviction remedies, including legal implications of sentencing and prisoner access to courts, probation and parole, discipline, classification, and conditions of confinement. Prerequisite: C J 231.

450 CRIMINAL JUSTICE INTERNSHIP 1 to 6 credits *S/U only*
Individual student internships are arranged with appropriate federal, state, or local criminal justice agencies. Regular written reports on observations and activities are required. Maximum of 9 credits. Prerequisite: completion of all required lower-division criminal justice courses.

498 SELECTED TOPICS IN CRIMINAL JUSTICE 1 to 3 credits
Study of a major topic or issue in criminal justice. Maximum of 9 credits when content differs.

499 INDEPENDENT STUDY IN CRIMINAL JUSTICE 1 to 3 credits
Maximum of 6 credits. Open only to criminal justice majors.

*Inactive Courses*
214 PRINCIPLES OF POLICE PATROL TECHNIQUES (3+0) 3 credits
260 THE VOLUNTEER IN COURTS AND CORRECTIONS (4+0) 4 credits
316 TECHNIQUES OF POLICE TRAFFIC FUNCTIONS (3+0) 3 credits

# CURRICULUM AND INSTRUCTION (C I)

230 ORIENTATION TO VOCATIONAL EDUCATION (3+0) 3 credits
Organization and management of vocational classes, laboratories, shops, work experiences, etc., youth groups and advisory committees.

270 HUMAN GROWTH AND DEVELOPMENT (3+0) 3 credits
Principles of human growth and development, the nature of the child, and child and adolescent learning. Prerequisite: general psychology. Corequisite: C I 271.

271 ELEMENTARY EDUCATION EXPERIENCE (0+3) 1 credit *S/U only*
This field experience in the public schools acquaints prospective teachers with the students and environment of elementary schools. Corequisite: C I 270.

280 BASIC COMPUTER APPLICATIONS IN EDUCATION (1+0) 1 credit
Basic exposure to computing and to computer applications in education. Includes hands-on experience with the computer. Designed primarily for prospective teachers.

290 ISSUES IN EDUCATIONAL COMPUTING (1+0) 1 credit
Examination of current research, issues and trends in educational computing.

300 READING AND LANGUAGE ARTS IN THE ELEMENTARY SCHOOL (3+0) 3 credits
Basic understanding, techniques, and approaches to instruction in oral and written language development, comprehension, word recognition, phonics, writing process and literature-based curriculum.

301 INTRODUCTION TO LIBRARY EDUCATION (3+0) 3 credits
Acquaints student with philosophy and work of school librarian. Introduces bibliographic tools and information sources basic to librarianship, emphasizing those used in school library work.

305 VOCATIONAL SAFETY TECHNIQUES (1+0) 1 credit
Introduction to basic concepts of classroom safety strategies, area of emphasis including concerns for safety, responsibility and liability and preventing bodily injury.

310 EDUCATION OF THE EXCEPTIONAL CHILD (1+0 per credit) 2 or 3 credits
Survey of the various types of exceptionalities. Emphasis on etiology, physical and educational characteristics.

311 INTRODUCTION TO LEARNING AND BEHAVIOR DISORDERS (3+0) 3 credits
Overview of contemporary theories and approaches to learning and behavior disorders with emphasis on assessment and treatment methodologies. Prerequisite: C I 310.

312 EXCEPTIONAL CHILD EXPERIENCE (0+3) 1 credit *S/U only*
Field experience to acquaint students with types of handicapping conditions and kinds of services available to handicapped persons. Prerequisite or corequisite: C I 311 .

350 MIDDLE SCHOOL PRACTICUM (2+3) 3 credits
General principles of secondary instruction with field experience in the middle school.

393 AUDIOVISUAL EQUIPMENT AND INSTRUCTIONAL MEDIA 1 credit
Beginning exposure to audiovisual equipment used in teaching and preparation of basic instructional materials for the classroom. Prerequisite: education major.

400, 600 SIGN LANGUAGE FOR TEACHERS (3+0) 3 credits
Development of signing and fingerspelling skills. Curriculum development based on manual communication. Orientation to American sign language and deaf culture.

401, 601 INDIVIDUALIZED METHODS OF TEACHING READING (3+0) 3 credits
Theory, procedures, organization and content of an individualized approach to the teaching of reading. Prerequisite: C I 300.

404, 604 READING AND WRITING IN THE SECONDARY SCHOOL (3+0) 3 credits
In content fields; sources of difficulties; developmental instruction; techniques for promoting comprehension and vocabulary. Prerequisite: C I 270, CEP 330, or valid teaching certificate.

406, 606 SURVEY OF REMEDIAL READING PROBLEMS (3+0) 3 credits
Introductory course for remedial reading training. Offers specialized instruction in reading designed to develop depth in remedial reading problems. Prerequisite: C I 300.

407, 607 BOOK SELECTION FOR CHILDREN (3+0) 3 credits
Survey of the field of books for children. Children's reading interests and needs as bases for evaluating and selecting library materials for the elementary school.

408, 608 BOOK SELECTION FOR ADOLESCENTS/YOUNG ADULT (3+0) 3 credits
Prepares teachers, librarians and administrators for evaluation of books and other library materials for pupils in secondary schools. Prerequisite: C I 301 or equivalent.

409, 609 HANDICAPPED LEARNERS IN THE REGULAR CLASSROOM (3+0) 3 credits
Preparation of teachers to deal with assessment and program development

for handicapped children who are placed in the regular classroom. Prerequisite: E L 101, C I 270 or equivalent. Meets new teacher education certification requirements.

**410, 610 TRANSITIONAL PROGRAMS FOR THE HANDICAPPED ADOLESCENT** (3+0) credits
Instructional strategies for preparing the handicapped adolescent for the transition from school to work. Implications for secondary school resource room teachers. Prerequisite: preprofessional standing in teacher certification.

**411, 511 TEACHING HOME ECONOMICS** (1+0 per credit) 2 or 3 credits
Includes instructional planning, execution, and assessment; curriculum development; and classroom and laboratory management. Understanding middle and high school home economics programs. Prerequisite: preprofessional standing in the College of Education

**412, 512 METHODS IN TEACHING AGRICULTURE**
(1+0 per credit) 2 or 3 credits
Course construction for all day, young and adult farmer classes; preparation of teaching plans, reports, organization and evaluation of a vocational agriculture department. Prerequisite: preprofessional standing in the College of Education.

**413, 613 SERVING HANDICAPPED INDIVIDUALS AND THEIR FAMILIES** (3+0) 3 credits
Facilitating the interrelationship of varied services for exceptional students. Focus includes working with parents, professionals and community service.

**414, 614 PROBLEMS IN SPECIAL EDUCATION**
(1+0 per credit) 1 to 3 credits
Integration of subject matter into the learning situation. New procedures on developments in the area of special education. Observation of special classrooms is required. Maximum of 12 credits, only 6 of which may apply to a degree. Prerequisite: C I 310, 311, 418 or 471.

**415, 615 THE ADOLESCENT LEARNER AND THE SECONDARY CURRICULUM** (3+0) 3 credits
Accommodating the secondary curriculum to developmental characteristics of the adolescent. Prerequisite: preprofessional standing in teacher certification program.

**416, 616 INSTRUCTION OF MODERATELY AND SEVERELY RETARDED STUDENTS** (3+0) 3 credits
Curriculum developments and methods in teaching the moderately and severely retarded child. Includes an experience with severely handicapped children.

**417, 617 CURRICULAR APPROACHES FOR THE HANDICAPPED ADOLESCENT** (3+0) 3 credits
Problems and methods for designing curriculum for secondary special education students with emphasis on vocational experience. Prerequisite: C I 311.

**418, 618 CURRICULUM DEVELOPMENT FOR THE MILDLY HANDICAPPED** (3+3) 4 credits
Problems and procedures in curriculum development for the mildly handicapped child. Materials and technique development for use in special, regular or resource classrooms. Field experience is required as a part of the course to practice techniques. Prerequisite: C I 471.

**419, 619 TEACHING THE BLIND AND VISUALLY HANDICAPPED**
(1+1 per credit) 2 or 3 credits
Anatomy and physiology of the eye. Instruction of the partially seeing and blind. Instruction in Braille, six-key typewriter and other audiovisual equipment. Prerequisite: C I 310.

**420, 620 SOCIOCULTURAL CONCERNS IN EDUCATION**
(3+0) 3 credits
Analysis of equity issues in contemporary schools. Concerns relative to access, participation, and benefit are addressed in relation to education for culturally pluralistic student populations. Prerequisite: C I 450 or CEP 330.

**421, 521 TEACHING SECONDARY SOCIAL STUDIES**
(1+0 per credit) 2 or 3 credits.
Nature of social growth of adolescents in a democratic culture. Content and procedures in social studies. Development of instructional materials and techniques. Prerequisite: preprofessional standing in the College of Education

**422, 522 TEACHING OF SECONDARY MATHEMATICS**
(1+0 per credit) 2 or 3 credits
Curriculum and instruction in secondary school mathematics with emphasis on relating it to college mathematics. Prerequisite: preprofessional standing in the College of Education; MATH 474, 475.

**423, 523 TEACHING SECONDARY ENGLISH**
(1+0 per credit) 2 or 3 credits
Principles and practices for teaching writing, speaking, listening and literature. Prerequisite: preprofessional standing in the College of Education.

**424, 524 TEACHING SECONDARY SCHOOL SCIENCE**
(1+0 per credit) 2 or 3 credits
Content and methods in teaching secondary science with emphasis on scientific literacy, demonstration, investigation, computer application, and other educational technology. Prerequisite: preprofessional standing in the College of Education.

**425, 525 METHODS AND MATERIALS IN TEACHING BUSINESS EDUCATION** (1+0 per credit) 2 or 3 credits
Learning processes and their application to the teaching of business subjects. Techniques and media for effective teaching of skill and nonskill areas. Prerequisite: preprofessional standing in the College of Education.

**426, 526 TEACHING SECOND LANGUAGES IN THE PUBLIC SCHOOL**
(1+0 per credit) 2 or 3 credits
Examination of traditional and innovative second language teaching approaches; lesson design for major skills; supervised teaching in groups. Prerequisite: preprofessional standing in the College of Education.

**427, 627 TEACHING INDUSTRIAL EDUCATION**
(1+0 per credit) 2 or 3 credits
Techniques of teaching applied to individual and group instruction in industrial education. Shop management, equipment standards, specifications safety precautions, and shop regulations. Prerequisite: C I 270 or CEP 330; preprofessional standing in the College of Education.

**429, 629 METHODS OF TEACHING ENVIRONMENTAL SCIENCE**
(1+0 per credit) 2 or 3 credits
Methods of teaching environmental science. Special emphasis on outdoor education methods. Materials and media for effective teaching. Prerequisite: 9 credits in science and a science methods course; preprofessional standing in the College of Education.

**430, 630 KINDERGARTEN EDUCATION** (1+0 per credit) 2 or 3 credits
Practical problems of organizing kindergarten programs. Emphasis on methods, materials and development aspects of learning.

**431, 631 ESL INSTRUCTION IN THE ELEMENTARY SCHOOL**
(3+0) 3 credits
Systematic instruction to help ESL students (1) adjust to school, (2) acquire English for self-help and for extended interaction; (3) develop English for extended learning. Prerequisite: ENGL 281 or C I 450.

**432, 632 MICROCOMPUTERS IN EDUCATION** (2+3) 3 credits
Uses of microcomputers in education, microcomputer operations, hardware/software selection, work processing and LOGO. Applied outcomes applicable to the classroom for teachers seeking a practical knowledge of how to operate and utilize microcomputers in education. Prerequisite: C I 290.

**433, 633 CREATIVE EXPERIENCES IN ELEMENTARY EDUCATION**
(1+0 per credit) 1 to 3 credits
Analysis of the nature of creative expression including art, music, movement drama and creative thinking. Prerequisite: E L 101.

**434, 634 CLASSROOM MANAGEMENT TECHNIQUES**
(3+0) 3 credits
Major aspects of classroom management including the physical arrangement of the classroom, scheduling, daily routines and procedures, models of discipline and methods for dealing with behavior problems. Corequisite: C I 451, 453.

**435, 635 PROGRAMMING LANGUAGES** (2+3) 3 credits
Educational applications of programming languages. LOGO, BASIC and PASCAL are offered on a rotating basis according to student need. Prerequisite: C I 290, 488, 688.

**436, 636 TEACHER APPLICATIONS OF MICROCOMPUTERS** (2+3) 3 credits
Strategies and techniques for effective use of microcomputers in the classroom. Topics include software evaluation, authoring systems, utility programs, classroom management uses and new technologies. Prerequisite: C I 290, 432,

**437, 637 LAW, SOCIETY AND EDUCATION** (3+0) 3 credits
Effects of judicial decisions upon society and education; interactions among the law, society and education. Prerequisite: C I 270 or CEP 330.

**438, 638 TEACHING WRITING IN THE PUBLIC SCHOOLS** (3+0) 3 credits
Current theory and related practices in the teaching of writing in grades K-12 . Prerequisite: ENGL 321.

**439, 639 THE JUNIOR HIGH SCHOOL/MIDDLE SCHOOL** (3+0) 3 credits
Development, basic philosophy and functions. Psychological and educational foundations. Problems and practices in administration, curriculum, instruction, guidance and student activities. Prerequisite: C I 270 or CEP 330.

**440, 640 THE INTEGRATED CURRICULUM** (3+0) 3 credits
Integration of subject matter into a functional learning situation. Attention is given to curricular areas and methods of instruction. Prerequisite: C I 270 or CEP 330.

**441, 641 CURRICULUM DEVELOPMENT IN THE SOCIAL STUDIES** (3+0) 3 credits
Research and curriculum studies dealing with content and procedures of the social studies. Prerequisite: C I 421 or 463.

**442, 642 CURRICULUM DEVELOPMENT IN MATHEMATICS** (3+0) 3 credits
Research and curriculum studies dealing with content and procedures of mathematics. Prerequisite: C I 422 or 464.

**443, 643 CURRICULUM DEVELOPMENT IN THE LANGUAGE ARTS** (3+0) 3 credits
Research and curriculum studies dealing with the content and procedures of the language arts. Prerequisite: C I 423 or 466.

**444, 644 CURRICULUM DEVELOPMENT IN SCIENCE** (3+0) 3 credits
Research and curriculum studies dealing with content and procedures of the science program. Prerequisite: C I 424 or 465.

**445, 645 LITERACY DEVELOPMENT FOR ESL STUDENTS** (3+0) 3 credits
Second language proficiency and literacy development; whole language approaches to second language literacy; enhancing transfer of literacy tasks in the regular classroom.

**446, 646 CURRICULUM DEVELOPMENT IN SECOND LANGUAGE EDUCATION** (3+0) 3 credits
Organization trends and curriculum issues of second language programs; materials adaptation and development for oral and written discourse; innovations in L2 curricula. Prerequisite: ENGL 281 or C I 450.

**447, 647 CURRICULUM DEVELOPMENT IN VOCATIONAL AND INDUSTRIAL EDUCATION** (3+0) 3 credits
Research and curriculum studies dealing with content and procedures of the vocational, technical and industrial education program. Prerequisite: C I 427.

**448, 648 CURRICULUM DEVELOPMENT IN ECONOMICS EDUCATION** (3+0) 3 credits
Recent curriculum developments in economics education, review of pertinent literature, and development of techniques for imparting basic concepts of economics. Prerequisite: C I 421 or 463 . Meets new teacher education certification requirements.

**449, 649 CURRICULUM DEVELOPMENT IN ENVIRONMENTAL EDUCATION** (1+0 per credit) 2 or 3 credits
Development of the school curriculum in the area of environmental education. Special emphasis is given to school and school-camp programs. Activities for promoting the acquisition of environmental concepts are demonstrated. Prerequisite: 6 credits of science.

**450 SECONDARY SCHOOL PRACTICUM** (2+1) 3 credits
General methods with field experience in the high school. Prerequisite: C I 350.

**451 SUPERVISED TEACHING IN THE ELEMENTARY GRADES** (0+2-1/2 per credit) 4 to 12 credits
Observation, planning and teaching of units, classroom management, participation and direction of school activities, pupil and parent conferences. Prerequisite: meet screening criteria. (See statement under Supervised Teaching. )

**452, 652 ADVANCED SUPERVISED TEACHING** (0+2) 1 to 6 credits
Supervised teaching experience in elementary, special or secondary education, beyond that required for original certification.

**453 SUPERVISED TEACHING WITH EXCEPTIONAL CHILDREN** (0+2-1/2 per credit) 4 to 16 credits
Practical experience in the classroom management and teaching of exceptional children: (a) mental retardation, (b) speech therapy, (c) learning disabilities, (d) emotionally handicapped. Prerequisite: C I 310, 311, 418, 471; meet screening criteria.

**454 SUPERVISED TEACHING IN PHYSICAL EDUCATION: GRADES 1 TO 6** 1 to 6 credits
Experience teaching physical education under supervision in an elementary school. Not applicable for teaching other elementary subjects. Prerequisite: meet screening criteria.

**457 SUPERVISED TEACHING IN THE SECONDARY SCHOOL** (0+2-1/2 per credit) 5 to 10 credits
Experience teaching major and/or minor field under supervision in either middle school or senior high school. Prerequisite: meet screening criteria. (See statement under Supervised Teaching.)

**458, 658 THE MICROCOMPUTER AS A TOOL** (2+3) 3 credits
Advanced applications of educational tool software such as word processors, data base managers, spreadsheets and graph packages. Prerequisite: C I 290, 432.

**459 PRACTICUM IN VOCATIONAL EDUCATION** 1 to 3 credits *S/U only*
Coordinated work-study programs in industry or government. Written progress reports are prepared periodically. Maximum of 6 credits.

**461, 661 ADVISING VOCATIONAL STUDENT ORGANIZATIONS** (3+0) 3 credits
Organizing and advising the activities and programs of the student organizations associated with various vocational programs. Prerequisite: C I 230.

**462, 662 PHILOSOPHY OF VOCATIONAL EDUCATION** (3+0) 3 credits
Philosophical bases of the theory and practice of vocational education in secondary and post-secondary schools. Interrelationship of vocational and academic programs. Prerequisite: C I 230.

**463, 663 SOCIAL STUDIES IN THE ELEMENTARY SCHOOL** (2+3) 2 or 3 credits
Teaching content and procedures for the social studies in elementary school classrooms. Development of instructional materials and techniques. Prerequisite: preprofessional standing in the College of Education.

**464 MATHEMATICS IN THE ELEMENTARY SCHOOL** (2+3) 2 or 3 credits
Mathematical and psychological bases for scope, sequence and appropriate instructional strategies in elementary school mathematics. Prerequisite: education major.

**465 SCIENCE IN THE ELEMENTARY SCHOOL** (2+3) 2 or 3 credits
Materials, procedures, classical techniques in the teaching of science to children, K-6. Public school practicum reinforces the campus based instruction. Prerequisite: preprofessional standing in the College of Education.

**466 TEACHING OF ELEMENTARY LANGUAGE ARTS AND LITERATURE** (3+3) 4 credits

Language needs of children with emphasis on written expression, language skills, speaking and listening. Language development as related to individual and cultural differences. Content and procedures for teaching language arts and children's literature and integrating literature of all groups in the total elementary school curriculum. Prerequisite: preprofessional standing in the College of Education.

**467, 667 TEACHING WRITING THROUGHOUT THE CURRICULUM, K-12** (1+0 per credit) 1 to 4 credits
Focus on writing for learning in all subject areas and at all grade levels. Introduction to current practices in the teaching of writing as well as frequent writing by participants in the course.

**468 READING AND LANGUAGE ARTS IN LOWER ELEMENTARY GRADES** (3+3) 3 or 4 credits
Learning and instruction in reading, writing, oral language, and literature for the primary grades. Includes planning and teaching lessons in public school classrooms. Prerequisite: preprofessional standing in the College of Education.

**469 READING AND LANGUAGE ARTS IN UPPER ELEMENTARY GRADES** (3+3) 3 or 4 credits
Learning and instruction in reading, writing, oral language and literature for the intermediate grades. Prerequisite: preprofessional standing in the College of Education.

**471, 671 ASSESSMENT FOR SPECIAL EDUCATION TEACHERS** (3+0) 3 credits
Methods for assessing handicapped children: motor, perceptual, academic language, self help skills, both formal and informal. Interpretation of assessment information and application to program needs. Prerequisite: C I 310 or 409.

**472, 672 PROGRAM DEVELOPMENT IN VOCATIONAL EDUCATION** (3+0) 3 credits
Development of programs in all areas of vocational education. Includes planning processes, community surveys, involving business and industry, and needs assessments. Prerequisite: junior standing.

**474, 674 CATALOGING AND ORGANIZATION OF LIBRARY MATERIALS** (3+0) 3 credits
Cataloging of books and other library materials. Includes practice in working with Dewey and Library of Congress "classification systems," principles of entry and cross referencing and organization of periodicals. Prerequisite: C I 301 or equivalent.

**475, 675 SUPERVISED LIBRARY PRACTICE** (0+2 per credit) 1 to 4 credits
Opportunities for supervised library practice under the direction of a professionally trained librarian in a school situation. Prerequisite: C I 301, 407, 408, 474, 476 or equivalent.

**476, 676 ADMINISTRATION OF THE SCHOOL LIBRARY** (3+0) 3 credits
Includes functions of school library. Relationship of library to school's total instructional program. Preparation of library budget. Other problems of library administration. Prerequisite: C 1301, 407, 408, 474 or equivalent.

**477, 677 NONPRINT MATERIALS IN THE SCHOOL LIBRARY** (3+0) 3 credits
Selection, acquisition, organization, storage and maintenance of films, filmstrips, recordings, pictures, maps, charts, computer software/courseware and realia in libraries and media centers. Prerequisite: C I 301 or equivalent.

**480, 680 INDEPENDENT STUDY IN CURRICULUM AND INSTRUCTION** (0+2 per credit) 1 to 3 credits
Action or library research in an appropriate area of curriculum and instruction. Maximum of 6 credits. Prerequisite: C I 440 or other curriculum course.

**481, 681 SPECIAL PROBLEMS IN CURRICULUM AND INSTRUCTION** (1+0 per credit) 1 to 6 credits
Specialized instruction designed to develop depth in understanding of a current education problem of the inservice teacher. Maximum of 12 credits, only 6 of which may be applied toward any degree. Prerequisite: C I 440 or other curriculum course. (Same as AGED 481, 681.)

**482, 682 FIELD STUDIES IN CURRICULUM AND INSTRUCTION** (1+0 per credit) 2 or 3 credits
Intensive study on organization and interpretation of data relative to selected problems such as curriculum development, parent-teacher relations, grouping of pupils. Maximum of 12 credits. Prerequisite: C I 440 or other curriculum course. (Same as AGED 482, 682.)

**483, 683 SPECIAL PROJECT WORKSHOP IN CURRICULUM AND INSTRUCTION** (1+0 per credit) 1 to 3 credits
Emerging problems in curriculum and instruction. Maximum of 12 credits.

**484, 684 WORKSHOP IN VOCATIONAL EDUCATION** (1+0 per credit) 1 to 6 credits
Modern developments in vocational and technical education programs; local vocational education and administration and supervision, agriculture, home economics, trades and industries, business and office occupations, health occupations, technical occupations, marketing and distributive occupations and vocational guidance. Maximum of 6 credits.

**486, 686 WORKSHOP IN SCHOOL LIBRARY PROBLEMS** (2+0) 2 credits
Problems pertaining to administration and operation of a school library. Discussed from point of view of the teacher-librarian. Prerequisite: C I 301, 407, 408, 474 or equivalent.

**487, 687 SPECIAL TOPICS** 1 to 3 credits *S/U only*
Specialized instruction designed to develop breadth of understanding in current curriculum and instruction topics for elementary, secondary and special education teachers. Maximum of 6 credits.

**488, 688 CURRICULUM INTEGRATION: METHODOLOGY AND APPLICATIONS** (2+3) 3 credits
Techniques for integrating computing activities into the general curriculum. Emphasis on the interrelationship between computers and the curriculum. Prerequisite: C I 290, 432.

**489, 689 SPECIAL TOPICS IN EDUCATIONAL COMPUTING** (1+3) 2 credits
Specialized instruction in educational computing. Topics may include authoring systems, programming, critical thinking and computers, special education applications, graphics, word processing and creative writing, etc. Prerequisite: C I 290, 432.

**490, 690 MICROCOMPUTER COURSEWARE DESIGN** (2+3) 3 credits
Introduction to instructional design of courseware in education and microcomputer programming. Emphasis on principles of courseware development and evaluation and an understanding of microcomputer commands and language. Prerequisite: C I 280 or equivalent.

**491, 691 PRODUCTION AND DESIGN OF MEDIA MATERIALS** (3+0) 3 credits
Preparation and use of graphics in instruction. Design and presentation of materials for slides, transparencies, models and exhibits. For teachers and librarians. Prerequisite: E L 101 or equivalent

**492, 692 PHOTOGRAPHY FOR TEACHERS** (2+3) 3 credits
Emphasizes fundamental photographic processes in education including film development, black and white enlarging, black and white and color slide development, lighting arrangements, portrait procedures, photographic displays, technical and operational lab aspects of the field. Prerequisite: E L 101 or equivalent.

**493, 693 AUDIOVISUAL METHODS IN TEACHING** (3+0) 3 credits
For both elementary and secondary students. Principles and application of both projected and nonprojected materials in audiovisual education. Prerequisite: E L 101 or equivalent.

**494, 694 EDUCATIONAL MOTION PICTURE PRODUCTION** (3+0) 3 credits
Idea development, research, planning and production of instructional motion pictures. Script writing, filming, editing and sound systems and applications, supervision of budget, personnel and content during film preparation. Prerequisite: C I 493 or equivalent.

**495, 695 PRACTICUM IN EDUCATIONAL MEDIA** (0+2 per credit) 1 to 3 credits
Supervised experiences in designing, developing and evaluating instructional media for specific teaching objectives. Involves working in the

Learning and Resource Center. Prerequisite: C I 493 or equivalent.

**497, 697 COOPERATIVE VOCATIONAL EDUCATION PROGRAMS** (3+0) 3 credits
Role of cooperative vocational programs, organization, and implementation. Prerequisite: C I 230.

**498, 698 SECOND LANGUAGE ACQUISITION IN SCHOOL** (3+0) 3 credits
Theoretical foundations of classroom interaction and second language acquisition. Providing for real oral and written discourse in a second language. Prerequisite: ENGL 281 or C I 450.

**505 PROFESSIONAL DEVELOPMENT** (1+0 per credit) 1 to 3 credits *S/U only*
Involvement in educational conferences dealing with current issues, trends, and developments in education. Not applicable toward a degree program.

**550 INTERNSHIP SEMINAR** (2+0) 2 credits *S/U only*
Examination of the experiences, concerns, and professional growth occurring during the supervised internship: (a) elementary education, (b) special education and dual elementary/special education. Corequisite: C I 551.

**551 SUPERVISED INTERNSHIP** (0+3 per credit) 12 to 16 credits
(a) Elementary education, (b) special education, (c) secondary education, (d) dual elementary/special education, (e) dual secondary/special education.

**602 READING AND LANGUAGE ARTS IN THE LOWER ELEMENTARY GRADES** (2+3) 3 credits
Advanced work in developmental reading including new developments, techniques and methods which are related to the primary grades. Prerequisite: C I 300.

**603 READING IN THE UPPER ELEMENTARY GRADES** (2+3) 3 credits
Advanced work in development reading for the reading teacher and the subject-matter teacher; including new developments, techniques and methods which are related to the upper elementary grades. Prerequisite: C I 300.

**605 LITERACY INSTRUCTION; INDIVIDUAL AND SMALL GROUP** (3+3) 4 credits
Apprentice teaching in center for learning and literacy; emphases on diagnostic teaching, small group instruction, corrective and remedial techniques, and applications in the classroom. Prerequisite: C I 300.

**611 PHYSICAL AND MULTIPLE DISABILITIES** (3+0) 3 credits
Definitions, classification, etiology, and treatment of individuals with disabilities such as cerebral palsy, mental retardation, spina bifida, and epilepsy. Prerequisite: C I 310 or 409.

**612 INSTRUCTION IN SEVERE BEHAVIOR DISORDERS** (3+0) 3 credits
Behavior and learning management and program development for students with severe behavior disorders, including autism. Prerequisite: C I 311.

**621 TEACHING READING TO OLDER STUDENTS** (3+2) 3 credits
Emphasis on diagnostic teaching, instruction, special needs, and interrelated areas of reading, writing and spelling development. (a) Correction and remediation, (b) diagnosis. Prerequisite: C I 468, 469, 604.

**623 FOUNDATIONS OF EARLY CHILDHOOD SPECIAL EDUCATION** (3+0) 3 credits
Introduction to special education programs for children from birth to age five with handicaps. History, legal foundation and service delivery models. Prerequisite or corequisite: C I 310.

**624 INSTRUCTION OF CHILDREN WITH SPECIAL NEEDS: BIRTH TO TWO** (2+0) 2 credits
Curriculum developments and instructional strategies for teaching infants and toddlers with disabilities. Includes a practicum. Prerequisite or corequisite: C I 310

**625 INSTRUCTION OF CHILDREN WITH SPECIAL NEEDS: AGES THREE TO FIVE** (2+0) 2 credits
Curriculum developments and instructional strategies for teaching young children with disabilities. Includes a practicum. Prerequisite or corequisite: C I 310.

**663 VOCATIONAL SAFETY TEACHING STRATEGIES** (1+0 per credit) 1 to 6 credits
Philosophical and applied investigation of the teaching strategies for safety education programs in vocational education.

**666 FOUNDATIONS OF LITERACY** (3+0) 3 credits
Intended for practicing teachers. Contemporary theoretical and pedagogical issues in literacy, preschool-secondary. Comprehension, word knowledge, social/environmental/psycholinguistic factors in reading and writing development.

**700 SUPERVISION OF STUDENT TEACHING** (2+0) 2 credits
Designed primarily for public school teachers who are functioning as cooperating teachers in the student teaching program.

**701 FIELD WORK AND CLINICAL PRACTICE IN READING** (1+5) 3 credits
Practice in reading with emphasis upon clinical diagnosis, prognosis and remediation. Maximum of 6 credits. Prerequisite: C I 606.

**702 READING CLINIC** (1+5) 3 credits
Administration of the reading clinic. Observation, planning and management of the pupil's diagnosis and remediation as well as staffing and parent conference. Maximum of 6 credits. Prerequisite: C I 701.

**705 ADVANCED HUMAN GROWTH AND DEVELOPMENT** (3+0) 3 credits
Emphasis on implications of human growth and development for the curriculum. Application and examples directed to the teaching profession. Prerequisite: C I 270 or equivalent.

**706 EDUCATIONAL USES OF TELEVISION** (3+0) 3 credits
Analysis of trends in utilization of television and video tape recordings. Program production, evaluation and methods of teaching with these media.

**707 MODERN TECHNOLOGY IN EDUCATION** (3+0) 3 credits
New and emerging technological advances in multimedia systems of instruction. Included are programmed instruction, audio and visual media and communication labs. Emphasis on current research and experimentation in this area.

**708 ADVANCED MEDIA DESIGN AND PRODUCTION** (3+0) 3 credits
Comprehensive multi-media modules designed around individually chosen topics and produced in class. Emphasis placed on quality production, organization, continuity and effective communication of topic. Prerequisite: C I 491, 691 or equivalent.

**710 ASSESSMENT OF THE SEVERELY HANDICAPPED** (3+0) 3 credits
Assessment of the intellectual, motor, adaptive and behavioral functioning of severely handicapped children during various developmental periods. Includes practicum tailored to one area of severity. Prerequisite: C I 471, 671.

**711 ASSESSMENT OF STUDENTS WITH MILD HANDICAPS** (3+0) 3 credits
Strategies for assessing children with mild handicaps: motor, perceptual, academic, language, and daily living skills. Interpretation of assessment information and application to program needs. Prerequisite: C I 311. Corequisite: C I 748.

**712 ASSESSMENT OF INFANTS/PRESCHOOLERS WITH SPECIAL NEEDS** (3+0) 3 credits
Assessment of cognitive, physical, communication, social, and self-help skills of infants, toddlers, and young children with special needs. Includes assessment practicum. Prerequisite: C I 310.

**713 ORGANIZATION OF PROGRAMS FOR EXCEPTIONAL CHILDREN** (3+0) 3 credits
Problems of organization of public school programs for exceptional children. Involves the planning and programs and facilities for the exceptional child in public and private institutions. Prerequisite: C I 413, 453.

**714 CAREER AND COMMUNITY LIFE FOR SEVERELY HANDICAPPED** (3+0) 3 credits

Theoretical and applied study of the self help, prevocational, career and community life needs of the moderate to profoundly handicapped, including the personal and community services available to help in their transition. Prerequisite: C I 417.

715 EDUCATION OF THE GIFTED (1+0 per credit) 2 or 3 credits
Consideration of educational programs and procedures to develop stimulating environments for the maximum development of gifted or superior children. Specific cases and demonstration. Prerequisite: C I 310.

716 TEACHING STUDENTS WITH SEVERE LEARNING DISABILITIES (3+0) 3 credits
Principles, methods and materials appropriate for instruction of the severely learning disabled students.

717 BEHAVIOR DISORDERS (3+1) 3 credits
Survey of the field of behavior disorders including characteristics, contributing factors, and an overview of interventions in school and related settings.

718 TRENDS AND ISSUES IN SPECIAL EDUCATION (3+0) 3 credits
Study of research pertaining to physical, mental, emotional and social characteristics of exceptional children. Emphasis on the implications of research for program development. Prerequisite: C I 413.

719 SEVERE LEARNING DISABILITIES (3+0) 3 credits
Survey of the field of learning disabilities including characteristics, contributing factors, and an overview of interventions in school and related settings.

720 ADVANCED METHODOLOGY (3+0) 3 credits
Study and evaluation of innovative teaching in elementary and secondary schools. Prerequisite: C I 451, 453 or 457 and a curriculum course.

721 EVALUATION OF CLASSROOM LEARNING (3+0) 3 credits
Construction and use of classroom tests, performance instruments, and other methods of evaluating learning. Prerequisite: C I 451, 453 or 457.

722 ADVANCED BEHAVIOR MANAGEMENT IN SEVERE HANDICAPS (3+0) 3 credits
Skills in management of behavior problems characteristic of individuals with severe handicaps through functional analysis and management of variables influencing behavior. Prerequisite: PSY 406, 606.

726 BILINGUAL AND IMMERSION EDUCATION (3+0) 3 credits
Basic principles of bilingualism; research and practice in immersion and bilingual education programs; sociocultural perspectives on bilingual education.

728 PROBLEMS IN TEACHING (1+0 per credit) 1 to 6 credits
Research projects required of each student in the field of special interest. (a) Social studies, (b) English, (c) science, (d) mathematics, (e) business education, (f) foreign language, (g) industrial education, (h) bilingual-bicultural education, (j) agricultural education. Maximum of 6 credits. Prerequisite: CEP 700.

730 WORKSHOP IN AGRICULTURAL EDUCATION (1+0 per credit) 1 to 6 credits
Intensive study of a technical phase of (a) agricultural education, (b) industrial mechanics. Maximum of 6 credits.

740 ELEMENTARY SCHOOL CURRICULUM (3+0) 3 credits
Curriculum principles as found in the historical, philosophical, sociological and psychological foundations. Emphasis on methods and techniques that meet the needs of the child. Prerequisite: C I 640 or equivalent.

741 ADVANCED CURRICULUM DESIGN IN EARLY CHILDHOOD EDUCATION (3+0) 3 credits
Research and curriculum studies in content and procedures. Curriculum design projects undertaken. Prerequisite: C I 705.

742 FOUNDATIONS IN ELEMENTARY EDUCATION (3+0) 3 credits
Philosophical, historical, sociological and psychological foundations of elementary education. Includes integrated curriculum, unit teaching, inquiry and discovery, human relations in the classroom. Prerequisite: C I 740.

744 RESEARCH APPLICATIONS IN CURRICULUM AND INSTRUCTION (3+0) 3 credits
Analysis of methods of research appropriate to curriculum and instruction. Application of these methods to a specific problem. Prerequisite: minimum of 9 graduate credits in education.

746 SECONDARY SCHOOL CURRICULUM (3+0) 3 credits
Study and discussion of development and improvement of curriculum practices, with special stress upon working out procedures suited to this area. Prerequisite: C I 440 or other curriculum course.

748 ADVANCED CURRICULUM DESIGN FOR EXCEPTIONAL CHILDREN (3+0) 3 credits
Recent developments in curriculum design for exceptional children including consideration of programmed instruction and operant procedures. Corequisite: C I 711.

750 INTERNSHIP IN CURRICULUM AND INSTRUCTION (0+2 per credit) 3 to 6 credits
Application of course content included in C I 742 or 746 in the classroom under the supervision and direction of local school system personnel and university staff members. Prerequisite: C I 742 or 746. (Same as AGED 763.)

753 SUPERVISION AND FIELD WORK WITH EXCEPTIONAL CHILDREN (0+3 per credit) 3 to 6 credits
Practicum in (a) mental retardation, (b) learning disabilities, (c) gifted, (d) behavior disorders, (e) early childhood special education. Maximum of 12 credits. Prerequisite: C I 413, 453, and 748.

755 SUPERVISED TEACHING IN EDUCATION (1+1 per credit) 2 or 3 credits
Directed experience in college teaching consisting of the preparation, presentation and testing of material for undergraduate students in lectures, discussion sections or labs. Prerequisite: undergraduate major in the subject or equivalent.

770 SEMINAR IN EARLY CHILDHOOD EDUCATION (3+0) 3 credits
Observation, study and research in early childhood education. Problems of organization, administration and evaluation of programs. Prerequisite: C I 705 .

771 SEMINAR IN ELEMENTARY EDUCATION 1 to 6 credits
Problems of organization, administration, curriculum, methodology, evaluation, public relations. Review of research procedures. (a) Curriculum, (b) advanced methods, (c) diagnosis and remedial, (d) evaluation, (e) administration and supervision, (f) research. Prerequisite: certification for teaching.

772 SEMINAR IN SPECIAL EDUCATION 1 to 6 credits
Consideration of special problems in organization, administration, curriculum, construction of materials, methodology and evaluation: (a) severe mentally retarded, (b) physically handicapped, (c) gifted or rapid learner, (d) emotionally handicapped, (e) culturally deprived, (f) severe learning disabilities.

773 SEMINAR IN SECONDARY EDUCATION (1+0 per credit) 1 to 6 credits
Study of a topic or topics of current importance in secondary curriculum, methodology, evaluation and materials. Maximum of 6 credits. Prerequisite: certification for teaching.

774 SEMINAR IN VOCATIONAL AND INDUSTRIAL EDUCATION (3+0) 3 credits
Analysis of the topic and vocational, technical, and industrial education pertaining to curriculum, methodology or evaluation. Maximum of 6 credits.

776 SEMINAR IN MULTICULTURAL EDUCATION (1+0 per credit) 1 to 6 credits
Detailed analysis of selected aspects of recent developments in methodology and pedagogical materials designed to instruct Black American, Native American, Spanish-speaking American, Asian American and other minority culture students. Maximum of 6 credits. Prerequisite: C I 420 or 620.

778 SEMINAR IN TEACHING WRITING (1+0 per credit) 1 to 6 credits
(See ENGL 778 for description.)

791 SPECIAL TOPICS (0+1) 1 credit
Selected problems related to curriculum and instruction: (a) teaching

problems, (b) curriculum, (c) supervision, (d) programmed instruction, (e) elementary, (f) junior high school, (g) senior high school, (h) area problems, (j) research. Maximum of 6 credits. Prerequisite: C I 440 or equivalent.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 12 credits

*Inactive Courses*
349 TEACHING OF SECONDARY MUSIC (2+0) 2 credits
371 UNDERSTANDING CHILD BEHAVIOR (1+0 per credit) 2 or 3 credits
374 HEALTH INSTRUCTION METHODS FOR SECONDARY TEACHERS (2+0) 2 credits
428 GENERAL PRINCIPLES OF SECONDARY EDUCATION (3+0) 3 credits
460, 660 ADULT EDUCATION (1+0 per credit) 1 to 6 credits
470, 670 ADVANCED STUDY OF PROBLEMS IN CHILD DEVELOPMENT (1+0 per credit) 2 or 3 credits

# ECOLOGY, EVOLUTION AND CONSERVATION BIOLOGY (EECB)

701-702 RESEARCH ROTATION I, II (0+9) 3 credits
Intensive research experience in ecology, evolution, and conservation biology research methods. Written reports on each research project required.

794 ECOLOGY, EVOLUTION AND CONSERVATION BIOLOGY COLLOQUIUM (1+0) 1 credit
Presentation of original research by visiting scientists, UNS faculty, and graduate students completing doctoral degrees. Maximum of 4 credits.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

799 DISSERTATION 1 to 24 credits
For ecology, evolution and conservation biology majors only.

# ECONOMICS (EC)

101 PRINCIPLES OF MACROECONOMICS (3+0) 3 credits
Introduction to the determination of levels of national income, employment and prices and the basic causes of fluctuations of these levels.

102 PRINCIPLES OF MICROECONOMICS (3+0) 3 credits
Introduction to the theory of relative prices; the allocation of productive resources among alternative uses in the production of national output and its distribution.

261 PRINCIPLES OF STATISTICS I (3+0) 3 credits
Probability and major probability distributions; sampling theory; descriptive statistics; measures of central tendency and dispersion; index figures; time series. Prerequisite: MATH 110 or equivalent.

262 PRINCIPLES OF STATISTICS II (3+0) 3 credits
Statistical inference, estimation, hypothesis testing; simple linear regression and correlations; analysis of the variance. Prerequisite: EC 261.

UPPER-DIVISION COURSES: Business majors must have satisfactorily completed the entire lower-division business core (see section on *Upper Division Courses* in the College of Business Administration section).

301 COMPARATIVE ECONOMIC SYSTEMS (3+0) 3 credits
Analysis of the economic institutions of capitalism and other economic systems. Prerequisite: EC 101, 102.

303 MONEY AND BANKING (3+0) 3 credits
Nature and functions of money, functions and history of banks, Federal Reserve System; monetary, theory and policy in relation to employment, growth and price levels. Prerequisite: EC 101, 102.

321 INTERMEDIATE PRICE THEORY (3+0) 3 credits
Analysis of the price mechanism and the determination of resource allocation, output composition and income distribution in a market economy. Prerequisite: EC 101, 102.

322 INTERMEDIATE INCOME THEORY (3+0) 3 credits
Analysis of income, output, employment, and price-level determination in a market economy. The role of fiscal and monetary, policy in promoting stability and growth. Prerequisite: EC 101, 102.

365 LABOR ECONOMICS (3+0) 3 credits
Theoretical materials relating to the economic analysis of labor problems and the descriptive materials relating to unionism and collective bargaining. Prerequisite: EC 101, 102.

367 COMPARATIVE LABOR MOVEMENTS (3+0) 3 credits
Analysis of labor movements of Europe and developing countries emphasizing the relationships between unions, political parties, and governments; the importance of collective bargaining and union structure. Prerequisite: EC 101, 102.

403, 603 MONETARY AND FINANCIAL ECONOMICS (3+0) 3 credits
Detailed analysis of the role played by money and monetary, institutions in the determination of the general levels of output, employment and prices. Prerequisite: EC 303.

410, 610 SEMINAR IN SOCIAL ECONOMICS (3+0) 3 credits
Advanced analysis of current economic problems. Maximum of 6 credits. No topic may be repeated for credit.

411, 611 ECONOMIC AND SOCIAL ASPECTS OF GAMING AND GAMBLING (3+0) 3 credits
Analysis of topics relevant to gambling, including game strategies and oddsmaking, gambling behavior, economics of the gaming industry, compulsive gambling and gambling and the law.

431, 631 INTRODUCTION TO MATHEMATICAL ECONOMICS (3+0) 3 credits
Mathematical formulation of economic theory, with principal consideration given to the construction of deterministic models of economic behavior. Prerequisite: MATH 265; EC 321.

441, 641 INTRODUCTION TO ECONOMETRICS (3+0) 3 credits
Application of statistical techniques for the purpose of testing and explaining economic relationships; integration of economic theory, with observed economic phenomena. Useful for economic and business forecasting. Prerequisite: EC 101, 102, 262 or equivalent.

451, 651 PUBLIC FINANCE (3+0) 3 credits
Appraisal of the effects of government financial policies. Government expenditures, taxation, government borrowing and indebtedness and fiscal policy are considered. Prerequisite: EC 101, 102.

454, 654 INDUSTRIAL ORGANIZATION AND PUBLIC POLICY (3+0) 3 credits
Interrelationships between industrial structure, conduct and performance. Implications for public policy with an emphasis on antitrust law. Prerequisite: EC 101, 102.

456, 656 ECONOMICS OP REGULATED INDUSTRIES (3+0) 3 credits
Economic and legal bases of the public utility concept; rate base regulation, rate structures in electric, gas and communication industries; public power; the transportation industry. Prerequisite: EC 101, 102.

457, 657 LAW AND POLITICS (3+0) 3 credits
Examines economic efficiency implications and objectives of legal institutions and legal rulemaking; including common law, public regulation of the market and legal procedures. Prerequisite: EC 102.

458, 658 INTERNATIONAL ECONOMICS (3+0) 3 credits
Analysis of the theory, of international trade, balance of payments, commercial policies; international institutions and theory, of international economic integration. Prerequisite: EC 101, 102.

459, 659 FUTURE DEVELOPMENT (3+0) 3 credits
Introduction to the world's development problems such as population, food, scarcity of nonrenewable resources, growing inequality between

nations and within nations, possible socioeconomic consequences of those problems. Prerequisite: EC 101, 102.

463, 663 ECONOMIC HISTORY OF EUROPE (3+0) 3 credits
Economic and social background of European national and international development with emphasis upon the period 1500 to present. Prerequisite: EC 101, 102.

464, 664 ECONOMIC HISTORY OF THE UNITED STATES (3+0) 3 credits
Origin and development of economic institutions including industry,, agriculture, commerce, transportation, labor and finance. Analysis of the economic progress of the U.S. Prerequisite: EC 101, 102.

471, 671 URBAN ECONOMICS (3+0) 3 credits
Exploration of the foundation of urban economic theory and planning. Primary emphasis placed upon research into urban problems and policy formulation.

472, 672 REGIONAL ECONOMICS (3+0) 3 credits
Systematic analysis of the problems of economic growth and stability of subnational regions. Trade, location, interregional competition and structural economic analyses are considered. Prerequisite: EC 101, 102. (Same as AGEC 472.)

481, 681 HISTORY OF ECONOMIC DOCTRINES (3+0) 3 credits
Development of classical political economy; the orthodox tradition in political economy in the 19th century; the foundation of economic doctrine in the 20th century. Prerequisite: EC 101, 102.

490, 690 INDEPENDENT STUDY 1 to 3 credits
Independent study in selected topics. Maximum of 6 credits.

*Graduate Standing is required as a prerequisite for all 700-level courses in the College of Business Administration.*

703 ADVANCED MONETARY AND FINANCIAL ECONOMICS (3+0) 3 credits
Comprehensive and critical examination of monetary theories. Major topics include the quantity theory, liquidity preference theory, money markets and money in macroeconomic markets. Prerequisite: EC 322.

721 ADVANCED PRICE THEORY (3+0) 3 credits
Advanced analysis of production, pricing, resource allocation and income distribution. Prerequisite: EC 321.

722 ADVANCED INCOME THEORY (3+0) 3 credits
Advanced analysis of the determinants of national income and the price level. Theories of growth and fluctuations in the economic system. Prerequisite: EC 322.

731 QUANTITATIVE METHODS IN ECONOMICS (3+0) 3 credits
Selected topics in the uses of mathematics and statistics in economic analysis. Prerequisite: EC 262; MATH 265.

751 ECONOMICS OF THE PUBLIC SECTOR (3+0) 3 credits
Theory of local, state and federal expenditures and revenues. Economic effects of alternative policies and decision-making processes of the public sector are emphasized. Prerequisite: EC 451.

759 ECONOMIC GROWTH AND DEVELOPMENT (3+0) 3 credits
Economic, social and political factors in economic development with special emphasis on low income countries. Programs for accelerated development and problems of financing are considered. Prerequisite: EC 458. 459.

764 SEMINAR IN AMERICAN ECONOMIC HISTORY (3+0) 3 credits
Advanced analysis of trends in U.S. economic history, including the industrialization process, economic factors influencing the Civil War, the Great Depression and post-World War II economic growth. Prerequisite: EC 464.

765 SELECTED TOPICS IN LABOR ECONOMICS (3+0) 3 credits
Analysis of labor force concepts and measurements, labor markets and labor mobility, wage theory and collective bargaining and macroeconomic behavior of employment and earnings. Prerequisite: EC 365.

780 BUSINESS AND PUBLIC POLICY (3+0) 3 credits
(See B A 780 for description.)

781 SEMINAR IN ECONOMIC DOCTRINES (3+0) 3 credits
Development of the critical method in the study of economic doctrines. Prerequisite: EC 481.

793 INDEPENDENT STUDY 1 to 3 credits
Advanced study and research in selected topics. Maximum of 6 credits.

797 THESIS 1 to 6 credits

*Inactive Courses*
103 INTRODUCTION TO ECONOMIC EDUCATION (3+0) 3 credits
109 ECONOMIC GEOGRAPHY (3+0) 3 credits
200 ECONOMIC DEVELOPMENT OF WESTERN CIVILIZATION (3+0) 3 credits
208 ECONOMICS OF SOCIAL INCOME REPORTING (3+0) 3 credits
460, 660 AMERICAN ECONOMIC SYSTEMS (3+0) 3 credits
473, 673 BUSINESS FLUCTUATIONS AND FORECASTING (3+0) 3 credits
772 REGIONAL ECONOMICS (3+0) 3 credits

# EDUCATION

*(See separate listings for:)*

Counseling and Educational Psychology (CEP)
Curriculum and Instruction (C I)
Educational Leadership (E L)

# EDUCATIONAL LEADERSHIP (E L)

101 EDUCATIONAL EXPERIENCE I (3+0) 3 credits
Introduction to the basic philosophical, sociological, psychological, historical, legal and anthropological foundations of education. Prerequisite for upper-division courses in education. Meets state certification requirements in Nevada school law.

421, 621 EDUCATION IN DEVELOPING NATIONS (3+0) 3 credits
Interrelations of education with economic, political and social development in selected Latin American, African, Asian and Native American cultures. The foregoing enhances an individual's ability to identify materials and understand the methodologies essential to functioning appropriately in a multi-cultural context.

422, 622 SEMINAR IN EDUCATION IN DEVELOPING NATIONS (3+0) 3 credits
Intensive study of student-selected topics dealing with current policies for educational development in Latin America, Africa, Asia and Native American cultures. Prerequisite: E L 421, 621 or equivalent.

700 BASIC PRINCIPLES OF EDUCATIONAL ADMINISTRATION (3+0) 3 credits
Foundational course for graduate students interested in school administration. Treatment of the major areas of school operations.

701 ADMINISTRATION OF SCHOOL STAFF PERSONNEL (3+0) 3 credits
Recruitment, selection, placement of teachers; orientation of new teachers; staff participation in salary scheduling and other aspects of economic welfare of teachers; administrator-teacher relations; codes of ethics; merit rating; certification, tenure. Prerequisite: E L 700 or equivalent.

702 SCHOOL MANAGEMENT AND DECISION MAKING (3+0) 3 credits
Discussion of administrative theory and practice in the context of the school setting. Needs assessment, goal setting, planning and decision making will be examined.

703 ADMINISTRATION AND CURRICULUM IMPROVEMENT (3+0) 3 credits
Clarifies the role of the administrator in improving curriculum and instruction in public schools.

**704 ADMINISTRATION OF THE JUNIOR AND COMMUNITY COLLEGE** (2+0) 2 credits
Presents the principles, policies and procedures for organizing and administering the junior and community college.

**705 SEMINAR IN ADMINISTRATIVE PROBLEMS** (0+1 per credit) 1 to 4 credits
Provides opportunity for advanced students to select and analyze current problems and to develop proposed solutions to such problems. Current related issues discussed. Maximum of 4 credits. Prerequisite: E L 700, 702 or equivalent.

**706 ADMINISTRATION OF SPECIAL PROGRAMS** (3+0) 3 credits
Treatment is given to the administration and supervision of specific school programs such as guidance services, pupil personnel services, vocational-technical and special education. Prerequisite: E L 700, 702 or equivalent.

**707 SEMINAR IN ADMINISTRATION OF HIGHER EDUCATION** (1+0 per credit) 1 to 4 credits
Programming, staffing and organization of higher education institutions. Maximum of 4 credits.

**709 THE ADMINISTRATOR AND COMMUNITY COLLEGE CURRICULUM** (3+0) 3 credits
Treatment is given to the unique nature of the curriculum of the community college and the justification of such offerings. Prerequisite: E L 707.

**710 THE PRINCIPALSHIP** (3+0) 3 credits
Gives specific treatment to the administration of the school unit at the elementary, middle school, junior high and senior high levels. Prerequisite: E L 700, 702 or equivalent.

**711 ARTICULATION OF POSTSECONDARY EDUCATION CURRICULA** (3+0) 3 credits
Emphasis is placed on the necessity for continuity of the curriculum of secondary education, the community college and colleges and universities. Prerequisite: E L 704, 707.

**712 HISTORY OF EDUCATION** (3+0) 3 credits
Development of educational thought and practice in Western civilization.

**713 HISTORY OF EDUCATION IN THE UNITED STATES** (3+0) 3 credits
Factors and conditions which have been influential in the shaping of educational thought, ideals, theories and practices of current American education.

**715 TEACHER EVALUATION** (3+0) 3 credits
Techniques of evaluating teachers for growth and accountability. Review current evaluation methodologies, teaching research, inservice and staff development related to teacher growth. Prerequisite: E L 700, 702 or equivalent.

**716 SUPERVISORY THEORIES** (3+0) 3 credits
Developmental supervision and corresponding supervisor techniques appropriate for teacher professional and cognitive growth. Classroom observation instruments and administrative communication skills are stressed.

**718 SOCIAL FOUNDATIONS OF EDUCATION** (3+0) 3 credits
Emphasizes the changing role of our educational system in meeting demands of our post-industrial society.

**719 PHILOSOPHY OF EDUCATION** (3+0) 3 credits
Examination and analysis of philosophical issues in education with particular reference to noted traditional and contemporary philosophers. Importance of developing a consistent personal philosophy of education.

**720 ADVANCED PHILOSOPHY OF EDUCATION** (3+0) 3 credits
Critical analysis and evaluation of philosophies of education. Implications for practice of progmatism, logical empiricism and existentialism. Prerequisite: E L 719 or equivalent.

**721 COMPARATIVE EDUCATION IN DEVELOPED NATIONS** (3+0) 3 credits
Comparative study of national ideologies and educational philosophies, and systems of education with emphasis upon Great Britain, France, the Union of Soviet Socialist Republics, Peoples Republic of China and Japan. Prerequisite: E L 421 or 621, 422 or 622 or in-depth cross-cultural experience.

**722 CRUCIAL ISSUES IN EDUCATION** (3+0) 3 credits
Problem analysis of timely issues in education analyzing their legal, historical, sociological and philosophical dimensions with focus on problems of continuing concern. Prerequisite: CEP 700.

**725 PUBLIC SCHOOL FINANCE** (3+0) 3 credits
Study of local, state and federal revenue sources used to support public education. State aid, taxation and current issues are emphasized. Prerequisite: E L 700, 702 or equivalent.

**726 SCHOOL BUSINESS MANAGEMENT** (3+0) 3 credits
The administration of school insurance, transportation, food services, purchasing, inventory control, state and federal accounting systems and budgeting procedures. Prerequisite: E L 725 or equivalent.

**727 SEMINAR IN SCHOOL FINANCE** (0+1 per credit) 1 to 4 credits
Specific problems related to financing public education on the local, state and national levels. Prerequisite: E L 725 or 726.

**730 THE EDUCATIONAL PLANT** (3+0) 3 credits
Specialized classroom treatment to the theoretical and practical procedures in developing educational specifications for the school plant and planning the school survey. Prerequisite: E L 730 or equivalent.

**731 SCHOOL SURVEYS AND EDUCATIONAL FACILITIES** (3+0) 3 credits
Master planning for school districts involving the details of programming, site selection, construction, equipment and student enrollment projections. Laboratory work. Prerequisite: E L 700, 702 or equivalent.

**734 SPECIAL EDUCATION LAW** (3+0) 3 credits
Case law with special consideration given to litigation relating to handicapped students and school officials. Prerequisite: E L 700 or equivalent.

**735 THE LAW OF PUBLIC EDUCATION** (3+0) 3 credits
Examination of statutory and case law with special consideration given to litigation relating to teachers and students. Emphasis on due process requirements. Prerequisite: E L 700, 702 or equivalent.

**736 SEMINAR IN SCHOOL LAW** (0+1 per credit) 1 to 4 credits
Special problems related to the legal aspects of education on the local, state and federal levels. Prerequisite: E L 735, 740.

**740 THE LAW OF PUBLIC EDUCATION II** (3+0) 3 credits
Legal authority of the public school with special consideration given to legal issues facing boards of education. Topics include: tort liability, religion and censorship. Prerequisite: E L 700, 702 or equivalent.

**741 POLITICS POLICY AND ETHICS** (3+0) 3 credits
Emphasis on national, state and local political structures and processes including the origin and appraisal of school policies. Key constituencies to be discussed. Prerequisite: E L 700, 702 or equivalent.

**742 ADMINISTRATION OF VOCATIONAL EDUCATION PROGRAMS** (3+0) 3 credits
Responsibilities of the administrator and directors of vocational and technical programs in the public schools and community colleges.

**743 PUBLIC RELATIONS FOR SCHOOLS** (3+0) 3 credits
Principles and practices pertaining to public relations, including the role of professional and classified personnel as well as the public.

**745 SEMINAR IN ADMINISTRATION OF SPECIAL EDUCATION** (1+0 per credit) 1 to 4 credits
Specific problems related to the administration of programs for handicapped children. Topics include finance, organization, public policy, program evaluation, supervision and conflict mediation. Prerequisite: E L 700, 734, or equivalent. Maximum of 4 credits.

**746 COORDINATION OF COOPERATIVE EDUCATION PROGRAMS** (3+0) 3 credits
The administrator has leadership responsibilities in developing an understanding of the philosophy underlying cooperative education, which includes business and office education, distributive education, home economics, industrial education, etc. Prerequisite: E L 742.

**752 SEMINAR IN COLLEGE TEACHING** (1+0 per credit) 2 to 5 credits

Topics include: (a) methods of teaching; (b) theories of learning; (c) modern technology in teaching; (d) evaluation and measurements; (e) social foundations of higher education. Prerequisite: recommendation by chairman of student's major.

**753 SEMINAR FOR NEW AND CURRENT SCHOOL ADMINISTRATORS** (1+0 per credit) 1 to 4 credits *S/U only*
In-service assistance with a focus on problem resolution and discussion related to the current literature. Maximum of 4 credits.

**791 SPECIAL TOPICS** (0+1 per credit) 1 to 4 credits
Literature review and analysis of assigned topics focusing on contemporary and future issues in school administration and other issues related to the school setting. Prerequisite: E L 700, 702 or equivalent.

**792 SPECIAL PROBLEMS** (1+0 per credit) 1 to 4 credits
Individual or group research projects in various areas of school administration and issues related to the public school setting. Prerequisite: E L 700, 702 or equivalent.

**793 INDEPENDENT STUDY** (0+1 per credit) 1 to 4 credits
Supervised readings with conferences. Maximum of 4 credits.

**794 PROFESSIONAL PAPER** 3 credits *S/U only*

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**798 INTERNSHIP** (0+2 per credit) 3 to 9 credits
Practical experience in the student's major field under close supervision and direction of local school system personnel and university staff members. Experience areas selected by student, adviser and department chairman. Prerequisite: approval of student's advisory committee.

**799 DISSERTATION** 1 to 12 credits

# ELECTRICAL ENGINEERING (E E)

**198, 298, 398, 498 COOPERATIVE TRAINING REPORT** (1+0) 1 credit
Preparation of written reports based on cooperative program assignments. Required of all students in cooperative programs during the summer or other semesters when on work assignments with cooperative program employers.

**200 NETWORK ANALYSIS LABORATORY** (0+3) 1 credit
Introduction to electrical engineering basic laboratory procedures and equipment. Corequisite: E E 201.

**201 INTRODUCTION TO NETWORK ANALYSIS** (3+0) 3 credits
Introduction to analysis methods and network theorems used to describe operation of electric circuits. Includes resistive, capacitive and inductive components in DC and AC circuits. Corequisite: E E 200 for electrical engineering majors. Prerequisite: PHYS 202.

**202 MATERIALS IN ELECTRICAL ENGINEERING** (2+0) 2 credits
Properties, tests and uses of materials in electrical engineering. Structural materials, conductors, insulators, semiconductors, magnetic materials. Prerequisite: CHEM 101. Corequisite: PHYS 202, M E 241.

**231 COMPUTERIZED MATRIX ALGEBRA** (3+0) 3 credits
Engineering programming applications with emphasis on vector space, its basis and transformations and computer solutions of linear equations. Introduction to FORTRAN. Prerequisite: C S 183.

**290 ELECTRICAL PROJECTS LABORATORY** (0+3 or 6) 1 or 2 credits
Offers the opportunity to undertake an independent project of the student's own interest, upon individual arrangement with a staff member. Maximum of 4 credits.

**301 CIRCUITS AND SYSTEMS** (3+0) 3 credits
Time domain and Laplace transform methods for analysis of electric circuits. Applications to passive and active filters. Modeling, analysis and simulation of circuits and systems. Prerequisite: E E 201. Corequisite: E E 231.

**320 ANALOG ELECTRONICS LABORATORY** (0+3) 1 credit
Analysis of discrete and integrated analog electronic components. Design, construction and testing of analog electronic circuits. Corequisite: E E 321.

**321 INTRODUCTION TO ELECTRONICS** (3+0) 3 credits
Study of active devices, their behavior in analog and digital circuits. Introduction to integrated circuits as building blocks in digital and analog circuits. Corequisite: E E 301, 320.

**330 COMPUTER LOGIC LABORATORY** (0+3) 1 credit
Basic digital electronics concepts, design and development of a microprocessor system with application in hardware and software. Corequisite: E E 336. Prerequisite: E E 333.

**333 COMPUTER LOGIC DESIGN** (3+0) 3 credits
Corequisite for all electric engineering majors: E E 330. (See C S 333 for description.)

**336 MICROPROCESSORS** (3+0) 3 credits
Elementary microprocessor principles found in electrical engineering applications with emphasis on 8 bit microprocessors. Hardware, software adn interface areas analyzed. Corequisite: E E 330. Prerequisite: E E 333. (Same as C S 336.)

**351 ELECTRIC AND MAGNETIC FIELDS** (3+0) 3 credits
Vector analysis approach to electric and magnetic fields and of Maxwell's equations. Prerequisite: E E 201; PHYS 202 and Differential Equations.

**361 POWER SYSTEM FUNDAMENTALS** (3+0) 3 credits
Basic power system analytical concepts, three-phase systems, phasers, impedance, steady-state network analysis, normalization, transmission lines, transformers, synchronous machines. Prerequisite: E E 201, 231. Corequisite: E E 301.

**380 CONTROL SYSTEMS LABORATORY** (0+3) 1 credit
Modeling and simulation of physical engineering systems. Implementation and testing of control system designs. Corequisite: E E 386.

**381 SIGNALS AND SYSTEMS** (3+0) 3 credits
Frequency and time domain analysis of continuous and discrete signals and systems: orthogonal functions and Fourier series; continuous and discrete Fourier transforms; the s-transform; and introduction to modulation and modulating systems. Prerequisite: E E 301.

**386 CONTROL SYSTEMS** (3+0) 3 credits
Analysis and modeling of engineering systems including input-output and state-variable descriptions. Root locus and frequency domain methods. Introduction to classical control design. Prerequisite: E E 301; M E 241. Corequisite: E E 380.

**390 ELECTRICAL PROJECTS LABORATORY** (0+3 or 6) 1 or 2 credits
Independent project of the student's own interest, upon individual arrangement with a staff member. Maximum of 4 credits.

**422, 622 INTEGRATED ELECTRONICS** (3+0) 3 credits
Examines circuit design and integrated circuit use with emphasis on operational amplifiers, active filters and analog applications. Prerequisite: E E 321.

**423, 623 INTEGRATED CIRCUIT ENGINEERING** (2+3) 3 credits
Introduction to the design and fabrication of integrated circuits. Factors limiting integrated circuits specifications are considered and new technologies are studied. Prerequisite: E E 321.

**424, 624 HYBRID INTEGRATED CIRCUIT ENGINEERING** (2+3) 3 credits
Introduction to the design and fabrication of thick and thin film integrated circuits. Design, processing and applications are considered and new techniques are studied. Prerequisite: E E 321.

**426, 626 BIOMEDICAL INSTRUMENTATION** (2+2) 3 credits
(See PHSY 426, 626 for description.)

**427, 627 DIGITAL ELECTRONICS** (3+0) 3 credits
Hardware-related design considerations for combinatorial and sequential logic using integrated circuits. Includes TTL, CMOS, shift registers, arithmetic units, RAM, ROM and edge-triggered devices. Prerequisite: E E 321, 333.

**428, 628 ELECTRONIC CAD/CAM** (3+0) 3 credits
Impact of the computer on the process of electronic system design, manufacture and test. Computer modeling, simulation and data interfacing to the manufacturing process. Student presentations on specialized topics.

**431, 631 DIGITAL COMPUTER ARCHITECTURE AND DESIGN** (3+0) 3 credits
Design of functional digital units—memory, arithmetic units, timing and input/output devices. Topics include coding, error detection, data flow, register transfer logic, hardware design language. Prerequisite:E E 333. (Same as C S 431, 631.)

**434, 634 REAL TIME COMPUTING SYSTEMS** (3+0) 3 credits
(See CH E 434, 634 for description.)

**437, 637 COMPUTER GRAPHICS** (3+1) 3 credits
(See C S 437, 637 for description.)

**439, 639 ADVANCED MICROPROCESSORS** (2+3) 3 credits
System design for techniques with emphasis on hardware and software development for typical applications. Topics include arithmetic processing, parallel processing, advanced 8-bit and 16-bit machines. Prerequisite: E E 336.

**450, 650 MICROWAVE LABORATORY** (0+3) 1 credit
Basic microwave measurements of wave progagation, components, tubes and antenna. Prerequisite: E E 451, 651. Corequisite: E E 452, 652.

**451, 651 DISTRIBUTED SYSTEMS AND ANTENNA DESIGN** (3+0) 3 credits
Introduction to concepts of distributed systems, wave propagation and antenna design. Prerequisite: E E 351.

**452, 652 MICROWAVE ENGINEERING** (3+0) 3 credits
Microwave devices, systems, components, networks, applications, microwave tubes and introductory solid-state devices, microwave measurements. Prerequisite: E E 451, 651. Corequisite: E E 450, 650.

**455, 655 OPTICAL FIBER LABORATORY** (0+3) 1 credit
Measurements of optical fiber propagation characteristics, losses, source characteristics and transmission information. Prerequisite: E E 351. Corequisite: E E 458, 658.

**456, 656 ELECTRACOUSTICS** (3+0) 3 credits
Theory of sonic and ultrasonic vibrations and acoustics, including electromechanical transducers. Prerequisite: E E 351.

**458, 658 FUNDAMENTALS OF OPTICAL FIBERS** (3+0) 3 credits
Optical fiber structures, propagation characteristics, fabrication, packaging, measurements, power launching and coupling, fiber system examples. Prerequisite: E E 351. Corequisite: E E 455, 655.

**461, 661 POWER SYSTEM ANALYSIS** (3+0) 3 credits
Power flow, symmetrical components, faulted system analysis, protection, stability. Prerequisite: E E 361.

**463, 663 ELECTRICAL MACHINES** (3+0) 3 credits
Fundamentals of transformers and rotating machines; dc, induction and synchronous machines. Prerequisite: E E 361.

**466, 666 POWER ELECTRONICS** (3+0) 3 credits
Semiconductor power switches. Rectifiers, a.c. voltage controllers, cycloconverters, choppers, inverters. Applications. Prerequisite: E E 321, 361.

**467, 667 ELECTRIC POWER DISTRIBUTION** (3+0) 3 credits
Distribution components, load characteristics, voltage calculations, primary and secondary systems, transformers, capacitor applications. Prerequisite: E E 361 .

**468, 668 POWER SYSTEM PROTECTION** (3+0) 3 credits
Elements of protective systems, relays, relaying schemes circuit interrupting devices, fault protection of radial feeders, network protective schemes and protective system reliability. Prerequisite: E E 361.

**481, 681 STOCHASTIC SYSTEMS** (3+0) 3 credits
Introduction to stochastic systems. Includes review of concepts of random variable theory, functions of two random variables, mean square estimation, nonstationary process applications. Prerequisite: E E 381; MATH 352.

**482, 682 DATA COMMUNICATIONS AND COMPUTER NETWORKS** (3+0) 3 credits
(See C S 482 for description.)

**484, 684 DIGITAL SIGNAL PROCESSING** (3+0) 3 credits
Discrete signals and systems. The Z transform. Digital filter design techniques. The Fast Fourier Transform. Modeling, analysis, and simulation of discrete random signals and systems. Prerequisite: E E 211; MATH 352.

**486, 686 SAMPLED DATA CONTROL SYSTEMS** (3+0) 3 credits
The analysis and control of feedback systems with discrete, digital and sampled data. Prerequisite: E E 386.

**487, 687 MODERN SYSTEM THEORY** (3+0) 3 credits
Modern techniques of system analysis and design, primarily in the time domain using state variable concepts. Prerequisite: E E 386.

**490 ELECTRICAL PROJECTS LABORATORY** (1+3) 2 credits
Theory and techniques of measurement on complex systems by electrical means. Prerequisite: E E 320.

**491 ENGINEERING DESIGN/ANALYSIS** (4+0) 4 credits
Proposal writing, design and fabrication of a suitable project selected by the student following procedures used by industry for product design and development. Prerequisite: E E 321.

**492, 692 SEMINAR** 1 to 4 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

**493, 693 INDEPENDENT STUDY** 1 to 3 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

**703 INFORMATION AND COMMUNICATION THEORY** (3+0) 3 credits
(a) Information theory and coding, (b) continuous and pulsed communication systems, (c) optimum transmission and propagation techniques. Each topic may be taken for 3 credits.

**713 PASSIVE AND ACTIVE NETWORKS** (3+0) 3 credits
(a) Linear passive network synthesis, (b) linear active network synthesis, (c) nonlinear active network analysis. These courses are sequential. Prerequisite: E E 386.

**715 NANOSECOND PULSE SYSTEMS** (3+0) 3 credits
Analysis of nanosecond pulse generation, transmission and recording techniques, including study of pulse distortion. Prerequisite: E E 485.

**721 ADVANCED ELECTRONICS** (3+0) 3 credits
(a) Low noise, wide band, and fast, amplifiers, active filters, (b) pulse, wave shaping and computing circuits. These courses are not sequential.

**731 ADVANCED SWITCHING THEORY** (3+0) 3 credits
Shift register sequences, state assignments for edge-triggered circuits, logic decisions, multilevel logic, fault detecting and ripple design. Prerequisite: C S 333.

**732 THEORY OF PARALLEL AND DISTRIBUTED PROCESSING** (3+0) 3 credits
Distributed processor, interprocessor communications, distributed algorithms, parallel processing, connectionist machines, parallel algorithms. Prerequisite: C S 333. (Same as C S 732.)

**733 MACHINE INTELLIGENCE** (3+0) 3 credits
(a) Intelligent systems, (b) neural computing, (c) advanced applications. Self-organizing, self-adapting systems; cybernetics; neural networks; automated decision making and control; learning automata; expert systems

application; knowledge and data engineering; pattern recognition, image processing. Prerequisite: C S 333. (Same as C S 733).

734 ADVANCED COMPUTER MODELING AND SYSTEMS ENGINEERING (3+0) 3 credits
Systems engineering, modeling, simulation, systems analysis, identification, verification of model. Prerequisite: C S 183.

741 ELECTROMAGNETIC FIELDS (3+0) 3 credits
(a) Energy and matter in stationary and moving systems, (b) radiating structures and systems. These courses are not sequential.

751 ELECTROMAGNETIC FIELD ANALYSIS I (1+0) 1 credit
Calculation of electromagnetic fields in two and three dimensions in air and in the presence of iron. Use of field analysis in high energy physics, electrodynamics forces, etc. Typical examples are solved using computer techniques. Prerequisite: E E 351.

752 ELECTROMAGNETIC FIELD ANALYSIS II (1+0) 1 credit
Continuation of E E 751. Prerequisite: E E 751.

753 DESIGN OF ELECTRICAL DEVICES (2+2) 3 credits
Industrial design of electric transformers and totaling machines. Complete examples of designs are worked through. Prerequisite: E E 451. Maximum of 9 credits.

754 MICROWAVE SEMICONDUCTOR DEVICES (3+0) 3 credits
Microwave diodes, transistors, parametric amplifiers, multipliers, TED's IMPATTS, TRAPATT, Masers-Lasers, Josephson Juction Devices, design examples and design considerations. Prerequisite: E E 452.

756 MICROWAVE INTEGRATED CIRCUITS (MIC'S) (3+0) 3 credits
Development of MIC's, analysis of microstrip lines, coupled microstrip lines, microstrip, discontinuities, slot lines and coplanar lines, MIC fabrication and design of microstrip components. Prerequisite: E E 452.

757 UNCONVENTIONAL POWER SOURCES (1+0) 1 credit
Energy conversions devices and systems other than conventional totaling machines. Prerequisite: E E 321, 451.

758 OPTICAL FIBER COMMUNICATIONS (3+0) 3 credits
Propagation in optical fibers, optical receivers, detectors, amplifiers, sources, transmission links, noise considerations, optical fiber communication systems, optical networks, applications and future developments. Prerequisite: E E 458, 658.

761 SYNTHESIS OF SOLID-STATE DEVICES I (3+0) 3 credits
Development of the theory of solid-state devices, with particular emphasis on controlling material parameters so as to produce desired terminal characteristics. Study of the current literature is required. Prerequisite: E E 321 .

762 SYNTHESIS OF SOLID-STATE DEVICES II (3+0) 3 credits
Principles of formation of solid-state devices to achieve the desired terminal characteristics. Energy level analysis is emphasized. Study of the current literature is required. Prerequisite: E E 321.

774 ADVANCED POWER SYSTEM ANALYSIS (3+0) 3 credits
(a) Computer solution of power system, (b) power system stability, (c) power system planning. Each topic may be taken for 3 credits. Prerequisite: E E 460.

781 MICROWAVES (3+0) 3 credits
Microwave devices and systems, including magnetrons, klystrons, traveling wave tubes and others and associated components and systems. Prerequisite: EE 451, 651.

782 RANDOM SIGNAL ANALYSIS AND ESTIMATION THEORY (3+0) 3 credits
Random variable and random signals, auto-correlation and cross-correlation functions. Power spectral density functions, minimal mean-quared estimation, maximal likelihood estimation, linear and extended kalman filtering.

783 MICROWAVE LABORATORY (0+3) 1 credit
Prerequisite: E E 321. Corequisite: E E 781.

784 COMPUTER LABORATORY (0+3) 1 credit
Non-von Neumann computer architectures, including principles of parallel processing and communication between multi-processors. Current developments in new architectures such as RISC and AI machines. Prerequisite: C S 333, E E 431 or 435.

786 NONLINEAR CONTROL SYSTEMS (3+0) 3 credits
Nonlinear state equations, phase plane analysis, describing function, Liapunov stability, circle criterion, introduction to nonlinear control systems design.

787 ADVANCED SIGNAL PROCESSING (3+0) 3 credits
Parametric, adaptive, and model-based signal processing. Detection/estimation of signals in noise. Ultidimensional discrete systems. Adaptive array processing. Introduction to intelligent signal processing systems. Prerequisite: E E 484.

788 ADVANCED CONTROL SYSTEM THEORY II (3+0) 3 credits
System optimization and adaptive systems. Prerequisite: E E 486 or 487.

790 SEMINAR 1 to 3 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

791 SPECIAL TOPICS 1 to 3 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

792 SPECIAL PROBLEMS 1 to 2 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

793 INDEPENDENT STUDY 1 to 3 credits
(a) Acoustics, (b) biomedical electronics, (c) communications and networks, (d) computer engineering, (e) control systems, (f) electronics, (g) image processing, (h) machine intelligence, (j) microwave systems, (k) modeling and simulation, (m) parallel distributed processing, (n) power systems, (p) signal processing, (q) stochastic systems, (r) systems science.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

796 PROFESSIONAL PAPER 2 credits *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 24 credits

# ENGINEERING (ENGR)

201 ENGINEERING COMMUNICATION (2+2) 3 credits
Gathering and organization of information and the oral, written and visual presentation of that information and its meaning. Prerequisite: ENGL 102.

# ENGLISH (ENGL)

*New students must register for ENGL 1, 101 or 102 based on the test scores listed below. However, final placement is based on an essay written the first day of class and evaluated by the Core Writing Program. As a result of the written essay students may be required to change their registration. The pending test scores are as follows:*

| | *Enhanced ACT October 1989* | *SAT/Verbal* |
|---|---|---|
| *ENGL 1* | *20 or below* | *474or below* |
| *ENGL 101* | *21to 29* | *475 to 624* |
| *ENGL 102* | *30 or above* | *625 to 800* |
| *ENGL 321* | *Required junior classification* | |

*Transfer students who have completed one or more college-level courses are exempt from the test score requirements.*

## English

**1 DEVELOPMENTAL WRITING** (3+0) 3 credits *S/U only*
The writing process including paragraph development, sentence structure, usage, and grammar. Credit does not apply to any baccalaureate degree program.

**10 ORAL ENGLISH FOR NON-NATIVE SPEAKERS** (3+0) 3 credits *S/U only*
Individualized practice in the oral properties of English for persons who need to improve their fluency (requires access to a learning laboratory or cassette records). Not accepted as a substitute for ENGL 103. Offered by correspondence only. Maximum of 6 credits. Credit not to be applied toward any baccalaureate degree.

**11 ENGLISH LABORATORY FOR INTERNATIONAL STUDENTS** (1+2) 2 credits
Training in conversation, reading and writing in English for international students. Designed for groups of visiting foreigners under special circumstances. Credit not to apply toward any baccalaureate degree.

**101 COMPOSITION I** (3+0) 3 credits
The process of expository essay writing; attention to strategies of invention, arrangement, and style.

**102 COMPOSITION II** (3+0) 3 credits
Academic writing includes analytic reading and writing, techniques of interpretation, argument, and research. Prerequisite: ENGL 101.

**103 ENGLISH AS A SECOND LANGUAGE** (3+0) 3 credits
Acquisition of academic English language skills for non-native speakers with emphasis in the following areas: (a) listening skills, (b) discussion and oral presentation, (c) reading skills, (d) composition and structure, (e) research and writing for graduate students, (f) ESL for teaching assistants, (g) English language for the natural science, (h) English language skills for the humanities and social sciences. Not intended for native English speakers. Maximum of 6 credits. Applicable for baccalaureate credit.

**113 COMPOSITION I FOR INTERNATIONAL STUDENTS** (3+0) 3 credits
Practice in expository writing with emphasis on the application of grammar; includes essay test writing and the multiparagraph essay. Prerequisite: pass IELC test.

**114 COMPOSITION II FOR INTERNATIONAL STUDENTS** (3+0) 3 credits
Continuation and extension of ENGL 113; includes the annotated theme and practice in technological writing. Prerequisite: ENGL 113 or equivalent. Satisfies the English requirement for international undergraduate students.

**131 INTRODUCTION TO LITERATURE** (3+0) 3 credits
Introduction to fiction, poetry and drama.

**181 VOCABULARY AND MEANING** (2+0) 2 credits
Problems of meaning, word derivation and word formation are investigated with a view to enlarging and refining a working English vocabulary. Not acceptable for the field of concentration as a substitute for ENGL 281. (Offered by correspondence study only.)

**223 THEMES OF LITERATURE** (3+0) 3 credits
Themes and ideas significant in literature. Maximum of 6 credits.

**235 ENGLISH LITERATURE TO 1800** (3+0) 3 credits
English writings and writers from the beginnings to about 1800, e.g., *Beowulf*, Chaucer, Shakespeare, Milton, Swift.

**236 ENGLISH LITERATURE, 1800 TO THE PRESENT** (3+0) 3 credits
English writings and writers from about 1800 to the present, e.g., Blake, Keats, Browning, Arnold, Yeats, Eliot.

**241 SURVEY OF AMERICAN LITERATURE** (3+0) 3 credits
Introduction to major American writers, e.g., Franklin, Whitman, Dickinson, Twain; and important literary trends. Designed to provide a general knowledge of American literature.

**244 INTRODUCTION TO FICTION** (3+0) 3 credits
Significant works of fiction from various languages, with attention to the novel and the short story as literary forms.

**253 INTRODUCTION TO DRAMA** (2 or 3+0) 2 or 3 credits
Reading of a variety of plays with attention to special characteristics of drama.

**261 INTRODUCTION TO POETRY** (3+0) 3 credits
Reading and discussion of selected British and American poems with attention to form and content.

**263 LITERATURE AND SOCIETY** (3+0) 3 credits
Literature within its various social contexts. Includes such topics as the portrayal of society in literature and the social responsibility of the artist.

**264 LITERATURE AND PSYCHOLOGY** (3+0) 3 credits
Relationships between literature and human psychology. Includes such topics as the portrayal of consciousness in literature and the application of psychological insights.

**265 NATURE IN LITERATURE** (3+0) 3 credits
Literary expressions of our conceptions of nature.

**266 POPULAR LITERATURE** (3+0) 3 credits
Various forms of popular writing, e.g., best-seller, the western, science fiction, the detective story.

**267 WOMEN AND LITERATURE** (3+0) 3 credits
Women writers and the ways in which women are portrayed in literature.

**268 LITERATURE AND RELIGION** (3+0) 3 credits
Literary expressions of religious experience.

**271 INTRODUCTION TO SHAKESPEARE** (3+0) 3 credits
Shakespeare's principal plays read for their social interest and their literary excellence. Not intended for students selecting a field of concentration in English.

**272 KING ARTHUR AND HIS KNIGHTS** (3+0) 3 credits
Origins and development of the Arthurian legends with readings from medieval and modern versions of the Arthurian stories.

**275 CONTEMPORARY LITERATURE** (3+0) 3 credits
Selected contemporary writers for understanding and appreciation. Emphasis on British and American figures.

**281 INTRODUCTION TO LANGUAGE** (3+0) 3 credits
Nature and function of language, including an introduction to the linguistic subsystems of modern English and the development of the English language.

**291 INTRODUCTION TO LITERARY STUDY** (3+0) 3 credits
Training in literary analysis. Designed for non-English majors.

**292 GREAT BOOKS: THE GREEKS TO DANTE** (3+0) 3 credits
Important writers of Western culture in translation e.g., Homer, the Greek dramatists, Virgil, Ovid, Dante. (Same as FLL 292.)

**293 GREAT BOOKS: THE RENAISSANCE TO THE PRESENT** (3+0) 3 credits
Important writers from the Renaissance to the present in translation, e.g., Racine, Moliere, Voltaire, Goethe. (Same as FLL 293.)

**295 MAJOR ENGLISH AUTHORS, BEGINNING TO 1798** (3+0) 3 credits
Survey of major English authors; includes training in the analysis of poetry and drama. Required of all English majors.

**296 MAJOR ENGLISH AUTHORS, 1798 TO PRESENT** (3+0) 3 credits
Continuation of ENGL 295. Includes training in the analysis of the novel and short story. Required of all English majors.

**301-302 IDEAS, VALUES AND CULTURES I AND II** (3+0) 3 credits each
Ideas, values and cultures as they relate to conceptions of man, society and

the cosmos. Based on Western, non-Western and woman's primary source material.

**304 AMERICAN LITERATURE AND CULTURE** (3+0) 3 credits
Important American writers and cultural development from the Colonial period to the present. Prerequisite: W T 202, 203.

**305-306 FUNDAMENTALS OF CREATIVE WRITING: FICTION** (3+0) 3 credits each
Conducted as a writer's workshop in fiction. Continued as ENGL 405-406. Prerequisite: submission of a sample of superior creative work to instructor.

**307-308 FUNDAMENTALS OF CREATIVE WRITING: POETRY** (3+0) 3 credits each
Conducted as a writer's workshop in poetry. Continued as ENGL 407-408. Prerequisite: submission of a sample of superior work to instructor.

**321 EXPOSITORY WRITING** (3+0) 3 credits
Advanced composition in various forms of expository prose with attention to structural and stylistic problems.

**322 ADVANCED EXPOSITORY WRITING** (3+0) 3 credits
Continuation of ENGL 321 with attention to the development of a distinctive writing style. Prerequisite: ENGL 321.

**335 THE ISLAMIC TRADITION** (3+0) 3 credits
Study of the Qur'an and other literary texts of classical Islamic culture, including poetry, history, science, philosophy and their relation to Greek and Christian cultures.

**337 THE BIBLE AS LITERATURE** (3+0) 3 credits
Readings from the Old and New Testaments studied in literary, historical and cultural contexts.

**339 MYTHOLOGY AND FOLKLORE** (3+0) 3 credits
Introduction to early literature as a revelation of the human mind with some attention to folkloristic methodology.

**340 MYTH AND ARCHETYPE** (3+0) 3 credits
Modes of relationship between mythic patterns and literary expression.

**341 LITERATURE OF NEVADA AND THE FAR WEST** (3+0) 3 credits
Fiction and nonfiction of the American West by, e.g., Twain, London, Cather, Clark, Stegner.

**345 LITERATURE OF ETHNIC MINORITIES IN THE U.S.** (3+0) 3 credits
Literature of ethnic groups within the American population, such as American Indians, Blacks, Basques and Chicanos.

**355 MODERN DRAMA** (3+0) 3 credits
Drama from various nations from the late 19th century through about 1945 including, e.g., Ibsen, Chekhov, Shaw, theatre of the absurd. (Same as FLL 355.)

**356 CONTEMPORARY DRAMA** (3+0) 3 credits
Treats selected plays of the recent theatre, including current productions here and abroad.

**358 SHAKESPEARE FESTIVAL** (1+0) 1 credit
One-week field trip to Ashland, Oregon, to attend the Oregon Shakespearean Festival. Offered only during summer sessions. Not applicable toward an advanced degree in English.

**404, 604 APPLIED LINGUISTICS** (3+0) 3 credits
Modern approaches to language and lingulstics. Prerequisite: ENGL 281.

**405-406, 605-606 ADVANCED TRAINING IN CREATIVE WRITING: FICTION** (3+0) 3 credits each
Continuation of ENGL 305-306.

**407-408, 607-608 ADVANCED TRAINING IN CREATIVE WRITING: POETRY** (3+0) 3 credits each
Continuation of ENGL 307-308.

**410, 610 DESCRIPTIVE GRAMMAR** (3+0) 3 credits
Modern English grammar and usage. Prerequisite: ENGL 281.

**411, 611 LINGUISTICS** (3+0) 3 credits
Studies in general linguistics. Prerequisite: ENGL 281. (Same as ANTH 411.)

**413, 613 HISTORY OF THE LANGUAGE** (3+0) 3 credits
History of English from its beginnings to the present. Prerequisite: ENGL 281.

**414, 614 HISTORICAL LINGUISTICS** (3+0) 3 credits
General principles of historical and comparative linguistics. Theories of language origin, methods of classifying language, processes of language change, techniques of reconstructing older forms of languages. Prerequisite: ENGL 281. (Same as ANTH 414, 614.)

**415, 615 PHONEMICS AND COMPARATIVE PHONETICS** (3+0) 3 credits
Phonetic phenomena that occur in languages of the world. Phoneme concept as applied to the analysis of speech sounds. Phonological structures. Prerequisite: ENGL 281 or SPA 259. (Same as ANTH 415.)

**416, 616 LINGUISTIC FIELD METHODS** (2+3) 3 credits
(See ANTH 416 for description.)

**417 OLD ENGLISH** (3+0) 3 credits
Old English language and literature for undergraduate students. Prerequisite: ENGL 281.

**418 BEOWULF** (3+0) 3 credits
Beowulf and the Germanic Heroic Age for undergraduate students: ENGL 417 or equivalent.

**421, 621 LITERARY CRITICISM** (3+0) 3 credits
Major theories and methods of literary criticism.

**423, 623 THEMES OF LITERATURE** (2 to 3+0) 2 or 3 credits.
Themes and ideas significant in literature and literary history. Maximum of 6 credits.

**425, 625 THE BRITISH NOVEL I** (3+0) 3 credits
British fiction from its origins to about 1800. Readings in such authors as Defoe, Richardson, Fielding, Smollett, Stetne, Johnson, Austen.

**426, 626 THE BRITISH NOVEL II** (3+0) 3 credits
British fiction from about 1800 to World War I; readings in such authors as Austen, Scott, Dickens, Thackeray, Trollope, Eliot, Hardy.

**429, 629 LANGUAGE AND CULTURE** (3+0) 3 credits
(See ANTH 429 for description.)

**430, 630 STUDIES IN COMPARATIVE LITERATURE** (3+0) 3 credits
Literature in English and English translation, following a historical (e.g., Classicism, Romanticism, Modernism) or a formal (e.g., narrative and fiction, drama) approach. Maximum of 6 credits. (Same as FLL 430.)

**431, 631 CHILDREN'S LITERATURE** (3+0) 3 credits
History, genres, traditions and illustrations of children's books in England and America from 1697 to the present.

**435, 635 TUTORING STUDENT WRITERS** (2+1) 3 credits
Trains students to work with peers on academic writing projects; prepares students to work in University Writing Center.

**436, 636 THEORIES OF SECOND LANGUAGE ACQUISITION** (3+0) 3 credits
Survey of major theories of second language acquisition and their potential applications to language teaching. Topics include: language and behavior, language acquisition in children and adults, social and psychological factors. Prerequisite: ENGL 281, 410.

**437, 637 TEACHING OF COMPOSITION** (3+0) 3 credits
Theory and practice in teaching of composition with special emphasis on recent developments.

**438, 638 TEACHING ENGLISH AS A SECOND LANGUAGE** (3+0) 3 credits
Current methods and materials in ESL with emphasis on curriculum models and applications. Class observation at primary, secondary and university levels. Prerequisite: ENGL 281, 410.

**439, 639 LANGUAGE TESTING** (3+0) 3 credits
Theories of defining and assessing competence in English as a second

language. Preparation and administration of various tests with attention to cultural bias in testing. Prerequisite: ENGL 281, 410.

**441, 641 AMERICAN IDEAS** (3+0) 3 credits
Readings in American fiction, poetry, and intellectual prose from the 17th to the 20th centuries, with emphasis on characteristic American notions.

**444, 644 THE AMERICAN NOVEL I** (3+0) 3 credits
American fiction from its origins to 1900. Readings in such authors as Cooper, Hawthorne, Melville, Clemens.

**445, 645 THE AMERICAN NOVEL II** (3+0) 3 credits
American fiction from 1900 to the present. Readings in such authors as Hemingway, Fitzgerald, Faulkner, Cather.

**446, 646 AMERICAN POETRY** (3+0) 3 credits
American poetry from the Puritans to about 1940 with emphasis on the 19th century.

**451, 651 CHAUCER** (3+0) 3 credits
Selections from the works of Chaucer read in Middle English with emphasis on the *Canterbury Tales*. Prerequisite: ENGL 281.

**453, 653 LITERATURE OF THE MIDDLE AGES** (3+0) 3 credits
Medieval writers and works from the continent, read in translation, e.g., *The Song of Roland, The Nibelungenlied*, Dante, Boccaccio.

**454, 654 MEDIEVAL ENGLISH LITERATURE** (3+0) 3 credits
Writers and works from medieval England, excluding Chaucer, e.g., *Beowulf*, Langland, *Sir Gawain and the Green Knight, Everyman*.

**458, 658 DRAMA BEFORE SHAKESPEARE** (3+0) 3 credits
Emphasizes the large body of important drama of the Middle Ages and early Renaissance.

**460, 660 ELIZABETHAN AND JACOBEAN DRAMA** (3+0) 3 credits
Plays and playwrights of the 16th and early 17th centuries, e.g., Marlowe, Jonson, Webster.

**461, 661 THE RENAISSANCE** (3+0) 3 credits
Writers of prose and poetry in 16th-century England, e.g., More, Sidney, Spenser.

**463, 663 THE 17TH CENTURY** (3+0) 3 credits
Writers in prose and poetry in England from about 1603 to 1660, e.g., Donne, Jonson, Herbert, Herrick; excluding Shakespeare and Milton.

**464, 664 MILTON** (3+0) 3 credits
Intensive study of Milton's poetry and selected prose.

**465, 665 SHAKESPEARE** (3+0) 3 credits
Reading and discussion of some of the major comedies, tragedies, and history plays.

**469 INDIVIDUAL AUTHORS (Before 1800)** (3+0) 3 credits
Undergraduate seminar on one or two authors, e.g., Pope, Boswell and Johnson, Dryden. Maximum of 6 credits.

**470, 670 RESTORATION AND 18TH CENTURY DRAMA** (3+0) 3 credits
English dramatists from about 1660 to 1800 including e.g., Wycherley, Congreve, Sheridan, Goldsmith.

**471, 671 RESTORATION AND 18TH CENTURY LITERATURE** (3+0) 3 credits
Readings in drama, poetry, shorter prose fiction and intellectual prose of such writers as Dryden, Swift, Pope, Fielding, Johnson, Goldsmith, Gray, Hume, Walpole, Blake.

**475, 675 THE ROMANTIC MOVEMENT** (3+0) 3 credits
English writers from about 1790-1832, e.g., Blake, Wordsworth, Coleridge, Byron, Shelley, Keats.

**479, 679 TOPICS IN NON-FICTION PROSE** (3+0) 3 credits
Analysis of non-fiction prose.

**481, 681 THE VICTORIAN PERIOD** (3+0) 3 credits
Social and artistic movements of the later 19th century as revealed in English poetry and prose.

**483, 683 20TH CENTURY BRITISH AND AMERICAN POETRY** (3+0) 3 credits
Readings in such poets as Auden, Eliot, Frost, Thomas, Stevens, Yeats, Williams.

**484, 684 20TH CENTURY BRITISH FICTION** (3+0) 3 credits
Selected fiction written in English by, e.g., Conrad, Joyce, Lawrence, Woolf.

**485, 685 STUDIES IN 20TH CENTURY LITERATURE** (3+0) 3 credits
Cross-generic studies in British and American literature from approximately 1900 to 1945.

**486, 686 STUDIES IN CONTEMPORARY AMERICAN LITERATURE** (3+0) 3 credits
Cross-generic studies in American literature since World War II.

**487, 687 CONTEMPORARY BRITISH LITERATURE** (3+0) 3 credits
Cross-generic studies in British literature since World War II.

**488, 688 INTERNATIONAL FICTION OF THE 19TH AND 20TH CENTURIES** (3+0) 3 credits
Masterpieces of literature from non-American and non-English origin; works will be read in translation. (Same as FLL 488, 688.)

**489 INDIVIDUAL AUTHORS (AFTER 1800)** (3+0) 3 credits.
Seminar on one or two authors, e.g., Joyce, Emerson and Thoreau, Dickens. Maximum of 6 credits.

**495 INDEPENDENT STUDY** 1 to 3 credits
Open to juniors and seniors specializing in English. Maximum of 6 credits.

**533 LITERATURE WORKSHOP** (1 to 3+0) 1 to 3 credits
Practicum in the teaching of literature.

**640 EVALUATION OF ESL TEXTBOOKS AND MATERIALS** (3+0) 3 credits
Survey of the ESL market in materials; texts, supplementary texts, workbooks, tapes, and discs; software; video. Reviews; materials adaptation; publishers and manuscripts. Prerequisite: ENGL 636, 638 or C I 631.

**711 INTRODUCTION TO GRADUATE STUDY** (3+0) 3 credits
Bibliography and modern research techniques in language and literature, methods of literary analysis, preparation of documented investigation.

**712 ADVANCED GRAMMAR FOR ESL TEACHERS** (3+0) 3 credits
Principles of American English grammar, its internal, developmental, interference and transitional problems and idiosyncracies. Classroom strategies for effective presentation, error remediation, and practice. Prerequisite: ENGL 281, 410, 739.

**713 PROBLEMS IN LANGUAGE** (3 or 4+0) 3 or 4 credits
Typical problems in advanced study of language. Prerequisite: ENGL 411 or equivalent. Maximum of 8 credits. (Same as ANTH 713.)

**714 PROBLEMS IN MODERN GRAMMATICAL STUDY** (3 or 4+0) 3 or 4 credits
Examination of important current grammatical descriptions, especially of English. Prerequisite: ENGL 411 or equivalent. Maximum of 8 credits.

**715 SEMINAR IN PHILOLOGY AND LINGUISTICS** (3 or 4+0) 3 or 4 credits
Special problems in philology and linguistics. Prerequisite: ENGL 411 or equivalent. Maximum of 8 credits.

**717 OLD ENGLISH** (3+0) 3 credits
Introduction to Old English language and literature.

**718 BEOWULF** (3+0) 3 credits
Beowulf and the Germanic Heroic Age. Prerequisite: ENGL 717 or equivalent.

**719 MIDDLE ENGLISH** (3+0) 3 credits
Introduction to Middle English language and literature. Prerequisite: ENGL 451 or equivalent.

**721 PROBLEMS IN THE HISTORY OF LITERARY CRITICISM** (4+0) 4 credits

Important critical modes and approaches from Plato and Aristotle to the present. Maximum of 8 credits.

**722 PROBLEMS IN LITERARY THEORY** (4+0) 4 credits
Problems in criticism and critical theory. Maximum of 8 credits with approval of the student's committee.

**723 PROBLEMS IN THEMES AND IDEAS IN LITERATURE** (3 or 4+0) 3 or 4 credits
Themes and ideas in literature and broad literary approaches like comparative literature and the history of ideas. Maximum of 8 credits.

**725 PROBLEMS IN THE NOVEL** (4+0) 4 credits
Intensive study of the novel with attention to its history and development. Maximum of 8 credits.

**726 PROBLEMS IN LITERARY FORM** (4+0) 4 credits
Generic or cross generic studies of literary structure. Maximum of 8 credits.

**730 THE CRAFT OF WRITING** (4+0) 4 credits
Writers and their experiences; development of the students' understanding of their own writing processes.

**732 PROBLEMS IN WRITING** (4+0) 4 credits
Investigation of a mode, genre, or thematic topic through writing.

**733 HISTORY AND PRINCIPLES OF RHETORIC** (3+0) 3 credits
Development of theories of effective expression in language with attention to practical problems of writing and the teaching of writing. Advised for candidates planning to teach. Maximum of 6 credits.

**734 WRITING IN THE ACADEMY** (4+0) 4 credits
Examination of ways of learning and writing in various academic disciplines.

**735 SEMINAR IN RHETORIC AND COMPOSITION** (4+0) 4 credits
Rhetorical problems Maximum of 8 credits.

**736 INTERNSHIP IN WRITING** 1 to 4 credits
Practicum in writing in community, school, or university settings. Maximum of 8 credits.

**737 COLLEGE TEACHING IN LANGUAGE AND LITERATURE** (1 to 3+0) 1 to 3 credits *S/U only*
Theory and practice in the teaching of English in college, particularly the first year course. Required of students planning a degree with a teaching emphasis. Maximum of 4 credits.

**738 TEACHING ENGLISH AS A FOREIGN LANGUAGE** (1 to 3+0) 1 to 3 credits
Theory and practice in the teaching of English to speakers of other languages and nonstandard dialects. Students work under supervision of the director of the ESL program. Prerequisite: ENGL 411 or equivalent. Maximum of 4 credits.

**739 APPLIED LINGUISTICS FOR LANGUAGE TEACHERS** (3+0) 3 credits
Principles of fluency, accuracy, and appropriateness in effective classroom presentation. Contrastive/error/avoidance analyses in error remediation of dynamic speech, syntax, semantics, pragmatics. Prerequisite: ENGL 281, 410.

**740 ISSUES IN ESL/EFL** (3+0) 3 credits
Linguistic, cultural, and political issues important to ESL/EFL professionals. Topics such as world Englishes, English for special purposes, the politics of language, materials acquisition and development overseas.

**741 PROBLEMS IN EARLY AMERICAN LITERATURE** (4+0) 4 credits
Selected subjects in early American literature. Prerequisite: ENGL 441, 445 or 446 or equivalent. Maximum of 8 credits.

**743 PROBLEMS IN LATER AMERICAN LITERATURE** (4+0) 4 credits
Companion course to ENGL 741. Prerequisite: ENGL 441, 445 or 446 or equivalent. Maximum of 8 credits.

**749 SPECIAL TOPICS IN LANGUAGE AND LINGUISTICS** (1 to 3+0) 1 to 3 credits
Intensive study of specific topics related to language. Maximum of 6 credits.

**750 SPECIAL TOPICS IN TESL** (3+0) 3 credits
Intensive study of specific topics related to TESL/ESL, TEFL/EFL. Maximum of 6 credits.

**751 WRITERS AND WORKS BEFORE 1800** (1 to 3+0) 1 to 3 credits
Intensive study of specific works by early writers. Maximum of 6 credits.

**752 INDIVIDUAL WRITERS AND WORKS AFTER 1800** (1 to 3+0) 1 to 3 credits
Intensive study of specific works by later writers. Maximum of 6 credits.

**753 PROBLEMS IN CHAUCER** (4+0) 4 credits
Selected problems in Chaucer. Prerequisite: ENGL 451 or equivalent. Maximum of 8 credits.

**758 PROBLEMS IN TEACHING WRITING** 1 to 4 credits
Survey of theory and practice of teaching composition (a) in grades K through 13, (b) at particular grade levels. Maximum of 6 credits.

**761 PROBLEMS IN THE EARLY RENAISSANCE** (4+0) 4 credits
Intensive study of selected topics in nondramatic Renaissance literature prior to 1603. Prerequisite: ENGL 461 or equivalent. Maximum of 8 credits.

**762 PROBLEMS IN 17TH CENTURY LITERATURE** (4+0) 4 credits
Companion course to ENGL 761. Prerequisite: ENGL 463 or equivalent. Maximum of 8 credits.

**764 PROBLEMS IN NON-SHAKESPEAREAN DRAMA** (4+0) 4 credits
16th and 17th century drama exclusive of Shakespeare. Prerequisite: ENGL 461 or equivalent. Maximum of 8 credits.

**765 PROBLEMS IN SHAKESPEARE** (4+0) 4 credits
Intensive study in the works of Shakespeare. Prerequisite: ENGL 465 or equivalent. Maximum of 8 credits.

**767 PROBLEMS IN MILTON** (4+0) 4 credits
Intensive study in the works of Milton. Prerequisite: ENGL 464 or equivalent. Maximum of 8 credits.

**771 PROBLEMS IN THE AGE OF REASON** (4+0) 4 credits
Considers special figures or aspect of the period. Prerequisite: ENGL 471 or equivalent. Maximum of 8 credits.

**775 PROBLEMS IN THE ROMANTIC MOVEMENT** (4+0) 4 credits
Problems in the prose and verse of the late 18th and early 19th centuries in England. Prerequisite: ENGL 475 or equivalent. Maximum of 8 credits.

**778 SEMINAR IN TEACHING WRITING** (1+0 per credit) 1 to 6 credits
Methods of teaching writing in grades K through 14 presented in relation to theories of language growth. Prerequisite: approval of screening committee. Maximum of 6 credits. (Same as C I 778.)

**781 PROBLEMS IN THE VICTORIAN AGE** (4+0) 4 credits
English literature of the middle and late 19th century in England. Prerequisite: ENGL 481 or equivalent. Maximum of 8 credits.

**783 PROBLEMS IN EARLY 20TH CENTURY BRITISH LITERATURE** (4+0) 4 credits
British and Irish literature of the early 20th century. Maximum of 8 credits.

**785 PROBLEMS IN CONTEMPORARY AMERICAN LITERATURE** (4+0) 4 credits
Selected contemporary American writers or current literary movements. Maximum of 8 credits.

**787 PROBLEMS IN CONTEMPORARY BRITISH LITERATURE** (4+0) 4 credits
Contemporary literature with emphasis upon movements which center in Great Britain. Maximum of 8 credits.

**788 PROBLEMS IN MODERN COMPARATIVE LITERATURE** (4+0) 4 credits
Modern literature studied with emphasis upon international movements. Maximum of 8 credits.

**789 ESL PRACTICUM** (0+9) 3 credits

Developing lesson plans, teaching experience at different instructional levels, and critique. Prerequisite: ENGL 636, 638 or C I 631, ENGL 639.

790 SPECIAL TOPICS 1 to 3 credits
May be taken by M.A. students only under very special conditions to provide work which is not otherwise offered during a student's anticipated residence. Maximum of 3 credits with the approval of the student's committee.

791 SPECIAL TOPICS 1 to 3 credits
May be taken by Ph.D. students only under very special conditions to provide work which is not otherwise offered during a student's anticipated residence. Maximum of 6 credits with the approval of the student's committee.

795 COMPREHENSIVE EXAMINATION 0 credits *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 24 credits

*Inactive Courses*
282 INTRODUCTION TO LANGUAGE AND LITERARY EXPRESSION (3+0) 3 credits
323 PRINCIPLES OF LITERARY ANALYSIS (2+0) 2 credits
333 FAR EASTERN LITERATURE (2 to 3+0) 3 credits
365 MODERN CONTINENTAL FICTION (3+0) 3 credits
412, 612 INTRODUCTION TO OLD NORSE (3+0) 3 credits
419, 619 MODERN ENGLISH (3+0) 3 credits
452, 652 CHAUCER (3+0) 3 credits

# ENVIRONMENT (ENV)

*Interdisciplinary Courses*

101 MAN AND ENVIRONMENT (3+0) 3 credits
Interdisciplinary, introductory survey of the ecology of natural systems with emphasis on the relationship of man to the environment.

294 LIFE STYLES AND THE ENVIRONMENT (3+0) 3 credits
Evaluation of personal decisions and modes of behavior which have effects upon environmental problems such as the consumption of resources, pollution and population growth.

301 INDEPENDENT STUDY IN ENVIRONMENT 1 to 3 credits
Independent research and/or reading under supervision of an instructor. Maximum of 6 credits.

305 COMMUNITY ENVIRONMENTAL PROBLEMS (3+0) 3 credits
(See GEOG 305 for description.)

401 ENVIRONMENTAL INTERNSHIP 1 to 5 credits *S/U only*
Work experience in governmental or private entity under supervision of faculty member. Periodic and final reports required. Maximum of 6 credits.

457, 657 ENVIRONMENTAL POLICY (3+0) 3 credits
(See P SC 457 for description.)

467, 667 REGIONAL AND GLOBAL ISSUES IN ENVIRONMENT SCIENCES (3+0) 3 credits
(See RWF 467, 667 for description.)

494, 694 SEMINAR ON LIFE STYLES AND THE ENVIRONMENT (2+0) 2 credits
Systematic analysis and reconsideration of alternative individual life style in the framework of society's impact on the environment.

# ETHNIC STUDIES (E S)

307 TOPICS IN RACE AND RACISM (3+0) 3 credits
Definitions and classifications of race and racism. Topical analyses within sociological, historical, psychological, anthropological, biological, humanistic and economic contexts.

# FAMILY AND COMMUNITY MEDICINE (FCM)

401, 601 NUTRITION APPLICATIONS (1+0) 1 credit
Identity, functions, metabolism, requirements, and food sources of basic nutrients and their role in health/disease.

451, 651 CLERKSHIP (1+21) 8 credits
Hospital and ambulatory clinical experience with preceptorial supervision to develop knowledge (practical, theoretical, basic science), technical and interpersonal skills basic to practicing family and community medicine.

461, 661 ELECTIVES RURAL HEALTH 2 to 8 credits *S/U only*
Elective experiences in family and community medicine including: (a) rural health, (b) family and community medicine, (c) hospice care, (d) introduction to occupational medicine, and (e) advanced public health and preventive medicine. Prerequisite: third- or fourth-year medical student. Maximum of 8 credits in any one subtopic. Maximum of 16 total credits for any combination of subtopics.

462, 662 NUTRITION 1 to 4 credits
Advanced clinical experiences in nutrition. Selected applied nutrition preceptorship experiences under faculty supervision. Special arrangement with instructor.

463, 663 PRECEPTORSHIP (0+8) 4 credits *S/U only*
Clinical experience for medical students between their first and second years. Observe and participate with preceptor in an office/practice setting.

468, 668 NUTRITION CLINIC ELECTIVE 1 to 3 credits
Individual counseling for personal nutrition problems. Learn experientially as patients in the clinic, co-therapists and students.

471, 671 ADVANCED CLINICAL EXPERIENCES (0+96) 2 to 32 credits
Selected practical experiences with patients, with faculty advisement and supervision.

477-478, 677-678 ADVANCED COMMUNITY MEDICINE (0+1) 1 credit each
Field questions exemplifying community health problems and delivery of health care.

481, 681 TEAM APPROACH TO HEALTH CARE II (1+6) 1 to 3 credits
Case study and field work methods are continued from SHR 335, with more time being allocated to direct experiences with individuals and families in the community through preceptorships.

490 INDEPENDENT STUDY 1 to 4 credits

491, 691 INDEPENDENT STUDY IN CLINICAL NUTRITION 1 to 4 credits
Special problem solving, research or supervised clinical preceptorship in applied clinical nutrition. Prerequisite: medical student standing. Maximum of 8 credits.

676 ISSUES IN HEALTH CARE (2+3) 3 credits *S/U only*
Survey of community health issues with a required practicum.

700 INDEPENDENT STUDY 1 to 3 credits

# FOREIGN LANGUAGES AND LITERATURES (FLL)

150-151 ELEMENTARY LANGUAGE (4+0) 4 credits each
Introduction to the language through practice and analysis. Instruction in the following languages will be available as demand and resources permit: (a) Arabic, (b) Chinese, (c) Ancient Hebrew, (e) Portuguese.

205 NON-WESTERN THOUGHT AND LITERATURE (3+0) 3 credits
Thought and literature on one non-Western culture or a topic common to several. All required readings in English. Prerequisite: W T 203.

292 GREAT BOOKS: THE GREEKS TO DANTE (3+0) 3 credits
(See ENGL 292 for description.)

293 GREAT BOOKS: THE RENAISSANCE TO THE PRESENT (3+0) 3 credits
(See ENGL 293 for description.)

295 INDEPENDENT LANGUAGE STUDY 1 or 2 credits
Open to qualified students in the following languages: (a) Arabic, (b) Basque, (c) Chinese, (d) Classical Greek, (e) Ancient Hebrew, (f)Japanese, (g) Latin, (j) French, (k) German, (m) Russian, (n) Spanish, (p) Portuguese, (q) Persian, (r) Italian. At least one conference per week with instructor concerned. Maximum of 4 credits in any one language.

301-302 IDEAS, VALUES AND CULTURES I and II (3+0) 3 credits each
Ideas, values and cultures as expressed in literature as they relate to man, society and the cosmos. Includes Western, non-Western and women's primary source material.

355 MODERN DRAMA (3+0) 3 credits
(See ENGL 355 for description.)

366 GREAT NOVELS IN TRANSLATION (3+0) 3 credits
Masterpieces of 19th and 20th century fiction by such authors as Balzac, Flaubert, Dostoevsky, Tolstoy, Proust, Kafka, Mann, Camus.

430, 630 STUDIES IN COMPARATIVE LITERATURE (3+0) 3 credits
(See ENGL 430 for description.)

450 HISPANIC WOMEN'S LITERATURE IN TRANSLATION (3+0) 3 credits
Feminine experience in Spanish and Latin American literary and cultural traditions as seen by Hispanic women. Instructors permission required for Spanish majors and minors.

455, 655 APPLIED ROMANCE LINGUISTICS (3+0) 3 credits
Introduction to basic linguistic concepts and contrastive linguistics. Projects applying the principles of contrastive linguistics to the teaching of language. Prerequisite: FR or SPAN 306.

488, 688 INTERNATIONAL FICTION OF THE 19TH AND 20TH CENTURIES (3+0) 3 credits
(See ENGL 488, 688 for description.)

495, 695 INDEPENDENT STUDY 1 to 3 credits
Open to qualified students in the following languages: (a) Arabic, (b) Basque, (c) Chinese, (d) Classical Greek, (e) Ancient Hebrew, (f),Japanese, (g) Latin, (h) Norwegian, (j) French, (k) German, (m) Russian, (n) Spanish, (p) Portuguese, (q) Persian, (r) Italian. At least one conference per week with instructor concerned. Maximum of 8 credits in any one language.

*Prerequisite for following four courses: admission to graduate standing in the Department of Foreign Languages and Literatures.*

702 INTRODUCTION TO GRADUATE STUDY (3+0) 3 credits
Methods of literary analysis, research techniques, preparation of documented investigation and bibliography.

703 TEACHING FOREIGN LANGUAGES (3+0) 3 credits
History and theory of language teaching methodology; application of linguistic theory to classroom practice.

714 PROBLEMS IN ROMANCE PHILOLOGY AND LINGUISTICS (3+0) 3 credits
Seminar in typical problems of Romance philology and linguistics. Maximum of 6 credits.

758 PROBLEMS IN COMPARATIVE LITERATURE (3+0) 3 credits
Literature studied with emphasis on international movements.

793 INDEPENDENT STUDY 1 to 3 credits
For majors in the tutorial doctoral program in Basque studies. Maximum of 9 credits.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*
For French, German and Spanish majors only.

799 DISSERTATION 1 to 24 credits
For majors in the tutorial doctoral program in Basque studies only.

*Inactive Course*
365 MODERN CONTINENTAL FICTION (3+0) 3 credits

## Basque (BASQ)

101-102 ELEMENTARY BASQUE I AND II (4 +0) 4 credits each
Introduction to the language through the development of written and conversational language skills and through structural analysis. Emphasis on Unified Basque but includes an introduction to the dialects.

203-204 SECOND YEAR BASQUE I AND II (3+0) 3 credits each
Structural review, conversation and writing. Includes further work with the unique structure of the Basque verb and system of suffixes. Prerequisite to BASQ 203 is BASQ 102 or equivalent. Prerequisite to BASQ 204 is BASQ 203 or equivalent. Completion of BASQ 204 satisfies the arts and science foreign language requirement.

405-406, 605-606 BASQUE CONVERSATION AND COMPOSITION (3+0) 3 credits each
Syntax and idiomatic usage in spoken and written Basque. Concentration on verb forms. Prerequisite to BASQ 405, 605 is 204; prerequisite to BASQ 406, 606 is 405, 605.

451, 651 INTRODUCTION TO BASQUE LITERATURE (3+0) 3 credits
Literature of the Basques in Basque, French, and Spanish. Readings in English translation. Course conducted in English.

455, 655 INTRODUCTION TO BASQUE LINGUISTICS (3+0) 3 credits
Structure of the Basque language, suggested relationships to other languages, historical development; dialectology; survey of research problems. Prerequisite: ANTH 305 or ENGL 281. (Same as ANTH 455.)

466, 666 OLD WORLD BASQUE CULTURE (3+0) 3 credits
Intensive study of the Basque people of southern Europe both in historical perspective and contemporary society; the historical events and social structural features which have stimulated or facilitated extensive Basque emigration to other parts of the world including the American West. Prerequisite: ANTH 101. (Same as ANTH 466.)

## French (FR)

101-102 ELEMENTARY FRENCH I and II (4+0) 4 credits each
Introduction to the language through the development of language skills and through structural analysis. Includes an introduction to French culture.

203-204 SECOND YEAR FRENCH (3+0) 3 credits each
Structural review, conversation and writing, readings in modern literature. Prerequisite to FR 203 is FR 102 or equivalent. Prerequisite to FR 204 is FR 203 or equivalent. Completion of FR 204 satisfies the arts and science foreign language requirement.

205 READING FRENCH I (2+0) 2 credits
Development of reading skills, including vocabulary building, verb recognition, and sentence structure. Reading of selected texts for comprehension. Prerequisite: FR 102. Completion of this course and FR 209 satisfies the arts and science foreign language requirement.

209 READING FRENCH II (2+0) 2 credits
Continuation of development of reading skills with emphasis on comprehension. Practical readings in the humanities, social science and natural sciences with individualized assignments when appropriate. Prerequisite: FR 205. Completion of this course satisfies the arts and science foreign language requirement.

221 FRANCE AND ITS CULTURE (3+0) 3 credits
Introduction to the culture and civilization of France. Taught in English; no knowledge of French required. French language readings required of French majors. Counts for humanities credits for students using the catalog prior to 1989-90.

223 FRENCH LITERATURE IN ENGLISH TRANSLATION (3+0) 3 credits

Major representative works of the important literary periods including such authors as Montaigne, Molière, Voltaire, Hugo, Gide, Ionesco.

301 FRENCH PHONETICS (3+0) 3 credits
Introduction to phonetic theory and practice in pronunciation; instruction and practice in levels of usage. Not open to native speakers using the standard form of the language. Prerequisite: FR 203 or equivalent.

305-306 FRENCH COMPOSITION (3+0) 3 credits each
Development of directed and creative writing skills in French. Prerequisite to FR 305 is 204; prerequisite to FR 306 is 305. Not applicable to an advanced degree in French.

309 FRENCH CONVERSATION (1+2) 1 credit
Intensive practice in speaking. Prerequisite: FR 204. Maximum of 4 credits.

313 INTRODUCTION TO THE HISTORY OP FRENCH LITERATURE I (3+0) 3 credits
Comprehensive view of French literature and its major genres from its beginnings through the 17th century, with emphasis on historical background and textual analysis. Prerequisite: FR 305 or equivalent. Not applicable to an advanced degree in French.

314 INTRODUCTION TO THE HISTORY OF FRENCH LITERATURE II (3+0) 3 credits
Comprehensive view of French literature and its major genres from the 18th century to the present with emphasis on historical background as well as textual analysis. Prerequisite: FR 305 and 313 or equivalent. Not applicable to an advanced degree in French.

*Prerequisite for all French 400-level literature courses: FR 305-306 and 6 credits from FR 221, 313, 314.*

407, 607 ADVANCED FRENCH GRAMMAR AND COMPOSITION (3+0) 3 credits
Prerequisite: FR 306.

441, 641 SEMINAR IN LANGUAGE AND LITERATURE (2 or 3+0) 2 or 3 credits
Selected themes, ideas, authors, works or periods in French language or literature. Topics vary from semester to semester. Maximum of 6 credits.

463, 663 MEDIEVAL FRENCH LITERATURE (3+0) 3 credits
Literature and thought of the Middle Ages. Maximum 6 credits each.

465,665 THE 16TH CENTURY IN FRENCH LITERATURE (3+0) 3 credits
Literature and thought of the Renaissance. Maximum 6 credits each.

469, 669 THE 17TH CENTURY IN FRENCH LITERATURE (3+0) 3 credits
Trends of 17th century literature and thought.

473, 673 THE 18TH CENTURY IN FRENCH LITERATURE (3+0) 3 credits
Literature and thought of the Age of Enlightenment. Maximum 6 credits each.

477, 677 THE 19TH CENTURY IN FRENCH LITERATURE (3+0) 3 credits
Main literary and intellectual trends from Romanticism to Naturalism.

491, 691 THE 20TH CENTURY IN FRENCH LITERATURE (3+0) 3 credits
Main currents of 20th century prose, poetry and theatre.

*Prerequisite for all French 700-level courses: admission to graduate standing in the Department of Foreign Languages and Literatures.*

731 STUDIES IN THE FRENCH RENAISSANCE AND BAROQUE (3+0) 3 credits
Development of the Renaissance and Baroque periods with particular reference to Rabelais, the Plèiade and Montaigne.

739 STUDIES IN 17TH CENTURY FRENCH LITERATURE (3+0) 3 credits
Seminar in literary problems of the century, considered by genre or by author. Maximum of 9 credits.

743 STUDIES IN 18TH CENTURY FRENCH LITERATURE (3+0) 3 credits
Special consideration of various authors or aspects of the period. Maximum of 9 credits.

747 STUDIES IN 19TH CENTURY FRENCH LITERATURE (3+0) 3 credits
Seminar in selected literary schools and movements of the century, selected authors, or genres. Maximum of 9 credits.

761 STUDIES IN 20TH CENTURY FRENCH LITERATURE (3+0) 3 credits
Problems of modern and contemporary literature; selected authors, movements, schools; influences, genres. Maximum of 9 credits.

792 SPECIAL PROBLEMS 2 or 3 credits
Seminar in selected problems not the main emphasis in other courses, such as existentialism, culture and civilization, literary criticism, etc. Maximum of 9 credits.

793 INDEPENDENT STUDY 1 to 3 credits Maximum of 6 credits.

797 THESIS 1 to 6 credits.

*Inactive Courses*
715 OLD FRENCH (2+0) 2 credits
725 EXPLICATION DE TEXTES (3+0) 3 credits

## German (GER)

101-102 ELEMENTARY GERMAN I and II (4+0) 4 credits each
Introduction to the language through the development of language skills and through structural analysis. Includes an introduction to German culture.

203-204 SECOND-YEAR GERMAN (3+0) 3 credits each
Structural review, conversation and writing, readings in modern literature. Prerequisite to GER 203 is GER 102 or equivalent. Prerequisite to GER 204 is GER 203 or equivalent. Completion of GER 204 satisfies the arts and science foreign language requirement.

205 READING GERMAN I (2+0) 2 credits
Development of reading skills, including vocabulary building, verb recognition and sentence structure. Reading of selected texts for comprehension. Prerequisite: GER 102. Completion of this course and 209 satisfies the arts and science foreign language requirement.

209 READING GERMAN II (2+0) 2 credits
Continuation of development of reading skills with emphasis on comprehension. Practical readings in the humanities, social sciences and natural sciences with individualized assignments when appropriate. Prerequisite: GER 205. Completion of this course satisfies the arts and science foreign language requirement.

221 GERMAN SPEAKING EUROPE AND ITS CULTURE (3+0) 3 credits
Introduction to the culture and civilization of Germany, Austria and Switzerland. Taught in English; no knowledge of German required. German language readings required of German majors. Counts for humanities credits for students using the catalog prior to 1989-90.

223 GERMAN LITERATURE IN ENGLISH TRANSLATION (3+0) 3 credits
Major representative works of the important literary periods including authors such as Goethe, Büchner, Hermann Hesse, Thomas Mann, Franz Kafka, Bert Brecht.

301 CORRECTIVE PHONETICS (2+0) 2 credits
Introduction to phonetic theory and extensive practice in pronunciation and intonation. Not open to native speakers using the standard form of the language. Prerequisite: GER 203 or equivalent.

305-306 GERMAN COMPOSITION (3+0) 3 credits each
Prerequisite to GER 305 is 204; prerequisite to GER 306 is 305. Not applicable to an advanced degree in German.

309 GERMAN CONVERSATION (0+2) 1 credit
Prerequisite: GER 204. Maximum of 4 credits.

311 INTRODUCTION TO GERMAN LITERATURE (3+0) 3 credits
Readings in German literature in its major forms with emphasis on the

modern period. Discussions. Prerequisite: GER 204. Not applicable to an advanced degree in German.

**350 SHORTER FORMS IN GERMAN LITERATURE** (3+0) 3 credits
Practice in literary analysis. Examples from lyric poetry, the short story, the novella, and the drama. Prerequisite: GER 204 or equivalent. Not applicable to an advanced degree in German.

*Prerequisite for all German 400-level literature courses: GER 305-306 and 3 credits from GER 221 or 311.*

**407 607 ADVANCED GERMAN GRAMMAR** (3+0) 3 credits
Prerequisite: GER 306 or equivalent.

**408, 608 ADVANCED GERMAN COMPOSITION** (3+0) 3 credits
Prerequisite: GER 407 or equivalent.

**435-436, 635-636 THE AGE OF GOETHE** (3+0) 3 credits each
Comprehensive view of German literature from 1750 to 1830.

**441, 641 SEMINAR IN LANGUAGE AND LITERATURE**
(2 or 3+0) 2 or 3 credits
Selected themes, ideas, authors, works or periods in German language or literature. Topics vary from semester to semester. Maximum of 6 credits.

**455, 655 APPLIED GERMAN LINGUISTICS** (3+0) 3 credits
Introduction to linguistic concepts and contrastive linguistics. Projects by students apply the principles of contrastive linguistics to the teaching of German. Prerequisite: GER 306.

**458, 658 INTRODUCTION TO THE HISTORY OF THE GERMAN LANGUAGE** (3+0) 3 credits
Development of the German language. Basic linguistic concepts and terminology. Prerequisite: GER 306.

**459-460, 659-660 HISTORY OF GERMAN LITERATURE**
(3+0) 3 credits each
Comprehensive view of German literature from its beginning to the present day.

**467, 667 LESSING** (3+0) 3 credits
Chief dramatic and critical works of Lessing.

**468, 668 SCHILLER** (3+0) 3 credits
Selections from Schiller's chief poetic, dramatic and aesthetic works.

**469, 669 GOETHE** (3+0) 3 credits
Selected works of Goethe exclusive of Faust.

**470, 670 GOETHE'S "FAUST"** (3+0) 3 credits
Parts I and II.

**471, 671 GERMAN LYRIC POETRY** (3+0) 3 credits
German lyric poetry from the 17th century to the present.

**472, 672 19TH CENTURY GERMAN LITERATURE** (3+0) 3 credits
German literature from 1830 to 1880.

**477, 677 THE GERMAN "NOVELLE"** (3+0) 3 credits each
Development of the "Novelle" from the Romantic period to modern times. Reading and discussion.

**491, 691 20TH CENTURY GERMAN LITERATURE** (3+0) 3 credits
Main currents of German prose, poetry and drama since 1890.

*Prerequisite for all German 700-level courses: admission to graduate standing in the Department of Foreign Languages and Literatures.*

**709 CRITICAL AND CREATIVE WRITING IN GERMAN** (2+0) 2 credits
Practice of the use of German in criticism and creative writing. Maximum of 6 credits.

**721 THE AGE OF ENLIGHTENMENT IN GERMANY** (3+0) 3 credits
German literature of the Enlightenment. Maximum of 6 credits.

**732 GOETHE AND HIS CONTEMPORARIES** (3+0) 3 credits
Literature of the German *Sturm und Drang, Klassic* and Romantik. Maximum of 6 credits.

**741 GERMAN REALISM** (3+0) 3 credits
Literature of Poetic Realism and Realism. Maximum of 6 credits.

**761 THE MODERN AGE IN GERMANY** (3+0) 3 credits
German literature from Naturalism to the present. Maximum of 6 credits.

**793 INDEPENDENT STUDY** 1 to 3 credits each
Maximum of 6 credits.

**797 THESIS** 1 to 6 credits

*Inactive Courses*
713 PROBLEMS IN GERMANIC PHILOLOGY AND LINGUISTICS (3+0) 3 credits
714 GOTHIC (3+0) 3 credits
715-716 MIDDLE HIGH GERMAN LANGUAGE AND LITERATUR (3+0) 3 credits each
731 GERMAN RENAISSANCE, REFORMATION AND BAROQUE (3+0) 3 credits

## Greek (GK)

**101-102 ELEMENTARY CLASSICAL GREEK I and II** (4+0) 4 credits each
Introduction to the language stressing mastery of grammar and the reading of simple texts from classical authors.

**205 READING CLASSICAL GREEK I** (2+0) 2 credits
Selections from such prose writers as Plato, Xenephon and the New Testament. Prerequisite: GK 102. Completion of this course and GK 209 satisfies the arts and science foreign language requirement.

**209 READING CLASSICAL GREEK II** (2+0) 2 credits
Selections from such prose and verse writers as Plato, Aristotle, Euripides and Homer. Prerequisite: GK 205. Completion of this course satisfies the arts and science foreign language requirement.

*NOTE:* The arts and science foreign language requirement can also be satisfied by completing two semesters of Classical Greek and two semesters of Latin.

### Italian (ITAL)

**101-102 ELEMENTARY ITALIAN I and II** (4+0) 4 credits each
Introduction to the language through the development of language skills and through structural analysis. Includes an introduction to Italian culture.

**203-204 SECOND YEAR ITALIAN** (3+0) 3 credits each
Structural review, conversation and writing, readings in modern literature. Prerequisite to ITAL 203 is ITAL 102 or equivalent; prerequisite to ITAL 204 is 203 or equivalent. Completion of ITAL 204 satisfies the arts and science foreign language requirement.

**221 ITALY AND ITS CULTURE** (3+0) 3 credits
Introduction to the culture and civilization of Italy. Taught in English; no knowledge of Italian required. Counts for humanities credits for students using the catalog prior to 1989-90.

**223 ITALIAN LITERATURE IN ENGLISH TRANSLATION**
(3+0) 3 credits
Major representative works of the important literary periods including such authors as Dante, Petrarch, Boccaccio, Machiavelli, Pirandello.

**309 ITALIAN CONVERSATION** (0+0) 1 credit
Prerequisite: ITAL 204. Maximum of 4 credits.

**462, 662 DANTE'S DIVINE COMEDY** (3+0) 3 credits
Selected readings in the Divine Comedy with some reference to Dante's minor works. Taught in English.

**464, 664, PETRARCH, BOCCACCIO** (3+0) 3 credits
Petrarch's poetry and selected prose. Selections from Boccaccio's *Decameron*. Taught in English.

*Inactive Courses*
305-306 INTERMEDIATE ITALIAN COMPOSITION AND CONVERSATION (3+0) 3 credits each

351-352 THE ITALIAN NOVEL (2+0) 2 credits each
381-382 ITALIAN LITERATURE OF THE 18TH AND 19TH CENTURIES (2+0) 2 credits each

## Japanese (JAPN)

**101-102 ELEMENTARY JAPANESE I and II** (4+0) 4 credits each
Introduction to the language through structural analysis and the writing system. Includes some conversation and an introduction to Japanese culture. Prerequisite to JAPN 102 is JAPN 101 or equivalent.

**203-204 SECOND YEAR JAPANESE** (3+0) 3 credits each
Continuation of structural analysis and spoken and written Japanese. Prerequisite: to JAPN 204 is JAPN 203 or equivalent. Completion of JAPN 204 satisfies the arts and science foreign language requirement.

**221 JAPAN AND ITS CULTURE** (3+0) 3 credits
Introduction to the culture and civilization of Japan. Taught in English; no knowledge of Japanese required. Counts for humanities credits for students using catalog prior to 1989-90.

## Latin (LAT)

**101-102 ELEMENTARY LATIN I and II** (4+0) 4 credits each
Introduction to the language stressing mastery of grammar and the reading of simple texts from classical authors.

**205 READING LATIN I** (2+0) 2 credits
Selections from such Latin prose writers as Caesar, Cicero, Livy, Pliny. Prerequisite: LAT 102. Completion of this course and LAT 209 satisfies the arts and science foreign language requirement.

**209 READING LATIN II** (2+0) 2 credits
Selections from such Latin poets as Ovid, Virgil, Catullus, Horace. Prerequisite: LAT 205. Completion of this course satisfies the arts and science foreign language requirement.

*NOTE:* The arts and science foreign language requirement can also be satisfied by completing two semesters of Latin and two semesters of Classical Greek.

## Russian (RUSS)

**101-102 ELEMENTARY RUSSIAN I and II** (4+0) 4 credits each
Introduction to the language through the development of language skills and through structural analysis. Includes an introduction to Russian culture.

**203-204 SECOND YEAR RUSSIAN** (3+0) 3 credits each
Structural review, conversation and writing, readings in modern literature. Prerequisite to RUSS 203 is RUSS 102 or equivalent. Prerequisite to RUSS 204 is RUSS 203. Completion of RUSS 204 satisfies the arts and science foreign language requirement

*Inactive Courses*
305-306 INTERMEDIATE RUSSIAN COMPOSITION AND CONVERSATION (3+0) 3 credits each
357-358 SURVEY OF RUSSIAN LITERATURE (3+0) 3 credits each

## Spanish (SPAN)

**101-102 ELEMENTARY SPANISH I and II** (4+0) 4 credits each
Introduction to the language through the development of language skills and through structural analysis. Includes an introduction to Spanish and Latin American culture.

**203-204 SECOND YEAR SPANISH** (3+0) 3 credits each
Structural review, conversation and writing, readings in modern literature. Prerequisite to SPAN 203 is SPAN 102 or equivalent. Prerequisite to SPAN 204 is SPAN 203 or equivalent. Completion of SPAN 204 satisfies the arts and science foreign language requirement.

**205 READING SPANISH I** (2+0) 2 credits
Development of reading skills, including vocabulary building, verb recognition, and sentence structure. Reading of selected texts for comprehension. Prerequisite: SPAN 102. Completion of this course and 209 satisfies the arts and science foreign language requirement

**209 READING SPANISH II** (2+0) 2 credits
Continuation of development of reading skills with emphasis on comprehension. Practical readings in the humanities, social sciences and natural sciences, with individualized assignments when appropriate. Prerequisite: SPAN 205. Completion of this course satisfies the arts and science foreign language requirement.

**221 IBERIA AND ITS CULTURES** (3+0) 3 credits
Introduction to the nationalities and cultures of Iberia; emphasis on the Spanish state, through geographical, historical, socio-economic and artistic issues. Taught in English. Readings in Spanish required of Spanish majors. Counts for humanities credits for students using catalog prior to 1989-90.

**222 HISPANIC-AMERICA AND ITS CULTURE** (3+0) 3 credits
Introduction to the culture and civilization of Hispanic-American nations. Taught in English; no knowledge of Spanish or Portuguese required. Spanish or Portuguese language readings required of Spanish or Portuguese majors or minors. Counts for humanities credits for students using catalog prior to 1989-90 .

**223 SPANISH LITERATURE IN ENGLISH TRANSLATION** (3+0) 3 credits
Major representative works of the important literary periods including such authors as Cervantes, Unamuno, Lorca, Borges, García Márquez.

**301 CORRECTIVE PHONETICS** (2+0) 2 credits
Extensive practice in pronunciation with the aim of eliminating foreign accent; instruction and practice in levels of usage. Not open to native speakers using the standard form of the language. Prerequisite: SPAN 203 or equivalent.

**305-306 SPANISH COMPOSITION** (3+0) 3 credits each
Syntax and idiomatic usage. Prerequisite to SPAN 305 is 204; prerequisite to SPAN 306 is SPAN 305. Not applicable to an advanced degree in Spanish.

**309 SPANISH CONVERSATION** (2+0) 2 credits
Designed to help intermediate and advanced language students achieve oral proficiency through specific communicative situations. Not intended for native speakers. Prerequisite: SPAN 204. Maximum of 4 credits.

**351-352 MASTERWORKS OF HISPANIC LITERATURE** (3+0) 3 credits each
Study of selected works of Spanish and Spanish-American literature. Prerequisite: SPAN 204.

*Prerequisite for all Spanish 400-level courses; SPAN 305-306, 351-352.*

**410, 610 SPANISH STYLISTICS** (3+0) 3 credits
Designed to help the mature language student achieve a personal style in written and spoken Spanish.

**440 SEMINAR** (3+0) 3 credits
Creative and critical writing and speaking on current issues in Hispanic language, literature and culture.

**441, 641 SEMINAR IN LANGUAGE AND LITERATURE** (2 or 3+0) 2 or 3 credits
Selected themes, ideas, authors, works, or periods in Hispanic languages or literatures. Topics vary from semester to semester. Maximum of 6 credits.

**462, 662 MEDIEVAL AND EARLY RENAISSANCE SPANISH LITERATURE** (3+0) 3 credits
Includes the period of the Catholic kings.

**464, 664 SPANISH GOLDEN AGE PROSE** (3+0) 3 credits
Prose forms of the 16th and 17th centuries with emphasis on Cervantes.

**466, 666 SPANISH GOLDEN AGE POETRY** (3+0) 3 credits
Poetry of the 16th and 17th centuries, from Garcilaso to Góngora.

**469, 669 SPANISH GOLDEN AGE DRAMA** (3+0) 3 credits each

Theater of the 16th and 17th centuries from Torres Naharro to Calderón de la Barca.

**476, 676 THE 18TH CENTURY IN SPAIN** (3+0) 3 credits
Neoclassical and traditional writers in the 18th century.

**477, 677 19TH CENTURY SPANISH LITERATURE** (3+0) 3 credits
Main currents in either the prose, drama, or poetry of the 19th century in Spain. May be repeated to a maximum of 6 credits if topics are alternated.

**484, 684 SPANISH-AMERICAN DRAMA** (3+0) 3 credits
History and development of the theatre in Spanish America.

**485, 685 SPANISH-AMERICAN POETRY** (3+0) 3 credits
Spanish-American poetry from the discovery to the present day.

**486, 686 SPANISH-AMERICAN NOVEL** (3+0) 3 credits
The novel in Spanish America from colonial times to the present.

**487, 687 SPANISH-AMERICAN SHORT STORY AND ESSAY** (3+0) 3 credits
The short story and essay in Spanish America from the conquest to the present day.

**491, 691 20TH CENTURY SPANISH LITERATURE** (3+0) 3 credits
Main currents in either the prose, drama or poetry of the 20th century in Spain. Maximum of 6 credits if topics are alternated.

**493, 693 THE SHORT STORY IN SPANISH LITERATURE** (3+0) 3 credits
The short story from early times to the present day.

*Prerequisite for all Spanish 700-level courses: admission to graduate standing in the Department of Foreign Languages and Literatures.*

**721 MEDIEVAL AND EARLY RENAISSANCE SPANISH LITERATURE** (3+0) 3 credits
Seminar on selected genres and authors of the Spanish Middle Ages and the period of the Catholic kings. Maximum of 6 credits.

**733 STUDIES IN SPANISH LITERATURE OF THE GOLDEN AGE** (3+0) 3 credits
Special consideration of selected authors or aspects of the period. Maximum of 9 credits.

**735 CERVANTES** (3+0) 3 credits
Seminar on the works of Cervantes.

**743 STUDIES IN SPANISH-AMERICAN POETRY** (3+0) 3 credits
Critical study of poetry in Spanish America with emphasis on the *modernista* movement.

**744 STUDIES IN THE SPANISH-AMERICAN NOVEL** (3+0) 3 credits
Development of the novel in Spanish America. Maximum of 6 credits.

**745 STUDIES IN 18TH CENTURY SPANISH LITERATURE** (3+0) 3 credits
Seminar in selected literary schools and movements. Maximum of 6 credits if topic is alternated.

**747 STUDIES IN 19TH CENTURY SPANISH LITERATURE** (3+0) 3 credits
Seminar on selected movements, authors or genres in Spanish literature of the 19th century. Maximum of 6 credits.

**761 STUDIES IN SPANISH LITERATURE OF THE 20TH CENTURY** (3+0) 3 credits
Problems of modern and contemporary literature; selected authors movements; influences, genres. Maximum of 9 credits.

**792a SPECIAL PROBLEMS IN SPANISH LITERATURE** (3+0) 3 credits
Special topics in literary movements, authors, genres, literary criticism, etc. Maximum of 9 credits.

**792b SPECIAL PROBLEMS IN SPANISH-AMERICAN LITERATURE** (3+0) 3 credits
Seminar in selected authors, genres, movements, literary criticism, etc. Maximum of 9 credits.

**793 INDEPENDENT STUDY** 1 to 3 credits
Maximum of 6 credits.

**797 THESIS** 1 to 6 credits

*Inactive Course*
715 OLD SPANISH (3+0) 3 credits

# GEOGRAPHY (GEOG)

**103 GEOGRAPHY OF PEOPLE'S ENVIRONMENT** (3+0 or 3) 3 or 4 credits
Physical elements of the earth, its natural features and their significance to man. Earth form and motion, landforms, climate, vegetation and soils. Four laboratory experiences required.

**106 INTRODUCTION TO CULTURAL GEOGRAPHY** (3+0) 3 credits
Systematic consideration of the spatial aspects of human culture. Major theses: spatial history and morphology, society-land relations and economic development and resource utilization.

**200 REGIONAL GEOGRAPHY OF THE DEVELOPED WORLD** (3+0) 3 credits
Systhesis of the geographic factors (human, economic, environmental, political) which give distinctive character to specific areas of the developed world. Emphasis on international awareness.

**202 REGIONAL GEOGRAPHY OF THE UNDERDEVELOPED WORLD** (3+0) 3 credits
Synthesis of the geographic factors (human, economic, environmental, political) which give distinctive character to specific areas of the underdeveloped world. Emphasis on international awareness.

**211 MAPS AND THEIR INTERPRETATION** (1+3) 2 credits *S/U only*
Introduction to maps and their use. Laboratory exercises in the interpretation of maps including topographic types. Experience in the field emphasized.

**212 CARTOGRAPHY** (2+6) 4 credits
Map making: includes map projections, map lettering, map reproduction and graphic presentation of geographic data. Prerequisite: one semester of college mathematics.

**300 GEOGRAPHY OF THE WORLD ECONOMY** (3+0) 3 credits
Emphasizes worldwide patterns of economic activity. World population, food and development problems; natural and economic factors related to economic activity. Study of selected agricultural and industrial commodities.

**305 COMMUNITY ENVIRONMENTAL PROBLEMS** (3+0) 3 credits
Local environmental problems involving their causes, effects and possible solutions. Examples also drawn from nearby regions and states. Local field study. Prerequisite: ENV 101 or GEOG 103 or a course in the natural sciences. (Same as ENV 305.)

**310 SEMINAR IN CULTURAL GEOGRAPHY** (3+0) 3 credits
In-depth study of one or more aspects of cultural geography. May be elected more than once to pursue different studies. Prerequisite: introductory cultural or economic geography course. Maximum of 9 credits.

**314 FIELD METHODS** (1+6) 3 credits
Introduction to field techniques used for geographic analysis. Accent on practical experience culminating in individual maps and reports. Prerequisite: geography major or minor.

**319 GEOGRAPHY OF WORLD AFFAIRS** (3+0) 3 credits
Workshop to develop the technique of interpreting current world events in the geographic framework in which such events occur. Prerequisite: introductory geography course.

**412, 612 COMPUTER MAPPING** (3+0) 3 credits
Computer assisted cartography in theory and practice. Cartographic communications, data acquisition and design for computer generated mapping. Prerequisite: course in cartography, computer science or statistics.

**416, 616 SPATIAL ANALYSIS IN GEOGRAPHY** (3+0) 3 credits
Statistical and mathematical techniques applied to spatial problems, espe-

cially mappable data. Description, inference, hypothesis testing and statistical map ping. Prerequisite: college algebra or higher.

**418, 618 GEOGRAPHIC THOUGHT** (2+0) 2 credits
History of geographic thought; place of geography among the fields of knowledge; geographic methods; current trends in the field. Prerequisite: major or minor in geography.

**421, 621 CLIMATOLOGY** (3+0) 3 credits
Physical characteristics of the atmosphere. World climatic classification. Local atmospheric field study. Prerequisite: GEOG 103 or ENV 101 or a course in physics or meteorology.

**431, 631 LANDFORMS** (3+0) 3 credits
Origin, description and classification of landforms. Distribution of landforms and their significance to environmental and resource problems in the U.S. Prerequisite: GEOG 103 or GEOL 101.

**434, 634 BIOGEOGRAPHY** (3+0) 3 credits
Brief treatment of plant and animal evolution. Prehistoric, historic and present-day world-wide distribution of plant formations and associated animal life. Examples of human impact on biotic life such as domestications, transfers and extinctions. (Same as BIOL 434, 634.)

**435, 635 CONSERVATION OF NATURAL RESOURCES** (3+0) 3 credits
Basic information regarding current and future problems and methods of conserving this country's renewable and nonrenewable resources. Prerequisite: one of the following: (I) junior (or higher) standing; or (2) at least 3 credits of work in geography or geology or a biological science. (Same as RWF 435, 635.)

**440, 640 MOUNTAIN GEOGRAPHY** (3+0) 3 credits
Geographic investigation of various mountain regions. Field study in the Sierra Nevada and basin-range mountains emphasizing man's impact on the mountain environment.

**446, 646 POLITICAL GEOGRAPHY** (3+0) 3 credits
Spatial analysis of political systems. Territorial organization trends in local government and the sovereign state. Changing geopolitical patterns of power. Prerequisite: introductory geography courses.

**452, 652 URBAN GEOGRAPHY** (3+0) 3 credits
Origin and historical development of cities; world survey of cities today; city site, situation and functions with emphasis on American examples. Field trip. Prerequisite: introductory geography course or work in related field such as engineering, history, economics, political science or sociology.

**456, 656 LAND USE PLANNING** (1 to 3+0) 1 to 3 credits
Establishment of goals, policy development, and implementation of plans for land use in various geographic areas. Considers resource scarcity and environmental deterioration problems.

**470, 670 GEOGRAPHIC EXPLORATIONS** 1 to 3 credits *S/U only*
Intensive field study at various locations. Physical geography, settlement patterns, cultural landscapes and environmental issues. Maximum of 8 credits.

**471, 671 ANGLO-AMERICA** (3+0) 3 credits
Physical and cultural geographic patterns in the U.S. and Canada, using both the systematic and regional approach. Historical origins considered. Prerequisite: introductory geography course.

**472, 672 GEOGRAPHY OF ARID LANDS** (3+0) 3 credits
Climate, geomorphology, hydrology, ecology, and desertification of the world's arid and semi-arid areas. Field trips may be required. Prerequisite: 6 credits in the natural sciences.

**473, 673 NEVADA: PATTERNS ON THE LAND** (3+0) 3 credits
Physical, historical and economic aspects of the western Great Basin and nearby areas such as the Sierra Nevada and the southern Columbia Plateau. Field trip.

**476, 676 LATIN AMERICA** (3+0) 3 credits
Regional survey of physical, economic, cultural and political aspects of Latin America. Prerequisite: introductory geography course.

**482, 682 EUROPE** (3+0) 3 credits
Consideration of the physical, cultural and historical geography of Europe and its regions. Prerequisite: introductory geography course.

**485, 685 SOVIET UNION** (3+0) 3 credits
Regional analysis of the environment, resources, peoples, and socialized economic development of the world's largest state. Prerequisite: introductory geography course.

**487, 687 MIDDLE EAST** (3+0) 3 credits
Regional geography of area with limits in terms of Arab and Islamic influences or related cultural and historical circumstances. Oriented around strategic core of territory as crossroads of three continents. Prerequisite: introductory geography course.

**488, 688 THE PACIFIC BASIN** (3+0) 3 credits
Physical geography, exploration and colonization, peoples and their cultures within the Pacific Ocean region, including Australia, New Zealand, the islands and bordering lands. Prerequisite: introductory geography course.

**489, 689 EAST ASIA** (3+0) 3 credits
Regional and national analysis of the physical, political and cultural geography of China, Japan, and Korea. Comparison of varied development experiences.

**491, 691 SPECIAL TOPICS** 1 to 3 credits
Independent study of selected geographic problems, including library research, field work and reports. Maximum of 8 credits.

**495, 695 INTERNSHIP IN GEOGRAPHY** 1 to 6 credits *S/U only*
Professional work experience with a government agency or private company. Maximum of 6 credits. Prerequisite: geography major or minor.

**701 ADVANCED GEOGRAPHY** 1 to 5 credits each
(a) Geographic thought, (b) historical, (c) cultural, (d) economic, (e) urban, (f) regional, (g) field methods, (h) cartography, (j) educational methods, (k) environmental perception, (m) statistical methods, (n) conservation problems, (p) physical, (r) climatology, (s) biogeography, (t) soils. Consists of either lectures, conferences, supervised reading, laboratory work, or field work. May be repeated more than once to pursue different studies.

**720 SEMINAR IN ADVANCED CLIMATOLOGY** (3+0) 3 credits
Topics in physical, regional, or applied climatology, world climates, microclimates, climatic change, statistical techniques and problems pertaining to people. Prerequisite: GEOG 421 or 422.

**752 THEMES IN CULTURAL GEOGRAPHY** (3+0) 3 credits
Uses the topical approach in the study of the roles played by such factors as population, race, social traits, economy, politics in shaping the diverse cultural regions of the earth.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits
For majors in the land use planning policy master's program only.

*Inactive Courses*
370 HISTORY OF MAPPING (2+0) 2 credits
422, 622 APPLIED CLIMATOLOGY (3+3) 4 credits
442, 642 HISTORICAL GEOGRAPHY (3+0) 3 credits
448, 648 ENVIRONMENTAL PERCEPTION (3+0) 3 credits
478, 678 AFRICA (3+0) 3 credits
486, 686 ASIA (3+0) 3 credits

# GEOLOGICAL ENGINEERING (G E)

**106 INTRODUCTION TO GEOLOGICAL ENGINEERING** (1+0) 1 credit
Historical background to includes seismic hazards, landslides, tunnelling, groundwater, exploration and mining geology, remote sensing, geophysics. Field trip required.

**385 GEOLOGICAL ENGINEERING DATA ANALYSIS** (3+0) 3 credits
Introduction to and application of statistics, probability and economic theory to analysis of geological data for the design of engineered structures interfacing with the earth. Prerequisite: MATH 215, 216 or equivalent.

**478, 678 COMPUTER APPLICATIONS IN GEOLOGICAL ENGINEERING** (3+0) 3 credits
Application of FORTRAN and BASIC for solution of problems pertinent to geological engineering, including ore reserve calculation, slope design, and data management. Prerequisite: C S 113.

**479, 679 EARTHQUAKE ENGINEERING** (3+0) 3 credits
Historic earthquakes, faulting and seismicity; spectra of earthquake vibrations; effects on soil and damage to manmade structures; seismic hazard studies; nuclear power plant siting; features of earthquake-resistant structures. Prerequisite: upper-division standing in geology, geological engineering, or civil engineering. (Same as C E 479.)

**480, 680 ENVIRONMENTAL GEOLOGY** (2+3) 3 credits
Relationship between geological materials, processes and history and man's safety, health and quality of environment. Includes lectures, discussions and field trips dealing with geological hazards in urban development. Prerequisite: upper-division standing in geology, geophysics, or engineering.

**483, 683 GEOLOGICAL ENGINEERING SLOPE STABILITY** (3+0 or 3) 3 or 4 credits
Application of geological and engineering factors in the design and stability of natural and man-made rock and soil slopes. Corequisite: C E 372; GEOL 332.

**484, 684, GROUNDWATER HYDROLOGY** (3+0) 3 credits
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Prerequisite: GEOL 101; PHYS 152; CHEM 102; MATH 216.

**485, 685 GEOLOGICAL ENGINEERING SUPPORT AND STABILIZATION TECHNIQUES** (3+3) 4 credits
Design of supports for surface and underground excavations. Ground improvement and instrumentation. In situ measurements in rock and soil. Prerequisite: G E 483; C E 492.

**487, 687 GEOLOGICAL ENGINEERING DESIGN** (2+6) 4 credits
Techniques and design of earth and rock structures, exploration programs, groundwater and mine feasibility projects. Prerequisite: G E 385, 483; GEOL 451.

# GEOLOGY (GEOL)

**101 OUR DYNAMIC PLANET EARTH** (3+1) 3 credits
Includes plate tectonics, oceans, atmosphere, Ice Ages, minerals, rocks, mass extinctions, rivers, earthquakes and volcanoes. Two field trips required. Prerequisite: MATH 105 or equivalent.

**102 HISTORY OF THE EARTH** (3+3) 4 credits
Origin and history of the earth with a description of the life of the successive geologic periods. Laboratory exercises in the interpretation of geologic history from maps and fossil study. Prerequisite: GEOL 101.

**103 PHYSICAL GEOLOGY LABORATORY** (0+3) 1 credit
Exercises on plate tectonics, minerals, rocks, maps, aerial photos, ground water, rivers, earthquakes and planets. Prerequisite or corequisite: GEOL 101.

**105 INTRODUCTION TO GEOLOGY** (1+0) 1 credit
Brief study of physical and historical geology, with emphasis on the structure of the earth, origin of past and present landscapes, and evolution of life as told in the fossil record.

**160 THE PARADE OF LIFE** (3+0) 3 credits
Survey of the history and classification of fossil plants and animals. Methods of interpretation of the fossil record. Evolution of form and structure and the sequence of fossils in rocks. Occasional Saturday field trips.

**211 MINERALOGY** (2+3) 3 credits
Crystallography, crystal chemistry and the origin and determination of ore minerals and rock-forming minerals. Prerequisite: elementary chemistry and trigonometry.

**212 ELEMENTARY PETROLOGY** (2+3) 3 credits
Identification of the common igneous, sedimentary, and metamorphic rocks using hard specimens supplemented with thin sections. Introduction to the principal rock-forming processes. Prerequisite: GEOL 211.

**250 GEOLOGY FOR ENGINEERS** (2+3) 3 credits
Minerals, rocks, principles of physical and structural geology, introduction to ground water, earthquakes and geophysics. Influence of geology on engineering design and construction procedures. Prerequisite: C E 246.

**290 ELEMENTARY GEOPHYSICS AND GEODYNAMICS** (3+0) 3 credits
Elementary geophysical concepts related to gravity, magnetism, seismic waves. Stress and strain in fault zones, earthquakes and fault creep, earthquake prediction and control. Sea-floor spreading and global tectonics. Prerequisite: GEOL 101; MATH 265.

**309 MUSEOLOGY** (3+0) 3 credits
(See ANTH 309 for description)

**332 STRUCTURAL GEOLOGY** (2+6) 4 credits
Structural features of the earth's crust. Laboratory work involves the study and preparation of geologic maps and cross sections. Prerequisite: GEOL 101 and trigonometry.

**341 GEOMORPHOLOGY** (2+3) 3 credits
Surface processes and the development of geomorphic features. Interpretation of topographic maps and air photographs. Emphasis on classic features of the Basin and Range province. Prerequisite or corequisite: GEOL 101 or GEOG 103 and GEOL 332.

**351 INTRODUCTION TO GEOCHEMISTRY** (3+0) 3 credits
Survey of premises and applications of geochemical studies. The distribution of elements in rocks; the periodic table and its usefulness in predicting geochemical behavior, chemical equilibria in natural systems; diadochy and isomorphism; the phase rule and phase equilibria; Eh and pH diagrams. Prerequisite: GEOL 211, 212.

**404, 604 INTRODUCTION TO AEROSPACE REMOTE SENSING** (2+3) 3 credits
Characteristics of electromagnetic radiation in the ultraviolet, visible and solar infrared portions of the spectrum. Physical basis for spectral properties of rocks, soils, vegetation and water. Applications of data collected by aircraft, spacecraft and satellite systems to mineral and energy exploration, engineering and environmental studies and hydrology/hydrogeology. Prerequisite: GEOL 341, 446, 646. (Same as RWF 404, 604.)

**414, 614 HYDROLOGIC FLUID DYNAMICS** (3+0) 3 credits
Physical principles governing natural flows in the land phase of the hydrologic cycle: open channel and saturated/unsaturated porous media flow. Erosion and sediment transport. Prerequisite: PHYS 201, MATH 217. (Same as RWF 414, 614.)

**415, 615 GEOLOGICAL THERMODYNAMICS** (3+0) 3 credits
Reversible and irreversible thermodynamics. Includes first law, second law, Gibbs equation, entrophy production, flows and forces, transport processes, electrochemical processes. Prerequisite: MATH 215, 216.

**417, 617 INSTRUMENTAL METHODS IN DETERMINATIVE MINERALOGY** (2+3) 3 credits
Principles, operations, and applications of available instruments in the qualitative and quantitative investigations of geologic, materials. Includes X-ray, thermal, atomic absorption, and neutron activation analyses.

**425, 625 ADVANCED MINERALOGY** (2+6) 4 credits
Optical crystallography and mineralogy; chemical composition, crystal chemistry and optical properties of rock-forming minerals; introduction to phase petrology and X-ray diffraction theory and application. Prerequisite: CHEM 202; GEOL 212; PHYS 202.

**427, 627 ADVANCED PETROLOGY** (2+6) 4 credits
Description and interpretation of rocks. Emphasis on rock-forming processes as deduced from textural, small-scale structural and mineralogical characteristics. Prerequisite: GEOL 425 or equivalent.

**446, 646 PHOTOGEOLOGY-IMAGE INTERPRETATION** (1+6) 3 credits
Application of photogeologic and image interpretation techniques for

study and evaluation of terrestrial landscapes. Corequisite: GEOL 332, 341.

**450 FIELD METHODS** (0+3) 1 credit
Introduction to methods and instruments used by field geologists, including elementary photogrammetry.

**451 SUMMER FIELD GEOLOGY** 3 or 6 credits
Study and preparation of maps to accompany reports on areas of sedimentary and igneous rocks in the Basin and Range region. Three- or six-week course in geologic field methods beginning in early June. Prerequisite: GEOL 212, 332, 341, 450. Fee to cover cost of board and transportation.

**455, 456, 655, 656 GEOPHYSICS AND GEODYNAMICS** (3+0) 3 credits each
Structure, composition and evolution of the planet earth; integrates seismic and potential fields data to study plate tectonics and dynamic processes of the earth's interior.

**461, 661 INVERTEBRATE PALEONTOLOGY** (3+3) 4 credits
Structure and evolutionary development of fossil invertebrates and their existing representatives. Application of paleontology to stratigraphic problems. A two-day collecting trip will be arranged early in October. Prerequisite: GEOL 102 or BIOL 383, 384.

**462, 662 MICROPALEONTOLOGY** (2+6) 4 credits
Study of microfossils, chiefly Foraminiferida and Ostracoda. Consideration of other groups including spores and pollen and nannofossils.

**464-465, 664-665 STRATIGRAPHIC PALEONTOLOGY** (2+3) 3 credits each
Succession of invertebrate faunas from the Cambrian to the Pleistocene with emphasis on index fossils, faunal distributions, and paleoecologic systems. Spring term covers Paleozoic; fall term covers Mesozoic and Cenozoic. Prerequisite: GEOL 461.

**468, 668 SEDIMENTOLOGY** (2+3) 3 credits
Processes that deposit and modify sediments and the aspects of sedimentary rocks that allow interpretation of depositional environments. Prerequisite: GEOL 102, 212.

**469, 669 PRINCIPLES OF STRATIGRAPHY** (3+0) 3 credits
History and methods of stratigraphic analysis and applications to geological and geophysical problems. Prerequisite: GEOL 102, 212, 332, 468.

**471, 671 ORE DEPOSITS** (2+3) 3 credits
Genesis and localization of metalliferous ore deposits, including surface expression, secondary effects in the weathering zone, wall rock alteration, and hypogene zoning. Prerequisite: GEOL 212, 332.

**474, 674 HYDROGEOLOGY LABORATORY** (0+3) 1 credit
Field, laboratory and computer experiments in hydrogeology including determination of hydraulic properties, aquifer testing, well design, flow net analysis, hydrogeochemical sampling/analysis. Corequisite: G E 484 or equivalent.

**476, 676 NONMETALLIC MINERAL DEPOSITS** (3+0) 3 credits
Occurrence, distribution, origin, and economic value of the nonmetallic minerals. Prerequisite: GEOL 471.

**486, 686 FIELD GEOPHYSICS** (0+3) 1 credit
Geophysical exploration and engineering: electrical and seismic refraction surveys. Field work, presentation of data, interpretation, and reports. Prerequisite: GEOL 450, 492.

**489, 689 EXPLORATION AND MINING GEOLOGY** (3+3) 4 credits
Geologic and economic principles and the technology used in exploration, evaluation, development, and mining of ore deposits. Mine mapping, field trips. Prerequisite: GEOL 471.

**490, 690 ELEMENTARY SEISMOLOGY** (2+3) 3 credits
Introduction to Geometrical Ray theory; solutions to elastic wave equation in terms of rays; transmission/reflection at boundaries of earth structure; from short period waves; seismic instrumentation. Prerequisite: MATH 320; PHYS 202.

**491, 691 EARTHQUAKE SEISMOLOGY** (2+3) 3 credits
Solutions to elastic wave equation in terms modes; the earthquake source; earth structure from long period waves; earthquake statistics and prediction. Prerequisite: GEOL 490.

**492, 692 GEOPHYSICAL EXPLORATION** (2+3) 3 credits
Applied geophysical methods: gravity, magnetics, electrical, and seismic refraction. Field work with geophysical equipment. Discussion of case histories. Prerequisite: GEOL 332; MATH 216; PHYS 152, 202.

**494, 694 GEOPHYSICS AND POTENTIAL THEORY** (2+3) 3 credits
Potential theory and interpretation technique as applied to the gravity, magnetic and electrical methods. Prerequisite: GEOL 492; PHYS 352 (may be taken concurrently) and 473.

**495, 695 SPECIAL PROBLEMS** 1 to 5 credits each
Independent study or research. Consists of conferences, reading, laboratory or field work. Maximum of 10 credits to pursue different studies.

**497, 697 SPECIAL TOPICS IN GEOLOGICAL SCIENCES** 1 to 6 credits
Study of selected topics by conferences, lectures, colloquia, seminars, and laboratory or field work. May be repeated to a maximum of 10 credits in different topics.

**701-702 ADVANCED GEOLOGY** 1 to 5 credits each
(a) General geology, (b) regional geology, (c) mineralogy, (d) petrology, (e) petrography, (f) geochemistry, (g) structural geology, (h) geophysics, (j) geomorphology, (k) paleontology, (m) sedimentation, (n) stratigraphy, (p) mineral deposits, (r) economic geology, (s) ground water, (t) engineering geology, (u) photogrammetry, (v) seismology, (w) instrumental analysis, (x) teaching of earth sciences, (y) mineral exploration, (z) earth science. Consists of either lectures, periodic conferences, supervised reading, laboratory or field work. May be repeated more than once to pursue different studies.

**704 ADVANCED AEROSPACE REMOTE SENSING** (2+3) 3 credits
Thermal and radar remote sensing techniques. Thermal properties of rocks, soils, vegetation and water including thermal inertia and spectral emissivity. Microwave evaluation of surface topography, roughness and dielectyric constant using multi-frequency and multi-polarization radar. Applications of air-craft, spacecraft and satellite systems to geologic and hydrologic problems. Prerequisite: GEOL 404, 604.

**715 GEOCHEMISTRY** (3+0) 3 credits
Origin and abundance of elements in nature; their distribution and migration in geochemical spheres of the earth; geochemistry of solids; isotope and historical geochemistry. (Alternates with GEOL 724.)

**716 LOW TEMPERATURE AQUEOUS GEOCHEMISTRY** (3+0) 3 credits
Physical chemistry of electrolyte solutions, oxidation and reduction, surface effects, combination diagrams, precipitation and dissolution. Computer used to calculate various thermodynamic parameters. Prerequisite: GEOL 415; GEOL 724 recommended.

**718 CHEMISTRY OF ENVIRONMENTAL WATERS AND ISOTOPES** (3+0) 3 credits
Basic principles of utilizing isotopes to examine hydrologic systems; includes stable and radioactive isotopes. Basic examination of water quality standards. Prerequisite: GEOL 484, 684.

**723 VOLCANIC GEOLOGY AND VOLCANOLOGY** (2+3) 3 credits
Subdivision, mapping, correlation, dating, petrography and volcanotectonic setting of volcanic and volcaniclastic rocks; collapse calderas and other volcanic centers; mineralization in volcanic centers; field trips. Prerequisite: GEOL 332, 425 or equivalent.

**724 PHASE PETROLOGY** (3+0) 3 credits
Phase equilibrium, paragenetic relations, and stabilities of minerals and mineral assemblages in the light of thermodynamic principles. Apparatus and techniques for high P-T experiments related to igneous and metamorphic petrology. Prerequisite: GEOL 415, 615. (Alternates with GEOL 715.)

**725 ORE PETROLOGY** (2+6) 4 credits
Microscopic identification and study of opaque minerals and ore mineral suites. Ore textures and interpretation. Use of X-ray diffraction, reflectance and microhardness determinations in opaque mineral studies. Prerequisite: GEOL 425, 471.

**726 VOLCANIC PETROLOGY** (2+3) 3 credits

Origin and evolution of magmas through partial melting, fractionation and mixing; mineralogy, elemental and isotopic geochemistry, and phase petrology; modern analytical, calculation, and discrimination procedures. Prerequisite: GEOL 425, 427-428 or equivalent; GEOL 725 is desirable.

**727 PETROLOGY OF PLUTONIC ROCKS** (2+3) 3 credits
Theoretical and petrographic investigations of crystallization of silicate melts in the plutonic environment. Includes consideration of magma source and the magmatic-metamorphic boundary problem. Prerequisite: GEOL 425 and 427 or equivalent. (Alternates with GEOL 728.)

**728 METAMORPHIC PETROLOGY** (2+3) 3 credits
Theoretical and petrographic study of metamorphic mineral assemblages including problems of equilibrium-disequilibrium, process lending to the development of fabric, and elementary petrofabrics. Prerequisite: GEOL 425, 427 or equivalent. (Alternates with GEOL 727.)

**729 SEDIMENTARY PETROLOGY** (2+3) 3 credits
Methods of study of the properties of sedimentary rocks leading to the interpretation of syngenetic, diagenetic and epigenetic history. Prerequisite: GEOL 425, 469.

**730 ADVANCED GEOLOGY OF NEVADA** (2+0) 2 credits
Tectonic and stratigraphic development of Nevada through geologic time. A two- or three-day field trip to significant areas is required early in the semester. Prerequisite: stratigraphy and structural geology.

**731 STRUCTURAL GEOLOGY SEMINAR** (2+3) 3 credits
Structural features of the earth's crust, their distribution and the mechanics of their formation. Prerequisite: GEOL 332.

**735 NEOTECTONIC GEOLOGY** (1+3) 2 credits
Relationship between earthquake or aseismic tectonic activity and deformation. Methods and principles for determining design earthquakes.

**736 ACTIVE FAULTING** (1+3) 2 credits
Tectonic, geomorphic and soil-stratigraphic character of active faults and folds of extensional, compressional and transform settings.

**740 DESIGN OF SURFACE AND UNDERGROUND EXCAVATIONS** (3+0) 3 credits
Design techniques for excavations in hard and soft rocks, soil masses. Stability problems. Rock and soil reinforcement, lining design. Computer applications, field trips. Prerequisite: C E 492.

**741 STATE OF THE ART IN GEOLOGICAL ENGINEERING** (3+0) 3 credits
Recent advances in geological engineering research. Materials just published and not incorporated into other courses. Prerequisite: GEOL 740.

**743 GEOSTATISTICS** (3+0) 3 credits
Introduction to geostatistical data estimation using the concepts of variograms, kriging, cokriging, multivariate techniques, correlation analysis and regression. Prerequisite: MATH 251.

**750 PRIMARY SEDIMENTARY STRUCTURES** (3+0) 3 credits
Features of sedimentary rock attributed to their environment of deposition and techniques used to constrain their interpretation. Prerequisite: GEOL 469 or 669, or equivalent.

**771 HYDROTHERMAL MINERAL DEPOSITS** (2+3) 3 credits
Field relations; active geothermal and fossil hydrothermal systems; ore transport and precipitation mechanisms; vein materials and alteration mineral assemblages; stable-isotope and fluid-inclusion chemistry. Prerequisite: GEOL 425, 471 or equivalent.

**773 MINERAL EXPLORATION SEMINAR** (1+0) 1 credit
Seminar on a current topic in geology, geophysics, or geochemistry in exploration for hard minerals in the Cordillera.

**774 ADVANCED SEISMOLOGY I** (3+0) 3 credits
Advanced applications of theory and experiments to seismological problems; body wave, and source theory; problems in modern seismometry.

**775 ADVANCED SEISMOLOGY II** (3+0) 3 credits
Advanced applications of theory and experiments to seismological problems; surface wave, free oscillation and source theory.

**779 COMPUTER ANALYSIS OF AEROSPACE REMOTE SENSING DATA** (2+3) 3 credits
Principles of computer processing of electromagnetic remote sensing data including computer systems and software programs used for radiometric and geometric correction, filtering, image enhancement, image transformation and image classification. Applications of computer processing techniques to mineral and energy exploration, engineering and environmental geology and hydrology / hydrogeology. Prerequisite: GEOL 404, 604 or 704.

**782 HYDROLOGY/HYDROGEOLOGY SEMINAR** (0+3) 1 credit
(See RWF 782 for description.)

**783 GROUNDWATER HYDRAULICS** (3+0) 3 credits
Mechanics of groundwater flow through porous and fractured media; boundary conditions and analytical solutions to subsurface flow problems including flow to wells; aquifer parameter estimation. Prerequisite: M E300 or MATH 320.

**784 UNSATURATED GROUNDWATER FLOW** (3+0) 3 credits
Theory of fluid, contaminant, and vapor transport in the vadose zone including the relevant surface physics and chemistry, thermodynamics, and appropriate mathematical development. Prerequisite GEOL 783.

**785 INTRODUCTION TO GROUNDWATER MODELING** (3+0) 3 credits
Numerical solution of the ordinary and partial differential equations of groundwater flow and contaminant transport. Emphases on learning methodology and solving applied problems. Prerequisite: FORTRAN; GEOL 783.

**786 CONTAMINANT TRANSPORT IN GROUNDWATER FLOW SYSTEMS** (3+0) 3 credits
Theoretical and applied study of solute transport phenomena. Analytical and numerical solutions of the advective-dispersion equation and other techniques for solving groundwater contamination problems. Prerequisite: MATH 320; GEOL 783.

**789 SEMINAR IN AEROSPACE REMOTE SENSING** (1+0 or 3) 1 or 2 credits
Presentations on student and faculty research in aerospace remote sensing. Reviews of current research topics involving the applications of aerospace methods to study of geoscience problems in the Great Basin. Prerequisite: GEOL 404, 604, 704.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
201 GEOLOGY OF NEVADA (2+0) 2 credits
203 PROSPECTING TECHNIQUES (1+1 or 2) 1 to 3 credits *S/U only*
381 APPLIED GEOLOGY (3+0) 3 credits
481, 681 TECTOGENESIS AND GEOTECHNOLOGY (2+6) 4 credits
482, 682 GEOLOGY OF ENERGY (3+0 or 3) 3 or 4 credits
487 687 MINING GEOLOGY (2+3) 3 credits
488 688 EXPLORATION GEOLOGY (3+0) 3 credits
651 SUMMER FIELD GEOLOGY 3 or 6 credits
710 HISTORY OF GEOLOGY (2+0) 2 credits
780 HYDROGEOLOGIC SYSTEMS (3+0) 3 credits
790 MINERAL INDUSTRY SEMINAR 1 to 3 credits

# HISTORIC PRESERVATION (H P)

**400, 600 PRINCIPLES OF HISTORIC PRESERVATION** (3+0) 3 credits
Development of preservation movement and philosophy in the U.S. and Europe; legal aspects and subfields of historic presentation. Case studies of local, state and federal projects and problems.

**401, 601 LAWS AND POLICIES** (3+0) 3 credits
Intensive review of agencies, laws, guidelines, policies, ordinances and building codes relating to historic preservation and its sub-fields. Case studies in preservation law. Prerequisite: H P 400 or 600.

402, 602 HISTORY OF AMERICAN ARCHITECTURE (3+0) 3 credits
Survey of major historic American architectural styles and European antecedents; consideration of architectural history in relation to historic preservation planning and technology.

403, 603 WORLD ARCHITECTURE (3+0) 3 credits
Historical survey of world architectural styles; styles seen as reflections of major sociocultural patterns of technology, ideology and historica connections.

405, 605 HISTORIC PRESERVATION SURVEY AND PLANNING 3+0) 3 credits
Survey archival and field research practices; formulation of historic preservation plans; procedures for integration with local and regional master plans. Case studies. Prerequisite: H P 400, 401, 600, 601.

470, 670 RESEARCH PRACTICUM (3+0) 3 credits
Field and archival recording and research; methods of recording historic structures and objects; development of historic overlays; nomination procedures of the National Register of Historic Places. Prerequisite: H P 400, 401, 600, 601.

475, 675 TECHNIQUES OF PRESERVATION AND CONSERVATION (3+0) 3 credits
Methods, techniques and materials for preserving, stabilizing, restoring and adaptively reusing historic structures, conservation methods for prehistoric sites. Field trips to local and regional preservation projects. Prerequisite: H P 400, 401, 600, 601.

480, 680 INTERNSHIP (3+0) 3 credits *S/U only*
Practical working experience in local, state or federal historic preservation agencies. Maximum of 6 credits. Prerequisite: H P 400, 401, 600, 601.

499, 699 SPECIAL PROBLEMS 1 to 6 credits
Research or reading in special topics under supervision. Maximum of 6 credits. Prerequisite H P 400, 401, 600, 601.

# HISTORY (HIST)

101 UNITED STATES (3+0) 3 credits
U.S. political, social, economic, diplomatic and cultural development from colonial times to 1865. Includes examination of the U.S. Constitution and satisfies the U.S. Constitution requirement.

102 UNITED STATES (3+0) 3 credits
U.S. political, social, economic, diplomatic and cultural development from 1865 to the present. Includes examination of the Nevada Constitution and satisfies the Nevada Constitution requirement.

105 EUROPEAN CIVILIZATION (3+0) 3 credits
Development of western civilization from the dawn of history to 1648.

106 EUROPEAN CIVILIZATION (3+0) 3 credits
Development of western civilization from 1648 to the present.

111 SURVEY OF AMERICAN CONSTITUTIONAL HISTORY (3+0) 3 credits
Origins and history of the constitutions of the U.S. and state of Nevada; surveys the development of American judicial interpretations and institutions. Satisfies the U.S. and Nevada Constitutions requirements.

202 AMERICAN MILITARY HISTORY (2+0) 2 credits
Review from 1776, emphasizing wars, interwar periods, military thought and policy, and relationship of the armed forces to society.

217 NEVADA HISTORY (3+0) 3 credits
Nevada history from early exploration to the present. Includes examination of the Nevada Constitution and satisfies the Nevada Constitution requirement.

281 INTRODUCTION TO THE HISTORY OF SCIENCE (3+0) 3 credits
History of the physical, mathematical, natural, biological and medical sciences from the ancient world to the Scientific Revolution of the 17th century.

282 INTRODUCTION TO THE HISTORY OF SCIENCE (3+0) 3 credits
History of the physical, mathematical, natural, biological and medical sciences from the 17th century to the present.

301-302 IDEAS, VALUES AND CULTURES (3+0) 3 credits
Ideas, values and cultures as they relate to the concepts of man, society and the cosmos. Includes Western, non-Western and women's primary source material.

309 MUSEOLOGY (3+0) 3 credits
(See ANTH 309 for description.)

310 MUSEUM TRAINING FOR HISTORIANS (2+2) 3 credits
Operation and administration of historical museums, including training in archival procedures, publications and related museum management procedures.

312 THE EXPANSION OF THE U.S. (3+0) 3 credits
Expansion and growth of the U.S. with emphasis on the "westward movement"; the conquest and settlement of regions west of the Appalachian Mountains.

315 TRANS-MISSISSIPPI WEST (3+0) 3 credits
U.S. exploration, conquest and settlement of western North America.

316 AMERICAN ENVIRONMENTAL HISTORY (3+0) 3 credits
American attitudes and policies toward the environment emphasizing themes of exploitation, preservation and conservation from the Puritans to the late 20th century ecological movement.

317-318 HISTORY OF RELIGION IN THE U.S. (3+0) 3 credits each
Selected topics on major trends, issues, and personalities within American religious traditions and their relationship to the political and social life of the nation. HIST 317 covers the period to 1900; 318 covers the 20th century.

328 CONTEMPORARY CIVILIZATION (3+0) 3 credits
Institutional developments, events, trends and conflicts since World War II are summarized and interpreted in the light of the recent past.

343-344 LATIN AMERICA (3+0) 3 credits each
Development of the Iberian states as colonizing powers, the discovery and conquest of America, the growth of political, social and economic institutions during the Colonial period, the independence movement in Spanish and Portuguese America and the historical development of the leading republics since independence.

345 LATIN AMERICA IN WORLD AFFAIRS (3+0) 3 credits
Emphasizes the relations of Latin America with the U.S. and other world powers; Pan-Hispanism; Pan-Americanism and its relation to world organization; the role of Latin America in the community of nations.

346 MEXICO, CENTRAL AMERICA, AND THE CARIBBEAN (3+0) 3 credits
Discovery, conquest, growth of political, social and economic institutions. Socio-economic development and foreign relations since 1850 are stressed.

351-352 THE FAR EAST (3+0) 3 credits each
Historical development of China, Japan and Southeast Asia in the 19th and 20th centuries. Emphasis is placed upon such subjects as commercial and colonial expansion, the opening of China and Japan, the growth of colonial imperialistic and nationalistic interests among the western powers and Japan, and the rise of Communist power in Asia.

353 RECENT HISTORY OF THE FAR EAST (2+0) 2 credits
The Far East in the aftermath of World War II.

361-362 THE MIDDLE EAST (3+0) 3 credits each
Survey of the Middle East with emphasis on its impact on European history.

371-372 ANCIENT CIVILIZATION (3+0) 3 credits each
Political, social, economic and cultural development of the ancient Near East, Greece and Rome; the elements of ancient civilization that contributed vitally to medieval and modern civilization.

373 MEDIEVAL CIVILIZATION (3+0) 3 credits
Europe from the disintegration of the Roman Empire to the age of the Renaissance.

**377-378 EUROPEAN SOCIAL HISTORY** (3+0) 3 credits each
Topical survey of European society emphasizing the formation of classes, the family, women, crime, material culture and popular culture. HIST 377 covers preindustrial Europe; HIST 378 covers industrial and postindustrial Europe.

**384 THE AGE OF THE RENAISSANCE** (3+0) 3 credits
Cultural, social, intellectual, religious, economic and political history of Europe, 1300-1520.

**385 REFORMATION EUROPE AND THE AGE OF THE BAROQUE** (3+0) 3 credits
Political, social, intellectual, religious and cultural history of Europe in the 16th and 17th century.

**393-394 ENGLAND AND THE BRITISH EMPIRE** (3+0) 3 credits each
History of England and its empire: social, economic and political development. Background of English literature and law. Second semester begins at Elizabethan Age.

**395 THE IRISH AND OTHER CELTS: A HISTORY OF SURVIVAL** (3+0) 3 credits
The 3,000-year history and culture of the Irish, Scots, Welsh and related peoples. Special notice is given to their tenuous survival and extensive migrations.

**401-402, 601-602 AMERICAN CONSTITUTIONAL HISTORY** (3+0) 3 credits each
Narrative and interpretive study of the origin and growth of the constitutional system. May be used to satisfy requirement in U.S. Constitution.

**403-404, 603-604 AMERICAN INTELLECTUAL AND SOCIAL HISTORY** (3+0) 3 credits each
Topical examination of the major currents in American life with emphasis on social, cultural, and intellectual development, and the impact of industrialization in the modern world.

**406, 606 HISTORY OF AMERICAN IMMIGRATION** (3+0) 3 credits.
Origins, experiences, and reception of U.S. immigrants from the colonial period to the present.

**407-408, 607-608 AMERICAN DIPLOMATIC HISTORY** (3+0) 3 credits each
Origins, character and consequences of American foreign policies from the Revolutionary War to the present.

**409, 609 U.S. AGRICULTURAL HISTORY** (3+0) 3 credits
Colonial beginnings of American agriculture, the advance of the American agricultural empire into the greater West, the accompanying industrial revolution in agriculture and the role of government in 20th century agricultural policy. Regional characteristics of American agriculture.

**410, 610 20TH CENTURY AMERICAN WEST** (3+0) 3 credits
Political, economic, and social problems growing out of the twentieth century West, including the Plains States, the Rocky Mountains and Pacific Coast with emphasis on the West's integration into the industrial and urban life of the nation and the interaction of the region with the Federal Government.

**411, 611 U.S.: COLONIAL PERIOD TO 1763** (3+0) 3 credits
Origins of the North American colonies; development of colonial society, culture and institutions; international rivalry for North American supremacy.

**412, 612 ERA OF THE AMERICAN REVOLUTION, 1763-1789** (3+0) 3 credits
Imperial reorganization and colonial protest, the War for Independence, government under the Articles of Confederation, formation of the Federal Constitution.

**413, 613 U.S.: NATIONAL PERIOD, 1789-1850** (3+0) 3 credits
Development of the new nation, the Federalists and the Jeffersonians, the War of 1812, the Era of Good Feelings, the Age of Jackson, expansion and controversy to the Compromise of 1850.

**414, 614 U.S.: CIVIL WAR AND RECONSTRUCTION, 1850-1877** (3+0) 3 credits
Intensification of sectional strife, the road to disunion, the Civil War, the era of Reconstruction.

**415, 615 U.S.: THE NEW NATION, 1877-1914** (3+0) 3 credits
Political, economic and social developments in years of rapid industrialization and western settlement; emergence as a world power; the Progressive Movement.

**416, 616 U.S.: RECENT HISTORY 1914 to PRESENT** (3+0) 3 credits
World War I and its impact, normalcy and prosperity, the Great Depression and the New Deal, World War 11, the U.S. in the Atomic Age.

**417, 617 NEVADA AND THE WEST** (3+0) 3 credits
Topical examination of Nevada history in relation to issues of western and national significance, e.g., mining, transportation, conservation and development of water resources.

**418, 618 HISTORY OF U.S.-AMERICAN INDIAN RELATIONS** (3+0) 3 credits
U.S. government relations with tribes and inter-tribal relations from colonial times into the 20th century with emphasis upon constitutional questions.

**421-422, 621-622 HISTORY OF RUSSIA** (3+0) 3 credits each
Development of Russian history and society from the Varangians to the present.

**423-424, 623-624 HISTORY OF GERMANY** (3+0) 3 credits each
Institutional, social, economic and political development of the German states to 1848. Continued through the period of German unification, Empire, the Weimar Republic and the Nazi era.

**427, 627 INTELLECTUAL HISTORY OF MODERN EUROPE** (3+0) 3 credits
Examination of selected ideas and thinkers who have influenced European civilization since the Renaissance.

**428, 628 BASQUE HISTORY** (3+0) 3 credits
Political, social and economic history of the Basque provinces and their unique ethnic status within Spain and France.

**447-448, 647-648 TOPICAL STUDIES IN AFRICAN HISTORY** (3+0) 3 credits each
Ancient empires, the peopling of Africa by its modern inhabitants, European imperialism/colonialism, collaboration and resistance to colonial rule.

**449, 649 TOPICAL STUDIES IN AFRICAN HISTORY SINCE 1945** (3+0) 3 credits
Elites and masses in modern Africa, independence and neocolonialism, white Africa, modern African intellectual thought, African nationalism.

**455-456, 655-656 BLACK EXPERIENCE IN AMERICA** (3+0) 3 credits each
Historical treatment of the Black experience in America, emphasizing the 17th to 20th centuries. Second semester begins in Reconstruction.

**461, 661 EUROPEAN CRISIS AND THE AGE OF THE ENLIGHTENMENT** (3+0) 3 credits
Development of the economic, political, social and cultural patterns of Europe during the Age of Reason and the Age of the Enlightenment.

**462, 662 ERA OF THE FRENCH REVOLUTION, 1763-1815** (3+0) 3 credits
Europe during the age of democratic revolution and the rise and fall of Napoleon Bonaparte.

**463, 663 EUROPE: 1815-1914** (3+0) 3 credits
Development of the economic, political social, and cultural patterns of Europe from Waterloo to the outbreak of World War I.

**464, 664 EUROPE: 1914 TO THE PRESENT** (3+0) 3 credits
Detailed study of an age of conflict and its interludes of peace.

**473, 673 PATTERNS OF MEDIEVAL CULTURE** (3+0) 3 credits
Selected topics concerning medieval economic, social, political, religious and cultural developments such as feudal society, religious orthodoxy and dissent, universities and chivalry. Maximum of 6 credits.

**475, 675 STUDIES IN URBAN HISTORY** (3+0) 3 credits

Topical examination of urban development stressing the city in its various political, social and economic aspects. Geographical and chronological emphasis determined by the instructor. Maximum of 6 credits.

**481, 681 PROBLEMS IN THE HISTORY AND PHILOSOPHY OF SCIENCE** (3+0) 3 credits
Selected topics in scientific revolutions, theory choice, discovery, relations of history, philosophy, sociology and psychology of science. Maximum of 6 credits. (Same as PHIL 481, 681.)

**490, 690 HISTORY OF THE MEDICAL SCIENCES** (3+0) 3 credits
Topical history of the conceptual, instrumental and institutional development of the medical sciences from the Greeks to the present.

**495, 695 ADVANCED HISTORICAL STUDIES** 1 to 3 credits
Maximum of 9 credits. Topics vary from semester to semester.

**497, 697 INDEPENDENT STUDY** 1 to 3 credits
Maximum of 6 credits.

**703 ADVANCED STUDIES IN HISTORY** 1 to 3 credits
Maximum of 6 credits.

**705 GRADUATE READINGS IN HISTORY** 1 to 3 credits
Maximum of 9 credits.

**710 SEMINAR IN MEDIEVAL HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**712 SEMINAR IN MODERN EUROPEAN HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**713 SEMINAR IN LATIN AMERICAN HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**716 SEMINAR IN FAR EASTERN HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**720 SEMINAR IN U.S. COLONIAL HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**721 SEMINAR IN 19TH CENTURY U.S. HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**722 SEMINAR IN 20th CENTURY U.S. HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**724 TOPICAL SEMINAR IN U.S. HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**725 SEMINAR IN NEVADA AND FAR WESTERN HISTORY** (3+0) 3 credits
Maximum of 9 credits.

**737 COLLEGE TEACHING IN HISTORY** (3+0) 3 credits
Theory and practice in the teaching of history in college. Maximum of 6 credits.

**783 HISTORIOGRAPHY** (3+0) 3 credits
Extensive readings in the literature of historical methods and a comprehensive survey of historical writing from ancient times to the present.

**784 PROBLEMS IN HISTORIOGRAPHY** (3+0) 3 credits
Prerequisite: HIST 783 or equivalent.

**785 U.S. HISTORIOGRAPHY** (3+0) 3 credits
Readings in the literature of American historical writing from colonial times to the present.

**786 ORAL HISTORY METHODOLOGY** (3+0) 3 credits
Directed, tape-recorded interviewing as a research device and method of primary source documentation in history and the social sciences. Includes practicum.

**793 INDEPENDENT STUDY** 1 to 3 credits
For students majoring in the tutorial doctoral program in Basque studies. Maximum of 9 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

# HONORS PROGRAM (HON)

*Interdisciplinary Courses*

**200 FRESHMAN-SOPHOMORE SEMINAR** (3+0) 3 credits
Topic-oriented rather than discipline-oriented analysis of selected subjects consistent with the framework and goals of the honors program of upper-division seminars. (a) The city, (b) the university, and (c) communications. Maximum of 12 credits.

**210 GENERAL HUMANITIES** (3+0) 3 credits
An integrated perspective of the humanistic disciplines. Three fine arts with philosophy provides the basic materials: literature, graphic arts, and music.

**240 AMERICA AND THE FUTURE OF MAN** 2 credits
Consists of twenty 1400-word printed lectures written by some of the nation's distinguished scholars and two seminar sessions conducted by university faculty. Printed lectures include such topics as the impact of change on society and on value systems, biological and ethical implications of advances in medicine and genetics, and the future of technology and its effects on the quality of life .

**300 SEMINAR THE CITY** (3+0) 3 credits
Topic oriented analysis of selected subjects consistent within the framework and goals of the honors program. (a) The city, (b) the university, and (c) communications.

**410 AREA STUDY** 3 credits
View of a particular region of the world from the perspective of several academic disciplines. Maximum of 9 credits.

**421 AGGRESSION: ROOTS AND MANIFESTATIONS** (3+0) 3 credits
Causes and consequences of a basic animal and human motive involving several points of view; genetic, biological, psychological, sociological, historical, and political. Maximum of 6 credits.

**432 RACE AND ETHNIC RELATIONS** (3+0) 3 credits
Consideration of both American and international problems of racial and ethnic relations drawing from anthropology, sociology, psychology, history, and literature.

**435 BRIDGING INTELLECTUAL DISCIPLINES** (3+0) 3 credits
Methods, values, theories, and directions of two or more academic disciplines in search of their common ground, as well as differences in approaches. Maximum of 6 credits.

**443 SCIENCE AND CULTURE** (3+0) 3 credits
Historical and philosophical presentation of cultural effects of scientific and technological innovation. Explores ways that science affects various humanistic activities. Maximum of 6 credits.

**454 THE CREATIVE ARTS** (3+0) 3 credits
Interaction of literature and fine arts. Investigation of creative arts including art history, involving printing, sculpture, music, architecture, and literature. Maximum of 6 credits.

**465 AMERICA: INSTITUTIONS AND VALUES** (3+0) 3 credits
One or more American institutions or values with a consideration of their evolution and contemporary significance. Maximum of 9 credits.

**476 THE FUTURE** (3+0) 3 credits
Investigation into future relations between man, his social structure, and his environment. Maximum of 9 credits.

**487 REVOLUTION:SOURCES AND MANIFESTATIONS** (3+0) 3 credits
Sources and manifestations of economic, social, and political revolution in various countries and areas. Maximum of 6 credits.

**498 DYNAMICS OF NATIONAL DEVELOPMENT** (3+0) 3 credits
Problems and processes involved in national efforts to achieve various developmental goals. Means and values are emphasized. Maximum of 6 credits.

## HORTICULTURE (HORT)

**163 LANDSCAPE DESIGN AND CONSTRUCTION** (1+6) 3 credits
Design using plants to enhance man's environment with specific emphasis on single family dwellings.

**164 HORTICULTURAL SCIENCE** (3+0) 3 credits
Introduction to horticulture, including principles of plant structure and function, culture, production, management and marketing.

**260 ORNAMENTAL PLANTS I** (2+6) 4 credits
Identification of ornamental plants using plant keys and emphasizing landscape characteristics and uses of ornamentals. Prerequisite: HORT 164 or BIOL 111.

**263 INTERIORSCAPING** (2+3) 3 credits
Discussion of methods of indoor foliage and flowering plant production and their effect in interior landscape.

**316, 416 INTERNSHIP** (1 to 3+0) 1 to 3 credits *S/U only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

**361 TURFGRASS PRODUCTION AND MANAGEMENT** (2+3) 3 credits
Business and cultural management of turfgrass production and marketing emphasizing species selection, cultural requirements, establishment, maintenance practices, including equipment and personnel management. Prerequisite: AGRO 222; BIOL 111 or HORT 164.

**362 NURSERY PRODUCTION AND MANAGEMENT** (2+6) 4 credits
Commercial nursery management practices and how students are taught to propagate, schedule, produce and market nursery materials. Field trip required.

**364 GREENHOUSE PRODUCTION AND MANAGEMENT** (2+6) 4 credits
Students learn commercial greenhouse design and management including how to schedule, produce and market crops. Field trip required. Prerequisite: HORT 164; AGRO 222.

**400 SEMINAR** (1+0) 1 credit
Research work and reports on topics of interest.

**465, 665 URBAN FORESTRY** (3+0) 3 credits
Urban forestry management and administration will be taught including surveying, cultural practices, program development and working in the public domain. Prerequisite: HORT 164, 260, 362; AGRO 222.

**480 INDEPENDENT STUDY** 1 to 3 credits
Special problems in floriculture, fruit crops, greenhouse operations, nursery operation, ornamentals, plant propagation, turfgrass or vegetable crops.

**485, 685 SPECIAL TOPICS** (1 to 4+0) 1 to 4 credits
Review of recent research, innovations and developments in horticulture. Maximum of 8 credits.

**790 SEMINAR** (3+0) 1 credit
Research work and reports on topics of interest.

**791 SPECIAL TOPICS** 1 to 3 credits
Intensive study of a special problem in horticulture. Maximum of 6 credits.

**792 SPECIAL PROBLEMS** 1 to 3 credits
Topics include floriculture, fruit crop production and processing, greenhouse and nursery operations, ornamentals, plant propagation, turfgrass or vegetable crop production and processing. Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** *S/U only*

**796 PROFESSIONAL PAPER** 1 or 2 credits *S/U only*

**797 THESIS** 1 to 6 credits

**798 INTERNSHIP** 1 to 2 credits *S/U only*
Directed experience in teaching in a classroom, laboratory or Cooperative Extension setting. Preparation, delivery and evaluation of instruction. Written report required. May be repeated in different topics for a maximum of 3 credits.

*Inactive Courses*
165 HORTICULTURAL PRACTICES (1+3) 2 credits
166 PLANT PROPAGATION (1+6) 3 credits
261 ORNAMENTAL PLANTS II (0+6) 2 credits
367 FRUITCROP PRODUCTION (2+3) 3 credits
368 VEGETABLE CROP PRODUCTION (2+3) 3 credits

## HUMAN AND COMMUNITY SCIENCES (HCS)

**101 INTRODUCTION TO HUMAN AND COMMUNITY SCIENCES** (3+3) 3 credits
Survey of current issues related to individuals, families, and communities presented by a variety of disciplines. Forty-five hours of community work is required.

## HUMAN DEVELOPMENT AND FAMILY STUDIES (HDFS)

**101 INTRODUCTION TO HUMAN AND COMMUNITY SCIENCES (2+3) 3 credits**
Survey of current issues related to individuals, families, and communities presented by a variety of disciplines. 45 hours of community work is required.

**131 CHILD DEVELOPMENT** (3+0) 3 credits
Overview of growth and development from the prenatal period through adolescence. Recommended corequisite: HDFS 233.

**132 CHILD GUIDANCE AND PARENTING** (3+0) 3 credits
Guiding the behavior of children from infancy through adolescence using child development principles appropriate for teachers, parents, and others working with children. Prerequisite or corequisite: HDFS 131 or 274.

**200 SPECIAL TOPICS** 1 to 3 credits
Study under supervision of a staff member on topics of special interest to the learner. Maximum of 3 credits.

**233 PRACTICUM WITH CHILDREN AND FAMILIES** (1+2 to 14) 1 to 5 credits
Observing and working in a preschool setting with children and their families. Advance approval required for more than one credit. Prerequisite or corequisite: HDFS 131 or 274. Maximum of 9 credits.

**270 FIELD EXPERIENCE** 1 to 3 credits *S/U only*
Work with one or more community agencies or firms that utilize expertise in the field of human development and family studies. Maximum of 3 credits.

**274 INDIVIDUAL AND THE FAMILY** (4+0) 4 credits
Individual bio-psycho-social development. Roles, relationships, and interaction within varied family systems. Lifespan, gender, ethnic and socioeconomic correlates. Critical societal and developmental issues facing families.

**341 PERSONAL FINANCE** (3+0) 3 credits
Factors relevant to family's and individual's economic functioning in American society. Personal use of money: earning, spending, saving, borrowing, investing, planning.

**371 FAMILY RESOURCE MANAGEMENT** (3+0) 3 credits
Theory and application in the identification and allocation of human and nonhuman resources. Decision making, communication, time and financial management. Prerequisite: EC 101 or 102; HDFS 274; PSY 101; or SOC 101.

**374 COMMUNICATIONS IN HUMAN DEVELOPMENT AND FAMILY STUDIES** (3+0) 3 credits
Communications process and current techniques in the effective transmission of home economics ideas, attitudes, and subject matter to individuals, families, groups, and mass audiences. Prerequisite: speech.

**376 ISSUES IN FAMILY HEALTH** (1+1) 1 credit
Analysis of topics related to the family system, physical or mental disorders. health care and well-being of its members. Reciprocal influences on and from society. Prerequisite: 6 credits of human development.

**400, 600 SPECIAL PROBLEMS** 1 to 6 credits
Individual study or research in topic of special interests. Maximum of 9 credits.

**430, 630 HUMAN SEXUALITY** (3+0) 3 credits
Exploration of masculine and feminine roles as they relate to human development, personal functioning, interpersonal relations and family living in a complex, changing society. Prerequisite: 6 credits in psychology, sociology or biological sciences.

**431, 631 ADVANCED STUDIES IN HUMAN DEVELOPMENT AND FAMILY** (2+2) 3 credits
Theory, research, and issues in one of the following: (a) infancy, (b) early childhood, (c) middle childhood, (d) adolescence, or (e) adult development and aging. Prerequisite: 6 credits in child and family studies, psychology, or sociology.

**432, 632 PRESCHOOL FOR SPECIAL CHILDREN AND THEIR FAMILIES** (3+0 or 3) 3 or 4 credits
Preschool for children with physical, social/ emotional and cognitive handicaps and gifted children. Particular emphasis on involvement of the families. Fourth credit is experience with special children in a preschool setting. Prerequisite: 6 credits in child development or special education.

**433, 633 ADMINISTRATION OF CHILD AND FAMILY SERVICES** (3+0) 3 credits
Administration of programs serving children, adolescents, adults and families; includes philosophy, staffing, operations and legal parameters. Prerequisite: HDFS 131 or 274 or equivalent.

**434, 634 FAMILY EDUCATION AND INTERVENTION PROGRAMS** (3+0) 3 credits
Educational, intervention and skills-training programs. Developing needs assessments, programs for presentation and evaluation components. Prerequisite: HDFS 274 or equivalent.

**435, 635 FAMILY INTERACTION FOR PRESCHOOL SPECIAL EDUCATION** (1+0) 1 credit
Principles of family education and intervention program. Only for students in the early childhood special education certificate program.

**436, 636 FAMILY INTERACTION** (3+0) 3 credits
Review of research and theory on family dynamics and process. Application of concepts and assessments via mass media and interviews. Examination of functional and dysfunctional patterns. Prerequisite: 6 credits in human development and family studies or other social sciences.

**437, 637 DEATH AND DYING: FAMILY AND LIFESPAN PERSPECTIVES** (3+0) 3 credits
Overview of death and dying, coping and adaptation as an individual and family experience from prenatal development through adulthood. Emphasis on both personal and professional applications. Prerequisite: 6 credits in psychology, sociology, or human development.

**438, 638 CHILDREN AND FAMILIES IN A MULTIETHNIC SOCIETY** (3+0) 3 credits
Lifestyles, values and needs of children and their families from diverse ethnic groups. Prerequisite: 6 credits in sociology, psychology, or human development.

**440, 640 PERSPECTIVES ON AGING** (3+0) 3 credits
Patterns and dynamics of later life focusing on the family and total ecosystem: natural, socio-cultural, economic, political and human-built environments. Prerequisite: 6 credits of social science or human development.

**441, 641 CONSUMER CREDIT** (3+0) 3 credits
Analysis of use and misuse of consumer credit. Investigation of policies and practices of credit grantors. Examination and application of theories of credit counseling. Prerequisite: EC 101 or 102.

**445, 645 THE CONSUMER LN OUR SOCIETY** (3+0) 3 credits
Consumer problems, representation, information and protection. The economic system and the role of consumers. The economy and marketplace from the consumer's point of view. Prerequisite: HDFS 371 or 3 to 6 credits of economics.

**451, 651 FINANCIAL PLANNING FOR INDIVIDUALS AND FAMILIES** (2+2) 3 credits
Using financial management concepts, strategies and theory to develop plans to achieve personal financial goals. Prerequisite: HDFS 341, 441, or 3 credits of economics.

**453, 653 HOUSING AND PUBLIC POLICY** (3+0) 3 credits
Social, economic and political aspects of housing. Local, state and federal policies and programs directed at current housing issues. Prerequisite: EC 102; SOC 101; P SC 103.

**457, 657 WORK AND THE FAMILY SYSTEM** (3+0) 3 credits
Balancing work and family roles, linkages between work and family systems, alternate work arrangements and strategies for improving quality of work life and family life.

**458, 658 FAMILIES AND PUBLIC POLICY** (3+0) 3 credits
Role of the family in decision making and management of public issues; analysis of legislation directly affecting the family, including experience with the legislature and other policymaking bodies. Prerequisite: HDFS 274 or equivalent; 3 credits of political science or history.

**470 PREPROFESSIONAL INTERNSHIP** (1+9 or 24) 3 or 8 credits *S/U only*
Supervised field experience with one or more community agencies or firms that utilize expertise in the field of human development or family services. Includes seminar.

**471 SENIOR THESIS** (3+0) 3 credits
Research conducted and written in thesis form. Prerequisite: statistics and faculty approval.

**472 CONTEMPORARY FAMILY ISSUES** (3+0) 3 credits
Application of human and community sciences subject matter in the development of problem solving strategies related to issues facing families and individuals.

**476, 676 ISSUES IN FAMILY HEALTH** (1+1) 1 credit
Analysis of issues related to family and health.

**700 GRADUATE STUDIES IN HUMAN DEVELOPMENT AND FAMILY STUDIES** 1 to 3 credits
Advanced study of problems and research in issues related to individual and family studies. Maximum of 6 credits.

**720 THEORIES OF HUMAN DEVELOPMENT** (3+0) 3 credits
Reading and analysis of original works by classic and contemporary theorists. Application to growth, change and continuity for children, adolescents, and adults.

**730 FAMILY THEORIES** (3+0) 3 credits
Analysis of current and classical theories as relates to contemporary family structures and issues. Application of theory to research and special topics.

**740 FAMILY ECONOMICS AND) MANAGEMENT** (3+0) 3 credits
Changing household/family composition, resource production, resource needs. Investigation of the relationships between these changes and the managerial and economic activities of households.

**771 RESEARCH METHODS** (3+0) 3 credits
Systematic examination of the scope and methods of inquiry and of the present state of research in human development and family studies.

**790 SEMINAR** (1+0) 1 credit
Clarifies basic philosophical issues in the context of present day society.

**791 INTERNSHIP** 3 credits
Professional work experience under the supervision of education, business or governmental personnel and university staff member. Advanced approval required. Reports are prepared periodically and at the conclusion of the internship. Prerequisite: HDFS 730, 790 or 740.

**796 PROFESSIONAL PAPER** 1 to 3 credits *S/U only*
Required of all students who wish to complete an advanced degree using the professional paper option.

**797 THESIS** 1 to 6 credits

**798 PROGRAM DEVELOPMENT AND EVALUATION** (2+2) 3 credits
Examination and application of teaching techniques and evaluation of undergraduate program.

*Inactive Courses*
232 PRESCHOOL CURRICULUM (3+0) 3 credits
373 ISSUES IN CONSUMER COMPETENCE (1+0) 1 credit
374 COMMUNICATIONS IN HOME ECONOMICS (3+0) 3 credits

# INTEGRATED PEST MANAGEMENT (IPM)

**100 INTRODUCTION TO INTEGRATED PEST MANAGEMENT** (3+0) 3 credits
Principles and practices in pest management systems including disease, insect and weed management in production agriculture.

**210 PRINCIPLES OF BEE MANAGEMENT** (2+0) 2 credits
Consideration of the basic principles of bee culture and the management of bees for honey production and pollination.

**316, 416 INTERNSHIP** 1 to 3 credits *S/U only*
Coordinated work-study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

**356 WEEDS AND WEED CONTROL** (2+3) 3 credits
Principles and practices of weed control. Recognition of important weed species.

**390 RANGE AND FOREST ENTOMOLOGY-PATHOLOGY** (2+3) 3 credits
Recognition of causal agents and damage produced by insects and diseases to range and forest species. Includes concepts of prevention and control of these pests in relation to resource management.

**391 GENERAL ECONOMIC ENTOMOLOGY** (2+3) 3 credits
Introduction to study and principles of control of insects and related organisms which affect production of animals, crops and management of range and forests. Graduate credit not available for integrated pest management majors, entomology option.

**400 SEMINAR** (1+0) 1 credit
Research work and reports on topics of interest in the pest sciences, integrated pest management and pesticide chemistry and toxicology.

**412, 612 INSECT PESTS OF PLANTS** (3+0) 3 credits
Detailed study including principles of control of more economic species of insects and related organisms which affect production of plants. Prerequisite: IPM 391.

**422, 622 INSECT PESTS OF ANIMALS** (3+0) 3 credits
Detailed study including principles of control of more economic species of insects and related organisms which affect the urban homeowner and the health and well-being of man and domesticated animals. Prerequisite: IPM 391. (Same as A SC 422, 622.)

**452, 652 INTEGRATED PEST MANAGEMENT STRATEGIES** (3+0) 3 credits
Detailed examination of the philosophies and concepts of integrated pest management and the practical implementation of integrated pest management programs. Prerequisite or corequisite: IPM 356, 471.

**471, 671 PLANT PATHOLOGY** (3+3) 4 credits
Nature, cause and control of plant diseases. Prerequisite: BIOL 111.

**480 INDEPENDENT STUDY** 1 to 3 credits
Intensive study of a special problem in (a) integrated pest management, (b) entomology, (c) plant pathology.

**485, 685 SPECIAL TOPICS** 1 to 3 credits
Presentation and review of recent research, techniques and developments in the pest sciences. May include the areas of integrated pest management, entomology, plant pathology, weed science, pesticide chemistry and toxicology. Maximum of 6 credits.

**712 ENVIRONMENTAL STRESS AND PLANT RESPONSE** 3 credits
Specific adverse physico-chemical factors which influence the growth and development of green plants. Focuses on abiotic plant disease with emphasis on stresses induced by mineral deficiencies, air pollutants, toxins, temperature and light disorders and nonparasitic organism interaction. Diagnosis, etiology and controls to ameloriate these problems. Prerequisite: AGRO 327; BIOL 355, 356.

**720 INSECT ECOLOGY** (3+0) 3 credits
Principles governing activity and distribution of insects in relation to their environment. Prerequisite: IPM 391. (Same as BIOL 720.)

**731 PESTICIDE RESIDUE ANALYSIS TECHNIQUES** (2+3) 3 credits
Emphasizes proper sampling techniques, laboratory analysis, significance for pesticide residues in the environment. Designed for ecologists, agriculturalists or chemists. Prerequisite: CHEM 142; IPM 332.

**756 HERBICIDES AND PLANT GROWTH REGULATORS** (3+0) 3 credits
Chemistry of herbicides and plant growth regulators, their entry and movement; action in plants and their fate in the environment. Prerequisite: BIOL 355, 356; IPM 356.

**775 ADVANCED PLANT PATHOLOGY** (3+3) 4 credits
Detailed study of plant diseases caused by viruses, nematodes, bacteria and fungi with emphasis on the physiology of pathogenesis. Prerequisite: IPM 471.

**790 SEMINAR** (1+0) 1 credit
Research work and reports on topics of interest.

**791 SPECIAL TOPICS** 1 to 3 credits
Selected topics dealing with current research and developments in the pest sciences, integrated pest management and pesticide chemistry and toxicology. Maximum of 6 credits.

**792 SPECIAL PROBLEMS** 1 to 3 credits
Individual study of a special problem in (a) integrated pest management, (b) entomology, (c) plant pathology, (d) weed science, pesticide chemistry and toxicology.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 1 to 2 credits *S/U only*

**797 THESIS** 1 to 6 credits
Thesis may be written in area of (a) integrated pest management, (b) entomology, (c) plant pathology, (d) weed science, (e) pesticide chemistry and toxicology .

**798 INTERNSHIP** 1 to 2 credits
Directed experience in teaching in a classroom, laboratory or Cooperative Extension setting. Preparation, delivery and evaluation of instruction. Written report required. May be repeated in different settings for a maximum of 3 credits.

# INTERIOR DESIGN (INTD)

**151 FOUNDATIONS FOR DESIGN** (1+6) 4 credits
Studio study of design principles, documents, graphic ideation and mod-

eling; both two- and three-dimensional aspects are studied.

**200 SPECIAL TOPICS IN INTERIOR DESIGN** 1 to 6 credits
Study under supervision of a staff member on topics of special interest to the learner. Maximum of 6 credits.

**202 FIELD STUDY** 1 to 6 credits *S/U only*
Student-faculty seminar including group travel for field study experience. Maximum of 6 credits.

**256 INTERIOR DESIGN I** (0+6) 3 credits
Design of residential interiors appropriate for users; programming, space planning, design, and client presentation. Prerequisite: INTD 151; architectural drafting.

**270 FIELD EXPERIENCE** 1 to 3 credits *S/U only*
Work with firms that utilize interior design subject matter. Maximum of 3 credits.

**275 HOUSING** (3+0) 3 credits
Housing, both aesthetic and functional, as a framework for family living.

**350 SPACE, LIGHT, AND COLOR** (3+0) 3 credits
Theories and concepts of space, light, and color relative to design. Prerequisite: INTD 151.

**353 HISTORY OF INTERIORS** (3+0) 3 credits
Evolution of design in interiors from antiquity to present.

**354 INTERIOR PRESENTATION TECHNIQUES** (0+6) 3 credits
Professional techniques and media for illustrating interior environments. Prerequisite: INTD 151; architectural drafting.

**355 MATERIALS AND RESOURCES** (3+0) 3 credits
Materials, surfaces, resources, and applications relevant to interior design.

**358 INTERIOR DESIGN II** (0+6) 3 credits
Design problems related to business and institutions. Prerequisite: INTD 256.

**400, 600 SPECIAL PROBLEMS IN INTERIOR DESIGN**
1 to 10 credits S/U *only*
Individual study or research in fields of special interest. Maximum of 10 credits.

**402, 602 CONTEMPORARY ISSUES** 1 to 10 credits
Topics of current interest to the interior design student and practicing professional. Maximum of 10 credits.

**452 CONTEMPORARY DESIGN CONCEPTS** (3+0) 3 credits
Evolution and formation of design philosophies, movements, and styles which influence contemporary design.

**456 PROFESSIONAL PRACTICES FOR INTERIOR DESIGNERS**
(3+0) 3 credits
Business functions specific to design and construction industry. Prerequisite: 3 credits of business.

**459 INTERIOR DESIGN III** (0+6) 3 credits
Studio in designing interiors for actual clients; complete design process; critiqued by professional panel. Prerequisite: INTD 358.

**470 INTERNSHIP** 3 credits *S/U only*
Work with one or more firms that utilize interior design subject matter as they work with clientele. Combines a seminar with supervised field experience. Prerequisite: interior design major.

# INTERNAL MEDICINE (IMED)

**451, 651 CLERKSHIP** (2+30) 12 credits
Hospital and ambulatory clinical experience with preceptorial supervision to develop knowledge (practical, theoretical, basic science), technical and interpersonal skills basic to practicing internal medicine.

**461, 661 ELECTIVES** 1 to 8 credits
Elective experiences in the major medical subspeciality including: (a) cardiology/EKG reading, (b) clinical neurology, (c) critical care, (d) dermatology, (e) endocrinology/nephrology, (f) gastroenterology, (g) general internal medicine, (h) externship, (j) hematology/oncology, (k) infectious diseases, (m) intensive care, (n) nephrology, (p) nuclear medicine, (q) physical medicine, (r) physical medicine and rehabilitation, (s) pulmonary medicine, (t) medical consultation, (u) research, (v) rheumatology, (w) geriatric medicine, (x) ambulatory care medicine, (y) pain management. Prerequisite: third- or fourth-year medical students. Maximum of 8 credits in any one subtopic. Maximum total credits for any combination of subtopics is 16.

**462, 662 ELECTIVES** 2 to 8 credits
Elective experiences in the major medical subspeciality including: (a) cardiology/clinical.

**490, 690 INDEPENDENT STUDY** 1 to 3 credits

**491, 691 THEORY AND PRACTICE OF ECG INTERPRETATION**
(1+3) 2 credits
Physiology of the cardiac action potential and general theory of the electrical field created by the heart. The different lead systems in relation to spatial vectorcardiogram. Analysis of simple and complex arrhythmias. Classical patterns of contour alterations.

# JOURNALISM (JOUR)

**101 INTRODUCTION TO JOURNALISM** (3+0) 3 credits
Survey of the role of newspapers, radio, television, advertising and public relations organizations. Interpretation of the day's news and analysis of media performance.

**201 BASIC REPORTING** (1+6) 3 credits
Fundamentals of reporting. Disciplines of the journalist: correct use of language, deadline pressure and accuracy. Prerequisite: JOUR 101.

**203 ADVANCED REPORTING** (1+6) 3 credits
Handling of more complicated stories and features, outside assignments and interpretive writing. Prerequisite: JOUR 201.

**213 WORKSHOP IN HIGH SCHOOL JOURNALISM** (0+6) 2 credits
Practical application of journalistic theory and technique to teaching of high school journalism, supervision of school newspapers, magazines and yearbooks. Maximum of 4 credits. Prerequisite: JOUR 203.

**231 PUBLICITY METHODS** (2+0) 2 credits
For officers and publicity chairmen, present and prospective, of civic, social, religious, professional, recreational and fraternal organizations in the handling of news of their groups for newspapers and radio stations. Not acceptable toward the requirements for the journalism major.

**291 DESKTOP PUBLISHING** (0+3) 1 credit *S/U only*
Introduction to computerized pagination using selected programs for word processing, graphics and layout.

*All journalism courses numbered 300 or above are open only to juniors seniors and graduates with the advance approval of a faculty adviser.*

**301-302 IDEAS, VALUES AND CULTURES** (3+0) 3 credits
Ideas, values and cultures as they relate to the concepts of man, society and the cosmos. Includes Western, non-Western and women's primary source material.

**303 MEDIA GRAPHICS** (2+3) 3 credits
Study and practice in the use of graphics and typography to create effective visual communications.

**311 ASSIGNMENT REPORTING** (1+6) 3 credits
Writing news and feature stories for publication, primarily in the campus newspaper. Prerequisite: JOUR 203.

**313 PHOTOJOURNALISM** (1+6) 3 credits
Techniques and principles of news, feature and public relations photography.

**321 WRITING NEWS FOR BROADCAST** (1+4) 3 credits
Study and practice of writing news for broadcast. Techniques of writing to

picture and sound. History of American broadcast journalism. Prerequisite: JOUR 203.

**323 RADIO NEWS AND PRODUCTION** (1+4) 3 credits
Practice in writing and producing radio reports and newscasts. Audio production techniques. Prerequisite: JOUR 321.

**331 INTRODUCTION TO ADVERTISING** (1+6) 3 credits
Process of creating product and service advertising, stressing social responsibility. Prerequisite: JOUR 203.

**333 ADVERTISING MEDIA** (1+6) 3 credits
Evaluating and selecting print space and broadcast time to meet marketing objectives. Prerequisite: JOUR 331. Corequisite: JOUR 334.

**334 ADVERTISING COPYWRITING** (1+6) 3 credits
Writing for print and broadcast. Stresses use of marketing research data. Prerequisite: JOUR 331. Corequisite: JOUR 333.

**335 CORPORATE COMMUNICATIONS** (3+0) 3 credits
Principles of successful advertising and public relations for commercial and non-profit organizations. Planning, media selection, copy writing and graphics. Social responsibilities of advertisers and agents. May not be substituted for JOUR 331, 341.

**341 PUBLIC RELATIONS PRINCIPLES** (3+0) 3 credits
Principles and techniques of public relations practice in today's society. Prerequisite: JOUR 203 .

**343 PUBLIC RELATIONS CASE STUDIES** (3+0) 3 credits
Application of the principles and techniques of public relations to the solving of representative problems. Prerequisite: JOUR 341.

**401, 601 MEDIA LAW** (3+0) 3 credits
Legislation and court decisions affecting the media, with stress on First Amendment, libel and constitutional rulings.

**411 NEWS EDITING** (2+2) 3 credits
Editing copy, writing headlines and laying out pages. Prerequisite: JOUR 311.

**413, 613 HISTORY AND ETHICS OF JOURNALISM** (3+0) 3 credits
Journalism from Zenger to today. Ethical questions and problems in the media.

**415, 615 COMMUNITY NEWSPAPER MANAGEMENT** (2+0) 2 credits each
Principles of journalism peculiar to the country weekly and small city daily, especially in Nevada. Editorial, circulation and advertising management. Prerequisite: JOUR 313.

**417, 617 EDITORIAL WRITING** (3+0) 3 credits
Opinion writing: editorials and columns. Prerequisite: JOUR 203.

**418, 618 MAGAZINE WRITING** (1+3) 2 credits
Writing and marketing of articles for magazines Analysis of general interest and specialized magazines. Maximum of 4 credits. Prerequisite: JOUR 203.

**419, 619 MAGAZINE EDITING** (1+2) 2 credits
Editing of a specialized magazine. Study of the problems involved in editing and production of a variety of magazines. Maximum of 4 credits. Prerequisite: JOUR 203.

**421 RADIO NEWS REPORTING** ( 1+6) 3 credits
Practice in writing, interviewing and producing stories and newscasts for radio. Comparison of styles used in various formats. Preparation and broadcasting of radio news. Prerequisite: JOUR 323.

**423, 623 TELEVISION NEWS AND PRODUCTION II** (1+6) 3 credits
Practice in writing and production of television news and other programs. Advanced video production techniques.

**424 ADVANCED NEWS PRODUCING FOR BROADCAST** (1+6) 3 credits
Practice in formatting newscasts, including use of graphics, timing, transitions, etc. Organizational and writing skills are stressed. Prerequisite: JOUR 423.

**425 PUBLIC AFFAIRS REPORTING AND PRODUCING FOR BROADCAST** (1+6) 3 credits
Production of public affairs programs for radio and television. Includes public service programming, community ascertainment, local-angle programs, talk shows and documentaries. Prerequisite: JOUR 423.

**426 BROADCAST STATION OPERATION** (2+3) 3 credits
Survey of broadcast station personnel, station organization, broadcast sales, operation of broadcast stations, and station relations with agencies, representatives, and other businesses. Prerequisite: JOUR 423.

**427, 627 DOCUMENTARY PRODUCTION FOR BROADCAST** (1+6) 3 credits
Creation of longer stories for television. Includes production of feature stories, educational pieces and investigative reports. Equal emphasis on writing and production skills. Prerequisite: JOUR 423.

**429 DIRECTING FOR TELEVISION** (1+6) 3 credits
Television production techniques. Includes the use of television graphics, audio, timing and organizational skills. Prerequisite: JOUR 423.

**431 ADVERTISING PHOTOGRAPHY AND GRAPHICS** (1+6) 3 credits
Photography for advertisements, packaging and product labels. Prerequisite: JOUR 331.

**433 ADVERTISING CASE STUDIES** (1+6) 3 credits
Development of an advertising campaign for the approval of a client. Preparation and placing of advertisements. Prerequisite: JOUR 431.

**435 RETAIL ADVERTISING** (2+3) 3 credits
Creating advertising for retail stores, service groups and professional people. Stresses pre- and post-testing techniques. Prerequisite: JOUR 331.

**441 PUBLIC RELATIONS PROBLEMS** (3+0) 3 credits
Practical experience in solving public relations problems for nonprofit organizations in the community. Prerequisite: JOUR 341.

**451, 651 MAGAZINE PUBLISHING** (3+0) 3 credits
Creating a new magazine from marketing research through production and sale. Maximum of 6 credits. Prerequisite: JOUR 203.

**483, 683 PUBLIC AFFAIRS REPORTING** (2+2) 3 credits
Covering the three branches of government: executive, legislative and judicial. Prerequisite: JOUR 203.

**487, 687 MEDIA MANAGEMENT** (3+0) 3 credits
Training, style, goals and organization of media managers. How they balance product quality and service with commercial achievement.

**490, 690 SPECIAL PROBLEMS** 1 to 3 credits
Pursuit of a special interest in journalism.

**493 INDEPENDENT STUDY** 1 to 3 credits
Special projects in journalism.

**499 PROFESSIONAL INTERNSHIP** (1+6) 3 credits *S/U only*
Supervised on-the-job experience in newspapers, magazines, radio and television stations, advertising and public relations agencies.

**701 MEDIA RESEARCH METHODS** (3+0) 3 credits
Methods common to mass communication research including surveys, content analysis and experimental design. Use of computers in gathering and analyzing data.

**702 QUALITATIVE RESEARCH METHODS** (1+6) 3 credits
Principals and practices of Opinion and Attitude Psychographic Research methods for news reporting, advertising, and public relations.

**703 MEDIA DYNAMICS LN SOCIETY** (3+0) 3 credits
Examination of the structure, functions and performance of the mass media and their dynamic relationship to American society in the context of communication theory and intellectual thought.

**705 MEDIA TECHNOLOGIES** (3+0) 3 credits
Analysis of technological developments in information dissemination and their impact on public communication and media management.

**707 ANALYTIC WRITING** (3+0) 3 credits
Systematic gathering of information, including public records and data bases. Methods of analyzing complex information and placing it in context for the intended audience.

**771 TECHNICAL WRITING** (0+6) 3 credits
Principles and practices for technical writing, stressing research reports, refereed journal papers, technical manuals and news releases on scientific subjects. Planning, production and social responsibilities involved.

**773 SEMINAR: ISSUES IN AMERICAN MEDIA** (3+0) 3 credits
Historical and contemporary issues on journalism, advertising and public relations.

**775 SEMINAR: LEGAL RESTRAINTS ON THE MEDIA** (3+0) 3 credits
Analysis of laws and regulations affecting the media.

**777 SEMINAR: INTERNATIONAL JOURNALISM** (3+0) 3 credits
Comparison of journalistic practices and relationships between media and government in Europe, Asia and the Third World.

**779 SEMINAR: LITERARY JOURNALISM** (3+0) 3 credits
Includes study of the styles and approaches employed by writers of fiction who emerged from journalism careers. Book-length journalism.

**790 SEMINARS** (3+0) 3 credits
(a) Persuasive writing, (b) book workshop, (c) finding and shaping ideas for magazines and film, (d) major issues in media, (e) visual presentation strategies, (f) media managment, (g) major issues in broadcast, (h) regulation of broadcast. Maximum of 6 credits.

**791 SPECIAL TOPICS** 1 to 3 credits
Maximum of 6 credits.

**792 SPECIAL PROBLEMS** 1 to 3 credits

**793 INDEPENDENT STUDY** 1 to 3 credits
Investigation into problems in journalism. Prerequisite: advanced approval of graduate adviser.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 PROFESSIONAL RESEARCH PROJECT** 4 credits *S/U only*

**798 PROJECT DEVELOPMENT** 2 credits *S/U only*
Prerequisite or corequisite: JOUR 797.

*Inactive Courses*
211 JOURNALISM IN THE HIGH SCHOOL (2+0) 2 credits
428,628 ON-THE-SCENE REPORTING FOR RADIO AND TELEVISION (1+2) 2 credits

# JUDICIAL STUDIES (J S)

**402 INTRODUCTION TO NON-LAWYER JUDICIAL STUDIES** (4+0) 4 credits
Introduction for non-lawyer special court judges of fundamental legal principles and procedures with emphasis on criminal trial procedures; covers legal research; communication skills and a mock trial.

**403 SEARCH AND SEIZURE** (2+0) 2 credits
Comprehensive examination of exclusionary rules derived from the Fourth Amendment, current trends and future developments.

**404 EVIDENCE IN SPECIAL COURTS** (2+0) 2 credits
Court rulings on evidentiary areas: relevancy; competency and privileges; opinion and expert testimony; examination of witnesses; hearsay and constitutional limitations.

**405 ALCOHOL AND DRUGS** (2+0) 2 credits
Judicial role in cases involving alcohol and substance abuse including plea bargaining, evaluation of treatment, penalties and referrals.

**406 TRAFFIC COURT PROCEEDINGS** (2+0) 2 credits
Aspects of traffic court proceedings: calendar; adjudication; arraignments; pleas; addictive behavior; admissibility of technical evidence; sentencing and corrective penalization.

**407 SMALL CLAIMS** (2+0) 2 credits
Comprehensive examination of the role of the small claims court and the judge through the analysis of administrative, judicial and public relations problems and possible solutions.

**408 SENTENCING MISDEMEANANTS** (2+0) 2 credits
Surveys the sentencing process and judge's role regarding sentencing, probation, sentence bargaining, alternatives and sanctions in misdemeanor cases.

**410 ADVANCED EVIDENCE** (2+0) 2 credits
Intensive examination of evidence, including an understanding of legal terminology, admissibility of evidence, the ability to recognize evidentiary issues, and to rule quickly and correctly.

**411 DEVELOPING A COURT INFORMATION SYSTEM** (2+0) 2 credits
Comprehensive examination of court computer systems, security and accuracy standards, hardware and software options, case flow management, statewide systems, and information agencies with computer access.

**412 DOMESTIC VIOLENCE** (2+0) 2 credits
Explores psychological issues and law surrounding spousal abuse, child sexual molestation, and physical and emotional abuse of children, and examines child testimony and cross-examination.

**415, 615 JUDICIAL WRITING** *S/U only*
Examines effective examples of good legal writing; identifies underlying principles of English composition; encourages judges to adopt clear, concise style by writing and rewriting.

**510 GENERAL JURISDICATION** (6+0) 6 credits *S/U only*
Comprehensive introduction to judicial system, role of judges, recent developments (legal, managerial, technological) in trials and the judiciary as a social institution.

**560 CORE COLLEGE** (2+0) 2 credits *S/U only*
Foundation of knowledge and skills in the area of juvenile law with emphasis on decision-making, dispositional alternatives and special problems relating to children.

**613 CRIMINAL EVIDENCE** (2+0) 2 credits *S/U only*
Analyzes how rules of evidence, emphasizing federal rules, are applied to criminal trials. Provides some historical perspective starting with common law.

**614 CIVIL LAW** (2+0) 2 credits *S/U only*
Examines significant developing areas of civil litigation: professional malpractice, products liability, commercial law, class actions, civil rights and comparative negligence.

**616 COURT MANAGEMENT** (2+0) 2 credits *S/U only*
Presents and analyzes a working model for trial courts intended to provide practical managerial methods to avoid or lessen court delay.

**617 CIVIL EVIDENCE** (2+0) 2 credits *S/U only*
Identification and analysis of common evidentiary problems faced by general jurisdiction courts in civil cases.

**618 DECISION-MAKING PROCESS** (4+0) 4 credits *S/U only*
Identifies the ingredients of the decision-making process and acquaints judges with the psychological, sociological and philosophical aspects of dispute resolutions.

**619 GREAT ISSUES IN LAW AS REFLECTED IN LITERATURE** (2+0) 2 credits *S/U only*
Explores significant moral and legal issues in American society. Readings from literary sources, judicial opinions and scholarly treatises.

**620 CONSTITUTIONAL CRIMINAL PROCEDURE** (2+0) 2 credits *S/U only*
Analyzes trends in the criminal justice system with particular attention to Fourth, Fifth, Sixth and Fourteenth Amendment cases.

**621 THE JUDGE AND THE TRIAL** (2+0) 2 credits *S/U only*

Detailed examination and analysis of the judge's role and responsibility before, during and after trial.

622 MEDICAL EVIDENCE (2+2) 2 credits *S/U only*
Overview of use of medical evidence in the courtroom: nature of scientific evidence, expert testimony, pathology, toxicology, child abuse, and technological innovation.

623 HANDLING CAPITAL CASES (2+0) 2 credits
Techniques for institutiong and maintaining high quality court management of capital cases; addresses the demands and judicial responsibilities unique to capital cases.

624 DRUGS AND THE COURTS (2+0) 2 credits
Examines societal attitudes toward drugs, patterns of abuse, nature of abuse, nature of addition and treatment, management strategies, evaluation and assessment, and identification procedures.

625 DISPUTE RESOLUTION (2+2) 2 credits
Examines strength, weaknesses, and potential uses of alternative dispute resolution methods, including arbitration, mediation, many-trials, and summary jury trials.

661 FAMILY LAW AND DOMESTIC RELATIONS ISSUES (2+0) 2 credits *S/U only*
Examination of current issues and concerns in family law with emphasis on custody and child support decisions.

662 EVIDENTIARY PROBLEMS IN THE JUVENILE AND FAMILY COURT (2+0) 2 credits *S/U* only
Examination of current evidentiary issues and concerns arising in juvenile and family courts.

663 ADVANCED JUVENILE JUSTICE MANAGEMENT INSTITUTE (2+0) 2 credits *S/U only*
Examination of management concerns for juvenile court management including budgeting, personnel recruitment, selection and performance evaluation.

690 TOPICS IN COMPARATIVE JURISPRUDENCE (2 or 3+0) 2 or 3 credits *S/U only*
Historical and current perspectives on various aspects of the legal system including the legal profession, the court system, criminology, social services, and academic research. (a) England, (b) Scotland.

710 HISTORY AND THEORY OF JURISPRUDENCE (3+0) 3 credits
General aspects of law from philosophical, historical and social perspectives: jurisprudence; legal history; courts and the administration of justice; and punishment, culture and society.

715 JUSTICE, LAW AND LITERATURE (3+0) 3 credits
Inquiry into ethical perspectives of judicial and legal experience through study and discussion of literary primary texts, including novels, plays, poems and intellectual prose.

730 LAW AND ECONOMICS (3+0) 3 credits
Examines economic implications and objectives of legal institutions and legal rule making: including common law, public regulations of the market and legal procedures.

735 LAW AND THE SOCIAL AND BEHAVIORAL SCIENCES (3+0) 3 credits
Assesses social and historical context of law, major roles and processes in legal institutions; includes major focus on use of scientific research in actual cases.

740 MEDICAL AND LEGAL ISSUES (3+0) 3 credits
Analysis of selected issues, combining scientific/medical and case law perspective. Topics include medical malpractice, informed consent, parents' rights, birth, AIDS, drug addiction.

745 PUBLIC POLICY AND THE COURTS (3+0) 3 credits
Examines the theory and practice of American policymaking, the ediology and structure of this process, and applies this understanding to selected policy areas.

750 CRIMINOLOGY: CAUSATION, ENFORCEMENT, RESPONSIBILITY (3+0) 3 credits
Focuses on major issues in understanding of and policies affecting crime, its control, and the system of criminal justice, including limits of individual responsibility for crime.

755 ECONOMICS OF ENVIRONMENTAL AND NATURAL RESOURCE ISSUES IN THE COURTS (3+0) 3 credits
Introduction to economic concepts applied to natural and environmental resource law. Economic implications of various environmental laws. Scientific interpretation of pollution and pollution impacts.

760 LANGUAGE AND JUDICIAL PROCESS (3+0) 3 credits
Theories of legal language in contemporary criticism, philosophy of actions, sociology of law, psychology of discourse, and structure of English; their uses in judicial practice.

797 THESIS 1 to 6 credits

## LIBRARY SCIENCE (L SC)

135 USE OF THE LIBRARY (1+0) 1 credit
Introduction to library search strategy; effective use of WolfPAC and card catalog; finding periodical articles through printed and computer-based indexes and abstracts, resources available through library departments and branch libraries.

303 BIBLIOGRAPHY AND GENERAL REFERENCE (3+0) 3 credits*
Basic reference materials, national and trade bibliography, general reference works (encyclopedias, handbooks, etc.), special bibliographies.

305 HISTORY AND ORGANIZATION OF LIBRARIES (3+0) 3 credits*
Evolution of libraries and description of principal fields of library service, their organization, and special problems.

309 SELECTION AND ACQUISITION OF LIBRARY MATERIALS (3+0) 3 credits*
Theories, principles, and practice of selecting books and other library materials with particular emphasis on public and special libraries.

381 PRACTICE AND HISTORY OF PRINTING (0+6) 3 credits
History of graphic communication in conjunction with actual practice of printing: typographic design, block making, typesetting, press work. (Same as ART 381.)

490 SPECIAL TOPICS IN LIBRARIANSHIP 1 to 3 credits
Exploration of a particular aspect of librarianship, e.g., a special subject area, an administrative or service function, or a technical system or process. Maximum of 9 credits when content differs.

## MANAGERIAL SCIENCES (MGRS)

101 INTRODUCTION TO BUSINESS (3+0) 3 credits
Character of enterprise in the U.S. Organization and administration, production, human resources, information for control of management decision, marketing, finance, business and society. Not open to Business Administration upper-division students.

270 PRINCIPLES OF REAL ESTATE (3+0) 3 credits
Economic, legal, financial, marketing, managerial and operational aspects of real estate.

UPPER-DIVISION COURSES: Business students must have satisfactorily completed the entire lower-division business cote (see section on Upper-Division Courses in the College of Business Administration section).

310 MARKETING PRINCIPLES (3+0) 3 credits
Objectives and policies of marketing managers as influenced by marketing institutions, the functions performed and consumer wants and needs. Prerequisite: completion of lower-division business core.

*Contact director of librariers for information.

**312 CONSUMER BEHAVIOR** (3+0) 3 credits
Nature and determinants of consumer behavior. Attention focused on the influence of socio-psychological factors (such as personality, small groups, demographic variables, social class and culture) on the formation of consumer's attributes, consumption and purchasing behavior. Prerequisite: MGRS 310.

**314 MARKET STRUCTURE AND CHANNELS** (3+0) 3 credits
Theory, principles and channel implications of wholesale and retail distribution; factors affecting channels; physical distribution. Prerequisite: MGRS 310.

**316 BUSINESS MARKETING MANAGEMENT** (3+0) 3 credits
Applications of marketing concepts to problems in planning industrial marketing strategy, structuring industrial buyer behavior, managing the marketing mix and negotiating trade relationships from a management perspective. Prerequisite: MGRS 310.

**323 ORGANIZATION AND INTERPERSONAL BEHAVIOR** (3+0) 3 credits
Analysis of the internal organization structure and of executive roles and functions in the business enterprise and other goal-directed institutions. Theory and design of organizational structure, impact of work-flow plans, leadership patterns and control systems upon human behavior. Prerequisite: completion of lower-division business core.

**325 LEGAL ENVIRONMENT** (3+0) 3 credits
Nature and function of law: contracts and private property as basic concepts in free enterprise; the legal system and evolution of legal attitudes. Prerequisite: completion of lower-division business core.

**345 PURCHASING MANAGEMENT** (3+0) 3 credits
Purchasing organization and practice of the industrial enterprise. Includes securing the proper material at the proper time, place, price and quantity.

**351 TRANSPORTATION** (3+0) 3 credits
Development of various means of transportation and accompanying regulations; rate, traffic, service and coordination problems of our transportation system. Prerequisite: MGRS 373.

**352 OPERATIONS MANAGEMENT** (3+0) 3 credits
Quantitative methods and models for decision making. Topics include linear programming, plant layout, quality control, line balancing, inventory models, and simulation. Prerequisite: lower-division business core.

**353 RISK AND INSURANCE** (3+0) 3 credits
Theory of risk, introduction to risk management, principles and legal aspects of insurance, survey of property and casualty insurance. Prerequisite: EC 101 or equivalent. Meets Nevada Insurance Division regulations.

**362 PRODUCTION MANAGEMENT** (3+0) 3 credits
Application to manufacturing and service organizations. Includes capital investment analysis; capacity planning; plant layout; production processes; research and development; cost calculations; production inventory and quality control and simulation. Prerequisite: statistics, MGRS 352.

**365 CORPORATION FINANCE** (3+0) 3 credits
Financial management of the business enterprise. Topics include financial analysis, planning and forecasting, management of working capital, decisions involving long-term assets, sources and forms of long-term capital, financial structure and the cost of capital. Prerequisite: completion of lower-division business core.

**367 HUMAN RESOURCE/PERSONNEL MANAGEMENT** (3+0) 3 credits
Management of human resource as a primary function of all managers. Emphasis on personnel processes significant in improving labor utilization and productivity. Review of pertinent legislation dealing with manpower and labor-management relations. Not applicable toward an advanced degree in managerial sciences.

**370 INVESTMENTS** (3+0) 3 credits
Analysis of investment risks, media and investment portfolios with relation to requirements and policies of individual investors. Prerequisite: MGRS 365.

**373 BUSINESS LAW I** (3+0) 3 credits
Nature, origin and philosophy of law and procedures. Law of contracts, agency, partnerships and sales. Prerequisite: completion of lower-division business core.

**374 BUSINESS LAW II** (3+0) 3 credits
Continuation of MGRS 373. Law of corporations, secured transactions, property, negotiable instruments, insurance and bankruptcy. Prerequisite: MGRS 373.

**401, 601 LIFE INSURANCE** (3+0) 3 credits
Analysis and treatment of personal risks, use of life, health and annuity contracts in realm of estate planning, actuarial concepts, purchase decisions, regulatory problems. Prerequisite: MGRS 353.

**402, 602 PROPERTY LIABILITY INSURANCE** (3+0) 3 credits
Essentials of risk management, principles of property and liability insurance contracts pertaining to pure risks of the firm. Some emphasis on managerial problems faced by insurance companies within socio-economic and legal constraints. Prerequisite: MGRS 353.

**403, 603 RISK MANAGEMENT SEMINAR** (3+0) 3 credits
Selected topics covering the management of static business risks. Emphasis on choosing among alternative risk handling techniques. Includes employee benefit programs, risk retention and financing, business continuation uses of life insurance and estate planning for the entrepreneur.

**404, 604 PROBLEMS IN BUSINESS FINANCE** (3+0) 3 credits
Case analysis and application of financial concepts to organization and operations of business enterprises. Prerequisite: MGRS 365.

**415, 615 COMMERCIAL BANK MANAGEMENT** (3+0) 3 credits
Administration and operation of commercial banks. Topics include internal organization; loan and investment administration, regulation and supervision; earnings, expense and dividend policies; capital structure and financing policies; new business development. Prerequisite: MGRS 365.

**420, 620 INTERNATIONAL FINANCE** (3+0) 3 credits
Financing international business operations and investments, financial decision making in the multinational firm, the international monetary system, balance of payments, foreign exchange rates, international financial institutions. Prerequisite: MGRS 370.

**422, 622 PROMOTIONAL MANAGEMENT** (3+0) 3 credits
Strategic communication problems faced by marketing management; allocation of resources to promotional mix, evaluation of communication effectiveness, and coordination with other marketing strategies. Emphasizes relevancy of consumer motivation and behavior to promotional strategies. Prerequisite: MGRS 310.

**424, 624 SALES AND NEGOTIATION MANAGEMENT** (3+0) 3 credits
Concepts and techniques used in the analysis, planning, implementation, and control of modern sales and negotiation strategies. Prerequisite: MGRS 310 or B A 760.

**452, 652 COMPARATIVE MANAGEMENT** (3+0) 3 credits
Analysis of international similarities and differences in managerial functions, processes and effectiveness and consideration of the changes evolving in management systems in various countries. Prerequisite: MGRS 323, 352.

**453, 653 ORGANIZATIONAL CHANGE AND DEVELOPMENT** (3+0) 3 credits
Analysis of strategies to bring about change in organizational structure; tasks; individual behavior; interpersonal relationships; and relationships of groups. Prerequisite: MGRS 323.

**455, 655 LOGISTICS MANAGEMENT** (3+0) 3 credits
Physical supply and physical distribution systems, optimum location of storage and transfer sites, material handling and selection of transportation media. Prerequisite: MGRS 310, 351, 352.

**457 RESEARCH METHODS FOR LOGISTICS** (3+0) 3 credits
Data needs identification, data collection issues under regulated/unregulated regimes, statistical and quantitative methods of analysis, research evaluation and practical issues. Prerequisite: EC 262, MGRS 351, 352.

**458 INTERNATIONAL LOGISTICS** (3+0) 3 credits
Design and operation of international logistics systems. Export-import issues, multi-national sourcing and distribution strategies, channel management, and comparative transportation systems and policies. Prerequisite: MGRS 351, 455.

**459, 659 ANALYSIS AND DESIGN OF LOGISTICAL SYSTEMS** (3+0) 3 credits
The modeling process, forecasting, data analysis, inventory analysis, location analysis, vehicle scheduling, use of specially designed software packages. Prerequisite: MGRS 455.

**460, 660 MANAGEMENT: THEORY AND PRACTICE** (3+0) 3 credits
Analysis of the nature and problems of and approaches to management planning, organizing, decision making and controlling through a study of recent relevant literature and selected cases. Prerequisite: MGRS 323.

**461, 661 ADVANCED OPERATIONS MANAGEMENT** (3+0) 3 credits
Theory and application to business systems of advanced quantitative decision models such as: linear programming and sensitivity analysis, network models and algorithms, dynamic programming, probabilistic-dynamic programming, integer programming, and computer simulation. Prerequisite: MGRS 352, 362.

**462, 662 BUSINESS AND SOCIETY** (3+0) 3 credits
Social responsibilities of business executives, ethics, government relations literature; role of the enterprise as subsystem of societal system; responsibilities to owners, work force, customers, suppliers and government.

**467 EMPLOYEE STAFFING AND SELECTION** (3+0) 3 credits.
Focus on issues associated with the external and internal staffing process. Emphasis on (a) legal issues, (b) methods of selection, (c) economic impact. Prerequisite: MGRS 323, 367.

**468 COMPENSATION MANAGEMENT** (3+0) 3 credits
Survey of theories underlying compensation and reward systems in organizations. Emphasis on the analysis and evaluation of jobs, criteria and procedures for determining wage levels. Prerequisite: MGRS 323, 367.

**470, 670 INTERNATIONAL MARKETING** (3+0) 3 credits
Marketing structure and policies employed in export and import trade. Consideration of legal, cultural and economic factors in marketing abroad. Prerequisite: MGRS 310.

**471, 671 MARKETING RESEARCH** (3+0) 3 credits
Basic research techniques, survey techniques, sources of marketing information, criteria for evaluation of research studies, and practical experience in making marketing research studies. Prerequisite: MGRS 310; EC 262.

**472 RETAIL MANAGEMENT** (3+0) 3 credits
Basic concepts, methods, and applications of modern retail practice; topics include trade area analysis, layout design, merchandise management, price, promotion, planning, etc. Prerequisite: MGRS 310, 323, 352, 365.

**481, 681 INTERCOLLEGIATE BUSINESS GAMES** (2+3) 3 credits
Business decision making in a competitive environment involving policy making; economic, sales and production forecasting; financial analysis; production scheduling; capital budgeting; marketing; research and development planning; pricing; advertising and inventory management. Prerequisite: MGRS 365.

**482 INTERNSHIP** (1+3 to 6) 2 to 3 credits *S/U only*
An internship with local firms, providing exposure to the real world environment in student's major.

**487 ENTREPRENEURSHIP** (3+0) 3 credits
How to pursue entrepreneurial opportunities and mechanics of opening a business. Prerequisite: ACC 309 or 313; MGRS 316.

**488 STRATEGIC MANAGEMENT AND POLICY** (3+0) 3 credits
Emphasis on the application of knowledge from all functional areas of business to organizational problems and the formulation and implementation of organizational strategies. Prerequisite: MGRS 310, 323, 352, 365.

**489, 689 MARKETING MANAGEMENT** (3+0) 3 credits
Application of marketing principles and methods to case problems in merchandising, distribution channels, brand policy, planning and administering sales programs and the like. Prerequisite: MGRS 310.

**490 INDEPENDENT STUDY** 1 to 3 credits
Study and research in business administration. Maximum of 6 credits.

**491, 691 ADVANCED SEMINAR IN MANAGEMENT** (3+0) 3 credits
Advanced study of selected topics in management. Maximum of 6 credits.

**492, 692 ADVANCED SEMINAR IN MARKETING** (3+0) 3 credits
Advanced study of selected topics in marketing. Maximum of 6 credits.

**493, 693 ADVANCED SEMINAR IN FINANCE** (3+0) 3 credits
Advanced study of selected topics in finance. Maximum of 6 credits.

**494 ADVANCED SEMINAR IN LOGISTICS** (3+0) 3 credits
Advanced study of selected topics. Maximum of 6 credits.

*Graduate standing is required as a prerequisite for all 700-level courses in the College of Business Administration.*

*Inactive Courses*
301 INSTITUTIONAL MANAGEMENT I (3+0) 3 credits
302 INSTITUTIONAL MANAGEMENT II (3+0) 3 credits
375 LAND RESOURCES: VALUE AND ALLOCATION (3+0) 3 credits
378 REAL ESTATE LAW (3+0) 3 credits
387 WAGE AND SALARY ADMINISTRATION (3+0) 3 credits
427, 627 PROBLEMS IN LABOR RELATIONS AND PERSONNEL ADMINISTRATION (3+0) 3 credits
430, 630 REAL ESTATE EVALUATION (3+0) 3 credits
431 631 REAL ESTATE APPRAISAL PROBLEMS (+0) 3 credits
477 677 SEMINAR IN INSTITUTIONAL MANAGEMENT (3+0) 3 credits
604 PROBLEMS IN BUSINESS FINANCE (3+0) 3 credits

# MATHEMATICS (MATH)

*Each student is required to present to the Mathematical Department an ACT or SAT standard mathematics score and a copy of the admission certificate prior to the first registration. Students with previous college mathematics experience should contact the department chair for proper placement before enrolling.*

**101 INTERMEDIATE ALGEBRA** (3+0) 3 credits
Basic properties of the real numbers; standard algebraic techniques, including exponents, factoring, fractions, radicals; problem solving; linear and quadratic equations; the concept of graphing. Prerequisite: one unit of high school algebra and one unit of high school geometry.[1]

**105 FUNDAMENTALS OF COLLEGE MATHEMATICS** (3+0) 3 credits
Equations and inequalities; relations and functions; linear, quadratic, polynomial, exponential, and logarithmic functions; circles, lines, and parabolas; right-triangle trigonometry; finite probability measures; some statistical concepts. Prerequisite: satisfactory score on qualifying examination or MATH 101.[2]

**110 COLLEGE ALGEBRA** (3+0) 3 credits
Relations, functions, graphing; equations; linear, quadratic, polynomial systems; matrices and determinants; sequences, mathematical induction, compound interest and amortization, binomial theorem; the complex numbers; logarithms; combinatorics. Prerequisite: satisfactory score on qualifying examination or MATH 101.

**115 ALGEBRA AND TRIGONOMETRY** (5+0) 5 credits
Equations, relations, functions, graphing; polynomial, rational, exponential, logarithmic, and circular functions with applications; coordinate geometry of lines and conics; analytic trigonometry; matrices, determinants; binomial theorem. Prerequisite: satisfactory score on qualifying examination or MATH 101.[2]

**173 ELEMENTARY SCHOOL MATHEMATICS I** (3+0) 3 credits
Mathematics needed by those teaching new-content mathematics courses at the elementary school level with emphasis on the structure of the real number system and its subsystems. Designed for students seeking a teaching certificate in elementary education. Open to others only with approval of department chair.[1]

**174 ELEMENTARY SCHOOL MATHEMATICS II** (3+0) 3 credits
Continuation of MATH 173. Prerequisite: MATH 173.[1]

[1]This course does not satisfy the university core mathematics requirement.
[2]This course satisfies the university core mathematics requirement.

**200 DIRECTED STUDY** 1 to 3 credits
Individual study conducted under the direction of a faculty member. Limited to 6 credits except under special circumstances.

**210 MATHEMATICS OF FINANCE** (3+0) 3 credits
Interest, annuities, sinking funds, depreciation and amortization. Prerequisite: MATH 101 or 1-1/2 units of high school algebra. Offered through UNR correspondence study only.[1]

**211 ELEMENTS OF CALCULUS I** (3+0) 3 credits
Fundamental ideas of analytic geometry and calculus, plane coordinates, graphs, functions, limits, derivatives, integrals, the fundamental theorem of calculus, rates, extrema and applications thereof. Prerequisite: satisfactory score on qualifying examination or MATH 115.[2]

**213 CALCULUS FOR SCIENCE I** (3+0) 3 credits
Calculus in the plane with emphasis on applications in the sciences, including curve sketching, optimization, related rates, and vectors in the plane. Prerequisite: satisfactory score on qualifying examination or MATH 115.[2]

**214 CALCULUS FOR SCIENCE II** (3+0) 3 credits
Multivariable calculus, including partial differentiation, multiple integration, calculus of vector-valued functions, optimization of functions of several variables and Lagrange multipliers. Prerequisite: one semester of calculus.

**215 CALCULUS I** (4+0) 4 credits
Fundamental concepts of analytic geometry and calculus; functions, graphs, limits, derivatives and integrals. Prerequisite: satisfactory score on qualifying examination or MATH 115. A student whose current progress is unsatisfactory in the opinion of the instructor may be required to attend supervised study sessions.[2]

**216 CALCULUS II** (4+0) 4 credits
Continuation of MATH 215; transcendental functions, methods of integration, conics, vectors. Prerequisite: MATH 215. A student whose current progress is unsatisfactory in the opinion of the instructor may be required to attend supervised study sessions.

**217 CALCULUS III** (4+0) 4 credits
Continuation of MATH 216; infinite series, three-dimensional calculus. Prerequisite: MATH 216.

**301 STUDIES IN THE HISTORY OF MATHEMATICS** (2+0) 2 credits
Survey of mathematical developments from ancient times to present. Emphasis on originators, origins and consequences of significant mathematical contributions.

**307 SYMBOLIC LOGIC** (3+0) 3 credits
(See PHIL 326 for description.)

**308 INTRODUCTION TO FOUNDATIONS OF MATHEMATICS** (3+0) 3 credits
Primitive terms, concepts, axioms, axiomatic method, proof, dependence, completeness, consistency, validity, models; set theory, cardinality, real numbers and other structures; formalism, intuitionism, cultural and scientific settings. Prerequisite: MATH 217, for those majoring in the physical sciences. (Same as PHIL 308.)

**311 MULTIVARIABLE CALCULUS** (3+0) 3 credits
Mappings between Euclidean spaces, their differentials and partial derivatives; the chain rule; extremalization computations; line and surface integrals; the theorems of Gauss, Green and Stokes. Prerequisite: MATH 217, 330.

**320 DIFFERENTIAL EQUATIONS** (3+0) 3credits
Scaler-valued differential equations; linear theory, differential operators, inhomogenous constant coefficient linear initial-value problems. Green's functions, Wronskians; non-linear first order initial-value problems. Prerequisite: MATH 217.

**321 DIFFERENTIAL AND DIFFERENCE EQUATIONS I** (3+0) 3 credits
Vector-valued linear differential equations, power series solutions, asymptotic behavior; the Legendre, Euler, and Bessel equations; Sturm-Liouville eigenvalue problems, autonomous systems, stability; finite difference methods; introduction to second order partial differential equation boundary-value problems. Prerequisite: MATH 320.

**330 LINEAR ALGEBRA I** (3+0) 3 credits
Systems of linear equations; matrix algebra; vector spaces: linear independence, bases, dimension, vector subspace configuration; linear maps, their matrix representations and structure theorems. Prerequisite: MATH 216.

**331 GROUPS, RINGS AND FIELDS** (3+0) 3 credits
Elementary structure of groups, rings and fields, including homomorphisms, automorphisms, normal subgroups, ideals and Galois theory. Prerequisite: MATH 217.

**341 METRIC TOPOLOGY** (3+0) 3 credits
Topological structures induced by metrics; topological concepts versus metric concepts; continuity, compactness, local compactness, connectedness; boundedness, total boundedness, completeness, uniform continuity; separation and countability conditions. Prerequisite: MATH 217.

**352 PROBABILITY AND STATISTICS** (3+0) 3 credits
Probability experiments; sample spaces, discrete and continuous random variables and distributions; mathematical expectation, central limit theorem; hypothesis testing and linear regression. Prerequisite: two semesters of calculus.

**371 CONCEPTS OF SCHOOL MATHEMATICS I** (3+0) 3 credits
Theoretical development of the ideas underlying school mathematics. Emphasis on sets, algebra and ordering. Designed for students seeking a teaching certificate. Open to others only with the approval of department chairman.

**372 CONCEPTS OF SCHOOL MATHEMATICS II** (3+0) 3 credits
Continuation of MATH 371. Emphasis on geometry mensuration and coordinate systems. Prerequisite: MATH 371.

**373 THEORY OF POSITIVE INTEGERS** (3+0) 3 credits
Mathematical logic, quantifiers, induction, axiomatic development of the theory of positive integers; fundamental theorem of arithmetic. Emphasis is on problem solving and theorem proving. Prerequisite: MATH 215 or consent of instructor.

**381 DISCRETE MATHEMATICS** (3+0) 3 credits
Quantifiers and logical operators; sets, functions, binary relations, digraphs, and trees; inductive definitions, counting techniques, recurrence systems analysis of algorithms, searching and sorting algorithms. Prerequisite: C S 183; MATH 215.

**400 600 INDEPENDENT STUDY** 1 to 3 credits
Individual study conducted under the direction of a faculty member. Limited to 6 credits except under special circumstances.

**401, 601 SET THEORY** (3+0) 3 credits
Formalism, inference, axiomatic set theory, unicity, pairs, relations, functions ordinals, recursive definition, maximality, well ordering, choice, regularity, equinumerosity, cardinal arithmetic.

**410, 610 COMPLEX ANALYSIS** (3+0) 3 credits
Complex numbers, analytic and harmonic functions. Cauchy-Reimann equations, complex integration, the Cauchy integral formula, elementary conformal mappings. Laurent series, calculus of residues. Prerequisite: MATH 311.

**411, 611 REAL ANALYSIS** (3+0) 3 credits
Continuity, monotonicity, differentiability; uniform convergence and continuity and differentiability; Stone-Wierstrass Theorem; multivariable functions, linear transformations, differentiation, inverse and implicit functions, Jacobians and change of variable; Lebsgue measure and integration. Prerequisite: MATH 311, 330, 341.

**412, 612 FUNCTIONAL ANALYSIS** (3+0) 3 credits
Normed vector spaces, Banach and Hilbert spaces, linear functionals and operators, the Hahn-Banach, closed graph and uniform boundedness theorems with applications, dual spaces, self adjoint operators, compact operators. Prerequisite: MATH 311, 330, 341.

**419, 619 TOPICS IN ANALYSIS** (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as differential forms, analytic

[1]This course does not satisfy the university core mathematics requirement.
[2]This course satisfies the university core mathematics requirement.

functions, distribution theory, measure and integration, constructive analysis. Maximum of 6 credits.

420, 620 MATHEMATICAL MODELING (3+0) 3 credits
Formulation, analysis and critique of methods of mathematical modeling; selected applications in physics, biology, economics, political science and other fields. Prerequisite: MATH 217 and 352 or 214. Corequisite: MATH 214 or 217.

422, 622 OPTIMAL ANALYSIS (3+0) 3 credits
Analysis of extrema of real-valued functions and functionals with applications. Introduction to calculus of variations and optimal control. Prerequisite: MATH 311, 320.

423, 623 DIFFERENTIAL AND DIFFERENCE EQUATIONS II (3+0) 3 credits
Partial differential equations; first order equations, initial and mixed boundary-value problems for the second order Laplace, heat and wave equations; finite difference approximation. Prerequisite: MATH 320.

429, 629 TOPICS IN APPLIED ANALYSIS (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as: integral transforms, approximation of functions, nonlinear mathematics, stability theory, matrix exponentials. Maximum of 6 credits.

430, 630 LINEAR ALGEBRA II (3+0) 3 credits
Vector spaces; duality, direct sums; linear maps: eigenvalues, eigenvectors, rational and Jordan forms; bilinear maps, quadratic forms; inner product spaces: symmetric, skewsymmetric, orthogonal maps, spectral theorem. Prerequisite: MATH 330.

435, 635 COMBINATORICS (3+0) 3 credits
Graph theory and enumeration. Searching, arrangement, selection, and network flow problems. Emphasis on algorithms useful for computers. Prerequisite: MATH 330.

439, 639 TOPICS IN ALGEBRA (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as Galois theory, number theory topological groups, combinatorial analysis, theory of graphs. Maximum of 6 credits.

441, 641 TOPOLOGY (3+0) 3 credits
Concepts of continuity, compactness, local compactness and connectedness in a general topological setting; separation and countability conditions; product and quotient topologies; homotopy, the fundamental group and covering spaces. Prerequisite: MATH 341.

442, 642 DIFFERENTIAL GEOMETRY (3+0) 3 credits
Geometry of curves and surfaces in space; Frenet's formulas; Cartan's frame fields, Gaussian curvature; intrinsic geometry of surface; congruence of surfaces; the Gauss-Bonnet theorem. Prerequisite: MATH 311.

443, 643 DIFFERENTIAL GEOMETRY AND RELATIVITY I 3+0) 3 credits
Manifolds, the tangent bundle, differential forms, exterior differentiation, Lie differentiation, Koszul connections, curvature, torsion, Cartan's structural equations, integration of differential forms. Prerequisite: MATH 311 or equivalent.

444, 644 DIFFERENTIAL GEOMETRY AND RELATIVITY II (3+0) 3 credits
Spacetimes, the Fermi-Walker connection, reference frames, particles and particle flows, electromagnetic fields, stress-energy tensors, matter models, black holes, gravitational waves, cosmological models. Prerequisite: MATH 443.

445, 645 INTRODUCTION TO RELATIVITY THEORY (3+0) 3 credits
Special relativity, redshift, Thomas precession; tensor fields, covariant differentiation, geodesics, curvature; Einstein field equations, a simple cosmological model, Schwarzschild spacetime, precession, Kruscal spacetime blackholes. Prerequisite: MATH 311 or equivalent.

449, 649 TOPICS IN GEOMETRY AND TOPOLOGY (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as differential topology, algebraic topology, convexity, topological vector spaces. Mathematical structures of special relativity. Maximum of 6 credits.

451, 651 PROBABILITY THEORY (3+0) 3 credits
Probability space axioms; random variables, expectation, univariant i multivariant distribution theory, sequences of random variab Tchebychev inequality, law of large numbers, and central limit theor Prerequisite: MATH 217, 352.

452, 652 STATISTICS I (3+0) 3 credits
Hypothesis testing: power, confidence intervals; estimation: choice estimators, desired properties of estimators; linear regression: Ga Markov theorems, design of experiments, ANOVA. Prerequisite: MA 352.

453, 653 STATISTICS II (3+0) 3 credits
Multivariant normal distributions; non-parametric methods in statis test procedures, estimation, rank correlation; sequential analysis; cen limit theorem and its applications. Prerequisite: MATH 452.

454, 654 INTRODUCTION TO STOCHASTIC PROCESSES (3+0) 3 credits
Discrete time stochastic processes: random walks, recurrent events, Mar chains, branching processes; continuous time processes: linear and nonlir birth-death processes and diffusions; renewal theory. Prerequisite: MA 451.

469, 669 MATHEMATICAL TOPICS IN THE MANAGEMENT SCIENCES (1+0 per credit) 1 to 3 credits
Variable content chosen from such topics as linear and integer progr ming nonlinear programming, game theory and optimization proble Maximum of 6 credits.

474, 674 SETS AND NUMBERS (3+0) 3 credits
Axiomatic theory of sets, relations and functions; natural numbers, inte rationals and reals constructed from sets; least upper-bound principle its consequences; complex numbers. Prerequisite: MATH 373.

475, 675 EUCLIDEAN AND NON-EUCLIDEAN GEOMETRY (3+0) 3 credits
Axiom systems, models, independence, consistency; incidence, dista betweenness, congruence, convexity; inequalities, parallels, perpend lars, the Klein model; Saccheri quadrilaterals, limit triangles, the r Euclidean geometry of Bolyai-Lobatchevsky. Prerequisite: MATH 37

480, 680 COMPUTER APPLICATIONS IN EDUCATION (1+0 per credit) 1 to 3 credits
(See C S 480, 680 for description.)[1]

483, 683 NUMERICAL METHODS I (3+0) 3 credits
Numerical solution of linear systems, including linear programming; it tive solutions of non-linear equations; computation of eigenvalues eigenvectors, matrix diagonalization. Prerequisite: MATH 330 or equ lent. (Same as C S 483, 683.)

484, 684 NUMERICAL METHODS II (3+0) 3 credits
Numerical differentiation and integration; numerical solution of ordi differential equations, two point boundary value problems; differ methods for partial differential equations. Prerequisite: MATH 32 equivalent. (Same as C S 484, 684.)

659 TOPICS IN PROBABILITY AND STATISTICS (1+0 per credit) 1 to 3 credits
Variable content chosen from among such topics as time series anal analysis of variance and design of experiments, and quality control reliability. Maximum of 9 credits.

701-702 NUMERICAL ANALYSIS AND APPROXIMATION (3+0) 3 credits each
Norms of vectors and matrices, computation of eigenvalues and eigen tors, matrix transformations, Welerstrass' approximation theo Chebyshev polynomials, best and uniform approximation, splines, proximation in abstract spaces.

703 COMPUTABILITY AND FORMAL LANGUAGES (3+0) 3 cred (See C S 703 for description.)

[1]This course does not satisfy the university core mathematics requiremer

**713-714 ABSTRACT AND REAL ANALYSIS** (3+0) 3 credits each
Metric spaces, abstract measures, measurable functions, integration, product measures, Fubini Theorem, topological measures, Haar measure, differentiation. Radon-Nikodym Theorem, linear spaces, Hahn-Banach Theorem, Riesz Representation.

**715-716 COMPLEX FUNCTION THEORY** (3+0) 3 credits each
Analytic functions, conformal mappings, Cauchy's theorem, power series, Laurent series, the Riemann mapping theorem, harmonic functions, subharmonic functions, canonical mappings of multiply connected regions, analytical continuation.

**731-732 MODERN ALGEBRA** (3+0) 3 credits each
Groups, fields, linear dependence, linear transformations, Galois theory.

**741-742 TOPOLOGY** (3+0) 3 credits each
Topological structures, uniform spaces, metric spaces, compact and locally compact spaces, connectivity, function spaces, topological algebra, elementary homological algebra, singular homology theory, cell complexes, homotopy groups.

**751 MATHEMATICAL METHODS IN OPERATIONS RESEARCH I** (3+0) 3 credits
Application of pertinent mathematical theories to deterministic models, including linear, nonlinear, dynamic and integer programming; duality theory; network analysis. Prerequisite: MATH 311, 330.

**752 MATHEMATICAL METHODS IN OPERATIONS RESEARCH II** (3+0) 3 credits
Application of pertinent mathematical theories to probabilistic models, including queueing theory; inventory theory; reliability; decision analysis; simulation. Prerequisite: MATH 311, 330, 352.

**753 STOCHASTIC MODELS** (3+0) 3 credits
Stochastic models of system noise, Brownian motion, parameter estimation and time series. Applications and mathematical characterizations of Gaussian, Poisson, Markov and stationary random processes. Prerequisite: MATH 311, 330, 352.

**773 TOPICS IN ALGEBRA** (3+0) 3 credits
Variable content chosen from such topics as theory of equations, number theory, and groups and permutations. Prerequisite: MATH 217, 330. Maximum of 9 credits.

**774 TOPICS IN GEOMETRY AND ANALYSIS** (3+0) 3 credits
Variable content chosen from such topics as plane algebraic curves, theory of surfaces, pseudo-Euclidean spaces. Prerequisite: MATH 217, 330. Maximum of 9 credits.

**775 TOPICS IN PROBABILITY AND STATISTICS** (3+0) 3 credits
Variable content chosen from among such topics as Markov Chains, multivariate statistics, and Brownian motion. Prerequisite: MATH 217, 330, 352. Maximum of 9 credits.

**780 TOPICS IN ADVANCED MATHEMATICS** 1 to 3 credits
Variable content chosen from such topics as mathematical methods in applied science, manifold theory, functional analysis, or geometric methods in ODE theory. Maximum of 9 credits.

**793 INDEPENDENT STUDY** 1 to 3 credits
Individual study conducted under the direction of a faculty member. Limited to 6 credits except under special circumstances.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

*Inactive Courses*
102 PLANE TRIGONOMETRY (2+0) 2 credits
140 ANALYTIC GEOMETRY (3+0) 3 credits.
163 INTRODUCTION TO PROBABILITY (2+0) 2 credits

# MECHANICAL ENGINEERING (M E)

**150 INTRODUCTION TO MECHANICAL ENGINEERING** (2+3) 3 credits
Introduces the design process including initial conceptualization (sketching), detailed drawings (drafting), and prototype fabrication (machine shop). Discussion of descriptive geometry; graph and chart preparation; design projects .

**198, 298, 398, 498 COOPERATIVE TRAINING REPORT** (1+0) 1 credit each
Preparation of written reports based on cooperative program assignments. Required of all students in cooperative programs during the summer or other semesters when on work assignments with cooperative program employers.

**201 COMPUTER PROGRAMMING** (2+3) 3 credits
Programming in FORTRAN illustrated by topics in computational mathematics. No previous knowledge of computer programming is assumed. Corequisite: MATH 217 or equivalent.

**241 STATICS** (3+0) 3 credits
(See C E 241 for description.)

**242 DYNAMICS** (3+0) 3 credits
Kinematics and kinetics of particles and rigid bodies in two and three dimensions; relative motion; work and energy; impulse and momentum. Prerequisite: M E 241. Corequisite: MATH 217.

**250 INTRODUCTION TO COMPUTER AIDED DESIGN** (2+3) 3 credits
Design and analysis of machine components using AUTOCAD and CADKEY on the IBM PC System 2. Introduction to dynamic simulation and graphic display. Prerequisite: M E 150.

**299 DIFFERENTIAL EQUATIONS** (3+0) 3 credits
Methods of solving ordinary differential equations with application to physical systems. Prerequisite: MATH 217. Required for mechanical engineering majors.

**300 INTRODUCTION TO ENGINEERING MATHEMATICS** (2+0) 2 credits
Methods of solving ordinary differential equations are investigated and applied. Both mathematical formulation of physical problems and solution of the resulting differential equations are stressed. Prerequisite: MATH 217. Not open to mechanical engineering majors.

**310 SYSTEM ANALYSIS AND DESIGN** (4+0) 4 credits
Mathematical modeling and response analysis of linear mechanical, electrical, hydraulic and pneumatic systems. Linearization of non-linear systems Introduction to experimental modeling. Control system analysis. Prerequisite: E E 201; M E 299, 367, 402.

**343 DYNAMICS OF MACHINERY** (2+0) 2 credits
Dynamical behavior of machine elements and mechanisms, inertia forces on linkages, two degrees of freedom vibrations, gyroscopic effects, selected special problems. Prerequisite: M E 242.

**351 MECHANICAL DESIGN** (3+3) 4 credits
Design of machine elements, emphasizing analysis. Using computer languages such as FORTRAN and design using interactive computer aided design facilities. Prerequisite: C E 372; M E 250.

**353 MANUFACTURING PROCESSES** (2+3) 3 credits
Metal casting, metal forming, rolling, forging, extrusion, drawing, sheet metal forming, powder metallurgy. Forming and shaping of plastics, composite materials, ceramics and glass, material. High Tc superconductor processing.

**367 ELEMENTARY FLUID MECHANICS** (3+0) 3 credits
Introduction to hydrostatics, conservation laws, dimensional analysis and boundary-layer theory. Corequisite: M E 242, 299 or equivalent.

**368 INTERMEDIATE FLUID MECHANICS** (3+0) 3 credits
Introductory treatment of potential theory, turbulence, boundary-layer theory, two-phase flow and numerical methods. Prerequisite: M E 367 or equivalent.

**371 THERMODYNAMICS I** (3+0) 3 credits
Principles of engineering thermodynamics. A study of the first and second laws, entropy, ideal and real gases and second-law analysis of engineering systems. Prerequisite: completion of physics requirements.

**372 THERMODYNAMICS II** (3+0) 3 credits
Continuation of M E 371 covering power and refrigeration cycles, gas

mixtures, thermodynamics relations, combustion and thermodynamics of high-speed flow. Prerequisite: M E 371.

**377 INTRODUCTION TO SOLAR ENERGY** (2+0) 2 credits
History of solar utilization. Characteristics of solar radiation. Design of structures to use solar energy. Principles of conversion of solar energy to other forms of energy. Prerequisite: PHYS 201.

**391 INSTRUMENTATION** (2+3) 3 credits
Theory, design and use of mechanical and electrical system for static and dynamic measurements Prerequisite: E E 200, 201; M E 242, 299, 367.

**402, 602 NUMERICAL METHODS IN ENGINEERING** (3+0) 3 credits
Numerical methods are introduced and applied to mechanical engineering problems. Requires knowledge of FORTRAN. Prerequisite: M E 299.

**403, 603 PARTIAL DIFFERENTIAL EQUATIONS IN ENGINEERING** (3+0) 3 credits
Techniques of solving and application of partial differential equations are investigated. Fourier Analysis, Bessel, Legendre and Mathieu functions are introduced. Prerequisite: M E 299.

**410, 610 INTRODUCTION TO SYSTEM CONTROL** (3+0) 3 credits
Mathematics of linear systems and their control. Prerequisite: M E 310.

**411, 611 INTRODUCTION TO ROBOTICS** (3+0) 3 credits
Included topics are forward and inverse kinematics, motion kinematics, force/torque relations, trajectory planning, dynamics and control of robots. Prerequisite: M E 242.

**430 MATERIALS** (3+0) 3 credits
Properties of materials as they affect selection and design. Prerequisite: METE 350.

**440, 640 INTERMEDIATE DYNAMICS** (3+0) 3 credits
Kinematics and dynamics of rigid bodies in space. General theory of rotating coordinate frames, Euler's angles, Euler's equations of motion, angular momentum, work-energy principles. Prerequisite: M E 242.

**444, 644, SPACE DYNAMICS** (3+0) 3 credits
Reference frames, Euler Angles, Orbital mechanics, mechanics of powered flight, satellite dynamics and lunar trajectories. Prerequisite: M E 201, 242.

**445, 645 ADVANCED MECHANICS** (3+0) 3 credits
Unsymmetrical bending, shear center, strain energy, complementary energy with applications, continuous elastically supported beams, beam columns, buckling of bars, electric resistance strain gauging. Prerequisite: C E 372.

**446, 646 COMPOSITE MATERIALS** (3+0) 3 credits
Stress-strain relations of a lamina; micromechanics and macromechanics of laminate; bending, buckling and vibration of laminated composite-material beams, plates and shells. Prerequisite: C E 372.

**452 DESIGN SYNTHESIS** (3+3) 4 credits
Creation and optimization of mechanical systems using Computer Aided Design (CAD) facilities. Heat transfer, fluid flow and ecomomic aspects are included. Prerequisite: M E 461.

**453, 653 MECHANICAL VIBRATIONS** (3+0) 3 credits
Theory of mechanical vibrations with applications to machinery. Includes critical speeds, torsional vibrations, isolation, damping, absorbers, uniform beams, etc. Lectures, experiments, problems. Prerequisite: M E 310.

**461, 661 HEAT TRANSFER** (3+0) 3 credits
Basic laws of heat transfer by conduction, convection and radiation are introduced and applied to engineering problems. Analytical, numerical and graphical solutions to problems are studied. Prerequisite: M E 367 or equivalent, M E 299, 371.

**463, 663 COOLING ELECTRONIC EQUIPMENT** (2+0) 2 credits
Introduction to heat transfer modes, including conduction, convection and radiation. Discussion of thermal problems in electronic packages. Does not satisfy M E 461 requirement. Prerequisite: M E 299 or 300.

**464 HEAT TRANSFER LABORATORY** (0+3) 1 credit
Laboratory covering conduction, convection and radiation areas. Prerequisite: M E 391. Corequisite: M E 461.

**465, 665 SYSTEM DESIGN** (3+0) 3 credits
Engineering systems are simulated, designed and optimized relative to cost, weight, size or other constraints. Time value of money is stressed. Optimization techniques include computer simulations. Design project required. Study of thermal or mechanical systems.

**472, 672 AIR CONDITIONING** (3+0) 3 credits
Heating, ventilation and air conditioning (HVAC) requirements to produce thermal comfort. Use of psychrometric chart, the design of duct distribution systems, blower selection criteria and equipment selection. Winter and summer load calculations. Prerequisite: M E 371.

**473, 673 REFRIGERATION** (3+0) 3 credits
Analysis of vapor compression cycle, absorption refrigeration and staged cryogenic systems. Desirable properties of refrigerants and brines, piping arrangement and sizing. Heat exchange and sizing criteria. Prerequisite: M E 372.

**474, 674 ACTIVE SOLAR ENGINEERING I** (2+3) 3 credits
Nature and availability of solar energy. Technology of collection and use. Design, construction and testing of solar collectors and systems. Prerequisite: M E 371 .

**475, 675 POWER SYSTEMS DESIGN** (3+0) 3 credits
Contemporary power systems, including geothermal power, cogeneration, waste burning systems and solar thermal systems. Prerequisite: M E 371, 461.

**476, 676 INTERNAL COMBUSTION ENGINES** (3+0) 3 credits
Otto, and Sterling Diesel cycle engines and gas turbines. Thermodynamics review, combusion, ideal cycles, real engine cycles, fuels and fuel metering, exhaust gas analysis, air pollution. Prerequisite: M E 371.

**477, 677 PASSIVE SOLAR ENGINEERING** (2+3) 3 credits
The design of buildings which interact with climate and solar energy to maintain comfort conditions. Includes computer modeling. Prerequisite: M E 371.

**480, 680 GAS DYNAMICS I** (3+0) 3 credits
Fundamentals of compressible flow; one dimensional flow, shock waves, area change, heat transfer, friction in subsonic and supersonic flow. Prerequisite: M E 367 .

**481, 681 GAS DYNAMICS II** (3+0) 3 credits
Continuation of M E 480, applications to ducts, nozzles, diffusers, wind tunnels, flow measurements; oblique shock waves, method of characteristics. Prerequisite: M E 480.

**482, 682 AERODYNAMICS** (3+0) 3 credits
Lift and drag characteristics of bodies and aerodynamics characteristics of the complete airplane. Prerequisite: M E 368 or 461.

**484, 684 COMPUTATIONAL FLUID MECHANICS AND HEAT TRANSFER** (3+0) 3 credits
Application of computational methods to the numerical simulation of the conservation equations which govern fluid mechanics and heat transfer. Knowledge of FORTRAN is required. Prerequisite: M E 368 or 461.

**491 MECHANICAL ENGINEERING LABORATORY** (1+3) 2 credits
Selected experiments in the areas of fluid mechanics, solid mechanics, heat transfer, solar energy, thermodynamics and mechanical vibrations. Prerequisite: M E 391.

**493 SENIOR LABORATORY** (0+2) 1 credit
Projects related to courses. Prerequisite: M E 391, mechanical engineering major.

**494 PROJECTS LABORATORY** (0+2) 1 credit
Group and/or individual projects related to student's area of concentration. Prerequisite: M E 391, mechanical engineering major.

**499 SPECIAL PROJECTS I, II** 1 to 4 credits each
Study and/or experimentation in areas of special interest to mechanical engineers. Maximum of 6 credits. Advance department approval is required.

**700 INTRODUCTION TO INTEGRAL METHODS WITH APPLICATIONS** (3+0) 3 credits

reen's functions; Poisson's kernals; LaPlace and Fourier transforms and ıdditional topics related to boundary value problems. Prerequisite: M E 403 : equivalent.

)1 ADVANCED MATHEMATICAL METHODS FOR ENGINEERS (3+0) 3 credits
egular and singular perturbation theory, multiple-scale analysis; asymp-ıtic expansions with application to mechanical systems. Prerequisite: M E )3 or equivalent.

)2 ADVANCED NUMERICAL METHODS (3+0) 3 credits
[ulti-dimensional problems using boundary element, finite difference ıd weighted residual methods.

[0 ADVANCED SYSTEM DYNAMICS AND OPTIMAL CONTROL (3+0) 3 credits
ıate space analysis of deterministic, continuous systems, observability, ɔntrollability, Lyapunov functions and stability theorems, the theory of ptimal processes and Pontryagin's maximum principle.

11 ADVANCED ROBOTICS (3+0) 3 credits
ıcluded topics are Newton-Eula formulation of equations of motion, ıverse dynamics, path planning using the dynamic model, position and ajectory control of robotic manipulators, and compliant motion control.

20 INTRODUCTION TO CONTINUUM MECHANICS (3+0) 3 credits
ıtroduction to the mechanics of a continuous medium; stress and strain in astic and inclastic solids; Newtonian and non-Newtonian fluids; varia-onal methods applied to a continuum. Prerequisite: M E 445, 645.

21 VISCOELASTICITY (3+0) 3 credits
iscoelastic stress-strain constitutive relations, polymer behavior, elastic-lscoelastic correspondence principle, initial/boundary value problems, ıave propagation, thermoviscoelasticity, creep, Prerequisite: M E 720.

30 ENERGY AND VARIATIONAL METHODS (3+0) 3 credits
quations of mechanics, energy and variational principles; Galerkin, Ritz nd finite-element analysis of plate and shells. Prerequisite: M E 445, 645 or : E 724.

40 ADVANCED DYNAMICS (3+0) 3 credits
undamentals of analytical mechanics. Behavior of dynamical systems, eometric theory. Stability of multi-degree of freedom autonomous and onautonomous systems. Prerequisite: M E 440, 640.

41 ADVANCED VIBRATIONS (3+0) 3 credits
'ibration of multi-degree of freedom systems with emphasis on modal nalysis. Introduction to vibration of continuous systems, exact and ap-roximate solutions. Prerequisite: M E 453, 653.

46 ADVANCED COMPOSITE MATERIALS (3+0) 3 credits
ınisotropic elasticity, shear deformation effects; laminated plates and hells; energy methods applied to composite structures; joining and fasten-ıg; special topics. Prerequisite: M E 646.

50 ADVANCED MACHINE DESIGN (1+6) 3 credits each
ı) Creative design of machines and systems, including advanced analysis nd synthesis, (b) continuation of 750a with emphasis on theory and pplication of photoelastic strain analysis. Prerequisite: M E 452.

60 CONDUCTION HEAT TRANSFER (3+0) 3 credits
ormulation of conduction problems in various coordinate systems. Solution by ɔparation of variables, LaPlace transforms, complex combination and approxi-ıate methods. Prerequisite: M E 461. Corequisite: M E 403 or equivalent.

61 CONVECTION HEAT TRANSFER (3+0) 3 credits
quations of continuity, momentum, energy and mass diffusion. Laminar ɔlutions including the Graetz problem, similarity parameters, external nd internal flows. Integral methods. Turbulence. Prerequisite: M E 461.

62 RADIATION HEAT TRANSFER (3+0) 3 credits
adiation properties of surfaces, radiation exchange in enclosures, radia-ve transfer in absorbing, emitting and scattering media, combined radia-on with conduction and convection. Prerequisite: M E 461.

70 STATISTICAL THERMODYNAMICS (3+0) 3 credits
ıtroduction to the statistical thermodynamics of the pure component and of mixtures. An introduction to the kinetic theory of gases; thermodynam-ics of irreversible phenomena. Prerequisite: M E 372, 700.

771 ADVANCED THERMODYNAMICS (3+0) 3 credits
Classical approach to thermodynamic equilibrium, stability of thermody-namic systems, extremum principles, Maxwell relations, phase transitions, chemical thermodynamics, Nernst postulate, and irreversible thermodymamics. Prerequisite: M E 371 or equivalent.

772 ADVANCED THERMODYNAMIC/FLUID SYSTEM DESIGN (3+0) 3 credits
System design and analysis with emphasis on dynamic behavior. (a) Environmental systems, (b) powers systems. Prerequisite: M E 372.

780 MECHANICS OF IDEAL FLUIDS (3+0) 3 credits
Vorticity dynamics; planar and three-dimensional potential flows. Intro-duction to wave theory and hydrodynamic stability. Prerequisite: M E 368 or equivalent.

781 MECHANICS OF VISCOUS FLUIDS (3+0) 3 credits
Fundamental laws of motion for a viscous fluid, exact solutions of the Navier-Stokes equations; study of laminar, turbulent boundary layers including approximate numerical methods. Prerequisite: M E 368 or equivalent.

782 TURBULENT FLOW AND TRANSPORT (3+0) 3 credits
Reynolds averaged equations, simple closure techniques for velocity and temperature field prediction in free and bounded flows. Complex closure. Prerequsite: M E 761 or equivalent.

785 EXPERIMENTAL METHODS IN FLUID/THERMAL SCIENCES (2+3) 3 credits
Lectures and laboratory demonstrations of flow visualization, anemom-etry, interferometry and related state-of-the-art methods used in the fluid/thermal sciences.

791 SPECIAL TOPICS 1 to 4 credits
Literature search and analytical study of special problems. Maximum of 6 credits.

792 SPECIAL PROBLEMS 1 to 4 credits
Study and experimentation in areas of special interest.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 24 credits

# MEDICINE (MED)

402, 602 ADVANCED PROBLEM SOLVING (1+3) 2 credits S/U *only*
Application of biological science knowledge and concepts to simulated clinical problems. Application, demonstration and role modeling of prob-lem-solving techniques in medicine. Maximum of 4 credits.

461, 661 ELECTIVES 2 to 8 credits
Experience in the interdisciplinary medical subspecialities emphasizing (a) administrative internship, (b) physical diagnosis, (c) radiology.

473 673 PHYSICAL DIAGNOSIS II (1+3) 2 credits *S/U only*
Medical history taking and physical examination with emphasis on abnor-mal and pathological findings, doctor-patient relationships, medical record keeping and medical problem solving.

601 BIOMEDICAL PROBLEM SOLVING (1+3) 2 credits *S/U only*
Application of biological science knowledge and concepts to simulated clinical problems. Application, demonstration and role modeling of prob-lem-solving techniques in medicine. Maximum of 4 credits.

670 PHYSICAL DIAGNOSIS I (1+3) 2 credits *S/U only*
Knowledge and skills of the physical examination with emphasis on normal findings, doctor-patient relationships, introduction to medical history taking, medical record keeping and medical problem solving.

# METALLURGICAL ENGINEERING (METE)

**101 INDUSTRY ORIENTATION LECTURES** (1+0) 1 credit
(See CH E 101 for description.)

**151 INTRODUCTION TO MATERIALS** (3+0) 3 credits
Basic concepts of material science. Structure and properties of all solid materials. Testing and processing of materials.

**203 SURVEY OF EXTRACTION METALLURGY** (3+0) 3 credits
Overall view of the art and science of extraction metallurgy including the concentration of ores, the extraction of metals from ores, the refining of metals, and environmental implications of these processes.

**232 PRINCIPLES OF METALLURGICAL AND CHEMICAL ENGINEERING** (3+0) 3 credits
Scientific bases for process engineering stoichiometry, gas behavior combustion and mass and energy balances. Problem solving is emphasized. Field trip. To progress to subsequent courses identified by CH E or METE, a grade of C or higher must be earned in this course. Corequisite: MATH 215. (Same as CH E 232.)

**310 TRANSPORT PHENOMENA** (4+0) 4 credits
Principles of momentum, heat and mass transfer, thermal conductivity, mechanisms of transport, shell balance, boundary conditions, equations of change, Fourier's and Fick's laws. Prerequisite: METE 232; MATH 320.

**322 MINERAL PROCESSING I** (3+0) 3 credits
Principles and practices of mineral preparation and concentration.

**324 MINERAL PROCESSING LABORATORY** (0+3) 1 credit
Experiments demonstrating principles of mineral processing.

**350 ELEMENTS OF MATERIALS SCIENCE** (3+0 or 3) 3 or 4 credits
Internal structure of materials, the dependence of properties upon these structures, and the behavior of materials in service.

**373 FLUID MECHANICS** (3+0) 3 credits
(See CH E 373 for description.)

**401, 601 CORROSION OF METALS** (3+0) 3 credits
Thermodynamics and kinetic basis for the electrochemical theory of corrosion. Potential-pH diagrams. Polarization curves. Forms of corrosion to include: general and galvanic corrosion, pitting and stress corrosion cracking. Methods of corrosion prevention.

**410 EXTRACTIVE METALLURGY I—PYROMETALLURGY** (3+0) 3 credits
Quantitative and descriptive treatment of the unit processes used and fundamentals of smelting, melting, refining of metals by high temperature methods. Prerequisite: CH E 361; METE 232. (Same as CH E 410.)

**411 PYROMETALLURGY LABORATORY** (0+3) 1 credit
Special methods not ordinarily included in chemical analysis to measure quantities that are important in studying and controlling pyrometallurgical operations. Corequisite: METE 410.

**416, 616 X-RAY DIFFRACTION** (2+3) 3 credits
Generation and properties of X-rays; diffraction techniques, structure determination, X-ray fluorescence and microscopy analysis of metals. Prerequisite: METE 350.

**420 PHYSICAL PROPERTIES OF CRYSTALS** (2+0) 2 credits
Crystal physics, equilibrium properties of crystals, stress and strain tensors, thermal expansion, Piezoelectricity, elasticity, transport properties of crystal. Prerequisite: METE 350.

**421, 621 MINERAL PROCESSING II** (3+0) 3 credits
Continuation of METE 322 with emphasis on flotation. Prerequisite: CHEM 353.

**423, 623 SURFACE CHEMISTRY OF MINERALS** (3+0) 3 credits
Thermodynamics of surfaces, electrostatic and electrokinetic phenomena, adsorption at interfaces, and properties of monolayers as applied to processing of minerals. Prerequisite: CHEM 354. (Same as CH E 423.)

**425, 625 HYDROMETALLURGICAL REACTIONS** (3+0) 3 credits
Systematic treatment embracing dissolution of minerals, leaching, precipitation, and complex formation in aqueous systems. Prerequisite: CHEM 354.

**430 SOLID STATE KINETICS** (3+0) 3 credits
Momogeneous and hetergeneous nucleation rates, diffusional growth kinetics, cellular phase separation, precipitation hardening; energetic of Guinier Preston Zones. Prerequisite: METE 460.

**431, 631 EXTRACTIVE METALLURGY II -HYDROMETALLURGY** (3+0) 3 credits
Quantitative and descriptive treatment of unit processes used and fundamentals of leaching, precipitation, electrolysis, both liquid and resin ion exchange, and purification of metals by low temperature methods. Prerequisite: METE 232; CH E 361.

**433-434, 633-634 ADVANCED METALLURGY** 1 to 4 credits each
Advanced studies in mineral dressing or chemical metallurgy (including laboratory investigations.)

**450 TECHNIQUES OF PROCESS DESIGN AND ECONOMICS** (3+0) 3 credits
(See CH E 450 for description.)

**460 PHYSICAL METALLURGY I** (2+3) 3 credits
Structure, properties and selection of alloys, vacancies and diffusion, phase diagrams, nucleation and growth, hardening of steels, creep, fracture. Prerequisite: METE 350.

**461, 661 PHYSICAL METALLURGY II** (2+3) 3 credits
Supplementary and advanced treatment of topics introduced in METE 350.

**462, 662 THERMODYNAMICS OF IRREVERSIBLE PROCESSES** (3+0) 3 credits
Thermodynamics treatment of irreversible metallurgical, chemical, and electrochemical processes, transport processes, coupling phenomena, etc. Prerequisite: M E 371 or CH E 361 and CHEM 353. (Same as CH E 462.)

**470 PROCESS EQUIPMENT DESIGN** (3+0) 3 credits
Design methods for chemical and metallurgical engineering process equipment with emphasis on fluid mechanics, heat transfer and mass transfer Systems. Prerequisite: METE 450.

**472 INTRODUCTION TO CERAMICS** (3+0) 3 credits
Structures and imperfections, atom mobility, grain boundaries, ceramic phase diagrams, transformation, grain growth and sintering, properties and applications. Prerequisite: MATH 320; METE 350.

**482 DESIGN PROJECT** (1+6) 3 credits
(See CH E 482 for description.)

**484, 684 HEAT TRANSFER** (3+0) 3 credits
(See CH E 484 for description.)

**493, 693 MASS TRANSFER** (3+0) 3 credits
(See CH E 493 for description.)

**495, 695 SPECIAL PROBLEMS** 1 to 3 credits
Individual research problems in metallurgy. Maximum of 6 credits.

**700 APPLIED MATHEMATICS IN CHEMICAL AND METALLURGICAL ENGINEERING** (3+0) 3 credits
Application of ordinary and partial differential equations, transforms, the calculus of finite differences and numerical methods in chemical and metallurgical engineering problems. Prerequisite: MATH 320 or M E 300; CH E 493; METE 431.

**701-702 ADVANCED METALLURGY** 1 to 5 credits each
(a) General metallurgy, (b) metallurgical analysis, (c) mineral dressing, (d) pyrometallurgy, (e) hydrometallurgy, (f) electro-metallurgy, (g) nonferrous metallurgy, (h) ferrous metallurgy, (j) physical metallurgy, (k) metallorgaphy, (m) heat treatment, (n) mechanical metallurgy, (p) history of metallurgy. These courses consist of either lectures, periodic conferences, supervised reading, laboratory or field work. May be repeated more than once to pursue different studies.

**703 ADVANCED PHYSICAL METALLURGY** (3+0) 3 credits
Advanced treatments of mechanical deformation, dislocation theory, sur-

face structure, solidification, annealing, phase transformations, hardening mechanisms in steel and other selected topics.

**711 ADVANCED CORROSION PRINCIPLES** (3+0) 3 credits
Advanced electrochemical theory of corrosion mechanism. Experimental technique in study of corrosion. Evaluation of current research progress in various topics in corrosion taken from the literature. Prerequisite: METE 401.

**715 X-RAY DIFFRACTION** (1+6) 3 credits
Theory of X-ray diffraction and methods used in obtaining and interpreting X-ray diffraction diagrams.

**721 ALLOY SELECTION AND FAILURE ANALYSIS** (3+0) 3 credits
Fundamentals of alloying element behavior in metals. Alloying for mechanical strength and corrosion resistance. Identification and prevention of various failure modes including fracture, corrosion and wear. Prerequisite: METE 350 or equivalent.

**725 PROCESS ENGINEERING OF COMMINUTION** (2+3) 3 credits
Crushing and griding theory and its application in simulation and control of comminution circuits. Prerequisite: MATH 320 or M E 300.

**726 PIPELINE TRANSPORT OF SLURRIES** (2+1) 3 credits
Principles of the flow of liquid-solid slurries in pipes and rotational viscometers and application to the design of slurry pipelines. Prerequisite: MATH 320 or M E 300.

**728 INTERFACIAL PHENOMENA** (3+0) 3 credits
Surface chemical and physical phenomena associated with the boundary between two phases. Prerequisite: MATH 320 or M E 300; CHEM 354.

**731 ADVANCED PROCESS CONTROL** (3+0) 3 credits
Selection of topics of interest in Process Control Research including: control applications of process dynamic modeling, dynamic testing and analysis, simulation of dynamic systems.

**738 ADVANCED CERAMIC MATERIALS** (3+0) 3 credits
Special methods for production, processing. Advanced concepts in phase equilibria, transformation, grain growth and sintering and properties in application of ceramic materials problems. Prerequisite: METE 350.

**741 ADVANCED KINETICS AND REACTOR DESIGN** (3+0) 3 credits
Complex reaction rates, networks; catalytic processes, gas-solid reactions batch, plug flow, perfectly mixed flow reactor equations; stability analysis, homogeneous, heterogenous models; fluidized bed reactors. Prerequisite: CH E 440.

**751 PHYSICS OF METALS** (3+0) 3 credits
Theoretical study of the metallic state. Emphasis upon crystal structure, elastic and plastic properties, crystal imperfections and thermal and magnetic properties.

**760-761 ADVANCED METALLURGICAL THERMODYNAMICS** (3+0) 3 credits each
Applications of thermodynamics to physicochemical hydrodynamic and pyrometallurgical unit processes. Prerequisite: MATH 320 or M E 300, CH E 361. 437 or 438; METE 431.

**762 STATISTICAL THERMODYNAMICS** (3+0) 3 credits
Introduction to statistical thermodynamics with applications to metallurgy and chemical engineering. Prerequisite: CH E 361.

**764 ADVANCED FLUID DYNAMICS** (3+0) 3 credits
Advanced concepts in theoretical and applied fluid and heat dynamics involving steady state, transient and dyclic phenomena in chemical and metallurgical engineering. Prerequisite: MATH 320; CH E 373 or METE 373.

**765 ADVANCED MASS TRANSFER** (3+0) 3 credits
Multicomponent diffusion, mass transport models, advanced concepts in analysis and design of continuous and multistage separation processes, advanced topics including recent literature. Prerequisite: MATH 320; CH E 493 or METE 493.

**773 PRECIOUS METALS HYDROMETALLURGY** (3+0) 3 credits
Examination of processes for processing gold and silver ores. Field trip required.

**790 MINERAL INDUSTRY SEMINAR** 1 to 3 credits
Review and discussion by staff members and graduate students of individual research or important new publications concerning the mineral industry and related sciences. Maximum of 6 credits. Prerequisite: graduate standing or faculty member. (Same as GEOL 790, MINE 790.)

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits.

**799 DISSERTATION** 1 to 24 credits
For majors in the metallurgical engineering doctoral program only.

*Inactive Courses*
441 641 METALLURGY OF REACTIVE METALS (2+0) 2 credits
452 652 INTRODUCTION TO THE STRUCTURE AND PROPERTIES OF SOLIDS (3+0) 3 credits
752 MAGNETIC PROPERTIES OF SOLIDS (3+0) 3 credits

# MICROBIOLOGY (MICR)

**401, 601 MEDICAL MICROBIOLOGY** (7+6) 9 credits
Fundamental concepts of immunochemistry, cellular immunology, clinical immunology, medical bacteriology, virology, medical mycology and parasitology as they apply to medicine and infectious diseases.

**483, 683 MEDICAL MYCOLOGY** (1+6) 3 credits
Application of mycological techniques to clinical specimens in the identification of disease-causing fungi. Prerequisite: BIOL 112 or equivalent.

**487, 687 PROBLEMS IN INFECTION AND IMMUNITY** (1+0 per credit) 1 to 3 credits
Research and/or seminar-oriented elective in either bacteriology, immunology, mycology, or virology.

**490 INDEPENDENT STUDY** 1 to 4 credits

**711 RECOMBINANT DNA TECHNIQUES** (0+9) 3 credits
Intensive laboratory experience covering basic principles and techniques of gene cloning. Methods for growing and isolating vectors, gel analysis of restriction fragments and selection of specific recombinant DNA molecules. Prerequisite: B CH 400, 600 or equivalent. Advance approval of department.

**780 INTRODUCTORY CELLULAR IMMUNOLOGY** (3+0) 3 credits
Basic concepts of cellular immunology including immunoglobulin structure, products of the major histocompatibility complex, lymphocyte activation and differentiation and mechanisms of damage mediated by the immune system.

**784 MOLECULAR MECHANISMS OP VIRUS REPLICATION** (3+0) 3 credits
Current issues in virus DNA, RNA and protein synthesis. Emphasis on mechanisms of control of gene expression utilizing model animal and bacterial virus groups.

**785 EXPERIMENTAL IMMUNOCHEMISTRY** (1+6) 3 credits
Emphases encompass the qualitative and quantitative methods for measurement of immunoglobulins. Mechanisms of antigen and antibody interaction are considered. Prerequisite: B CH 400, 600 or equivalent.

**787 CELLULAR AND MOLECULAR BIOLOGY OF CANCER** (3+0) 3 credits
Introduction to the basic biology of cancer; development of, and emphasis on, insights from current research; with perspectives relating this research to human cancer.

*Inactive Courses*
482, 682 MEDICAL BACTERIOLOGY (2+3) 3 credits
484,684 MEDICAL VIROLOGY (2+3) 3 credits
786 CELLULAR IMMUNOLOGY (1+6) 3 credits

# MILITARY SCIENCE (MIL)

**101 INTRODUCTION TO MILITARY SCIENCE** (2+0) 2 credits

Mission, organization, and function of the Armed Services; the role of the military in relation to national objectives and security; the evolution of weapons and warfare.

**102 BASIC LEADERSHIP AND ORGANIZATION** (2+0) 2 credits
Fundamentals of good leadership to include different theories; fundamental organization and operation of the Army.

**201 MILITARY TOPOGRAPHY AND ORIENTEERING** (2+0) 2 credits
Proper use and appreciation of maps, photos, and compasses and the development of orienteering skills to include cross-country navigation over unfamiliar terrain,

**203 BASIC TOPICS IN LEADERSHIP SKILLS** (1 or 2+0) 1 or 2 credits
Presentation of basic military leadership skills in such areas as land navigation, first aid, desert survival, winter survival, and marksmanship. May be repeated to a maximum of 4 credits provided different subject areas are studied for each period of enrollment.

**204 BASIC SUMMER CAMP** 2 credits
Six-week camp designed to substitute for the first two years of ROTC. Includes map reading, national security, military history, and various other military subjects. Course conducted at a military reservation designated by the Army.

**205 SMALL UNIT LEADERSHIP TECHNIQUES** (2+1) 2 credits
Principles and techniques of leading a squad in combat with emphasis on individual roles of squad members, decision making, control and management. Prerequisite: completion of MIL 101, 102, 201.

**301 LEADERSHIP IN SMALL UNIT OPERATIONS** (3+0) 3 credits
Introduction to the principles and techniques of combat tactics and management at the platoon level. Emphasis is placed on considered factors in the decision-making process; techniques of command and control of troops; introduction to the missions, roles, and contributions of the several branches of the Army. Prerequisite: completion of basic program.

**302 ADVANCED LEADERSHIP DEVELOPMENT** (3+0) 3 credits
Enhances student understanding of the planning and coordinating steps in the decision-making process and the principles and techniques of command, control, and management at all levels. Emphasizes clarity of written and oral expression and the need for deliberate analysis of problems to produce logical solutions. Prerequisite: completion of basic program.

**303 ADVANCED SUMMER CAMP** 2 credits
Advanced cadets spend six weeks at an Army installation to learn practical skills in tactics, field living, leadership, weaponry, technical military equipment, military customs and traditions, physical fitness, confidence building, and personnel management. Prerequisite: MIL 301, 302.

**304 ADVANCED TOPICS IN LEADERSHIP** (1 or 2+0) 1 or 2 credits
Includes student research and presentation of leadership styles, leadership characteristics, staff procedures, planning, and organization. Maximum of 4 credits provided different subject areas are studied for each period of enrollment.

**401 SEMINAR ON THEORY AND DYNAMICS OF THE MILITARY TEAM** (3+0) 3 credits
Explores core values governing officer behavior; the concepts for military organizations; the theory of military organizations; and tactical employment of forces emphasizing company-sized operations. Prerequisite: completion of basic program.

**402 SEMINAR IN LEADERSHIP AND MANAGEMENT** (3+0) 3 credits
Stresses administrative and logical matters which confront the commander at platoon and company levels. Introduction to principles of personnel, fiscal, and supply management, and the philosophy and purpose of military law. Prerequisite: completion of basic program.

# MINING ENGINEERING (MINE)

**A. MINERAL INDUSTRY EMPLOYMENT** 0 credits
Work for a mining company at least one summer vacation and prepare an acceptable report on the experience. Required for mining engineering majors.

**101 INTRODUCTION TO MINING** (1+0) 1 credit
Introduction to techniques, practices and problems in modern mining. Field trip required.

**102 MINERAL MAP MAKING** (1+3) 2 credits
Introduction to the basic principles of modern drawing and cartography as used in mineral engineering reports.

**210 MINING METHODS** (3+0) 3 credits
Introduction to mining systems with emphasis on methods, equipment and terminology of surface and underground mine operations. Prerequisite: MINE 101, 102 or equivalent.

**218 MINING ENGINEERING LABORATORY** (0+3) 1 credit
Application of unit operations in underground mining. Field evaluation of blasting patterns, support methods and materials handling. Fulfills MSHA training requirement. Prerequisite: MINE 210.

**301 COAL MINING** (2+0) 2 credits
Geology of coal, its constitution and uses. Underground and surface mining of coal including mining methods and equipment. Prerequisite: MINE 210.

**310 MATERIALS HANDLING** (3+0) 3 credits
Design and evaluation of materials handling systems in surface and underground mines. Hoisting, conveyors, track and rubber-tired haulage, load-haul systems. Prerequisite: M E 241, 342, MINE 210.

**324 COMPUTER APPLICATIONS** (1+3 or 6) 2 or 3 credits
Use of digital computers in the earth sciences, with emphasis on developing student's ability to use computers in industry or research. Prerequisite: C S 113.

**342 MINE SURVEYING** (1+0) 2 credits
Theory and mathematics of mine surveying.

**343 APPLIED MINE SURVEYING** (0+6) 2 credits
Surface and underground surveying techniques in exploration and mining operations. A charge is made for field expenses. Prerequisite: MINE 342.

**344 MINE ENVIRONMENTAL CONTROL** (2+3) 3 credits
Theory, and practice of creating safe, healthy, and efficient working environments underground. Mine ventilation techniques. Prerequisite: M E 371; C E 367.

**361 OPERATIONS RESEARCH METHODS** (3+0) 3 credits
Introduction to the theory, of Operations Research and its application in the mining industry. Prerequisite: AGEC 270; MINE 213.

**400 MINING COMMUNICATION** (1+0) 1 credit
Study of written and oral skills in engineering and management communication. Video taped technical talk given to class. Report required on senior field trip.

**406 SENIOR REPORT** 1 to 3 credits
Formal, comprehensive report on a subject approved by the student's adviser and department chairman.

**411, 611 MINE ECONOMICS** (2+0) 2 credits
Introduction to management accounting principles, balance sheet and income statement, depreciation, depletion and cash flow. Financial evaluation using present value theory,, equipment evaluation and replacement. Risk and sensitivity analysis. Prerequisite: AGEC 270; MINE 210, 310; MINE 361 or equivalent.

**413, 613 MINERAL INVENTORY ESTIMATION** (2+0) 2 credits
Principles of sampling and the study of the major methods for mineral reserve estimation including polygonal, inverse distance squared and geostatistical. Grade tonnage curves for normal and log normal distribution. Variograms and kriging of mineral reserves. Prerequisite: MINE 213; AGEC 270 or equivalent.

**418, 618 MINE FEASIBILITY** (1+3) 3 credits
Data, techniques, and layout required for a formal mine feasibility report to be prepared on a given mineral deposit. Prerequisite: MINE 411, 413.

**425, 625 MINE POWER AND DRAINAGE** (3+0) 3 credits
Electrical and compressed air power in the design of underground mining and mine water drainage systems. Prerequisite: C E 367; M E 371; E E 212.

**445, 645 DRILLING AND BLASTING** (3+0) 3 credits
Current theory and practice in drilling and blasting. Prerequisite: MINE 448.

**446, 646 THEORY OF EXPLOSIVES** (2+3) 3 credits
Thermodynamic theory and the blasting action of explosives.

**448, 648 ROCK MECHANICS I** (2+3) 3 credits
Uniaxial and triaxial stress-strain analysis and structural analysis of rocks in the design of underground openings. Prerequisite: M E 241; GEOL 332.

**449, 649 ROCK MECHANICS II** (2+3) 3 credits
Application of Rock Mechanics in underground and open-pit mining. Includes excavation, rock burst. and slope stability. Prerequisite: MINE 448, 648.

**451, 651 MINING LAW** (3+0) 3 credits
U.S. and foreign, federal and state laws affecting the mineral industry and pertaining to mineral land acquisition, corporations, ethics, mining, taxation, water, environment, labor, safety and welfare.

**454, 654 MINING AND SURFACE ENVIRONMENT** (2+0) 2 credits
Effects of mining, milling, and smelting on the surface environment, and their control to allow maximum conservation and minimum waste of natural resources. Field trip.

**472, 672 WORLD MINERAL ECONOMICS** (3+0) 3 credits
Minerals in World Affairs. Interdependence of nations on minerals and the economic and political problems caused by their unequal geographic distribution and divided political control.

**482 ECONOMICS OF THE BASE METALS** (3+0) 3 credits
Systematic treatment of current aspects of international production and trade in base metals.

**495, 695 SPECIAL PROBLEMS** 1 to 3 credits each
Individual research problems in mining engineering. Maximum of 6 credits.

**701-702 ADVANCED MINING ENGINEERING** 1 to 5 credits each
(a) General mining, (b) excavation, (c) drilling, (d) blasting, (e) equipment, (f) transportation, (g) design, (h) surface mining, (j) underground mining, (k) safety, (m) ventilation, (n) mining economics, (p) mine administration, (r) mining law, (s) mineral economics, (t) history of mining, (u) mineral explorations, (v) rock mechanics, (w) mining conservation, (x) nonmetallic mining. These courses consist of either lectures, periodic conferences, supervised reading, laboratory or fieldwork. May be repeated more than once to pursue different studies.

**729 ADVANCED COMPUTER APPLICATIONS** 1 to 3 credits
Computer systems, languages, and economics. Major individual earth science project on computer. Prerequisite: C S 113 or MINE 324.

**745 ADVANCED ROCK MECHANICS** (2+3) 3 credits
Field and laboratory studies of applied rock mechanics. Prerequisite: MINE 448, 449.

**749 ADVANCED BLASTING METHODS DESIGN** 1 to 3 credits
Modern theories in the use of explosives and the design of blasting systems. Prerequisite: MINE 446.

**790 MINERAL INDUSTRY SEMINAR** 1 to 3 credits
(Same as METE 790).

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

*Inactive Courses*
316 STATISTICAL ANALYSIS IN THE EARTH SCIENCES (2+0) 2 credits
405 SENIOR REPORT 1 to 3 credits

# MUSIC (MUS)

INDIVIDUAL INSTRUCTION: Special fee of $125.00 per half hour lesson.

**100 CONCERT CLASS** (0+1) 0 credits *S/U only*
Development of listening skills through attendance at musical events: music department concerts, master classes, approved community events.

**101 MUSIC FUNDAMENTALS AND EAR TRAINING** (3+0) 3 credits
Notation, terminology, intervals, scales and chords. Designed to furnish a foundation for musicianship.

**103 CLASS BRASS INSTRUCTION** (1+2) 2 credits
Fundamental instruction in each of the instruments and in class teaching procedures. Simple selections, employing various keys and rhythms.

**104 CLASS WOODWIND INSTRUCTION** (1+2) 2 credits
Fundamental instruction in each of the instruments and in class teaching procedures. Simple selections, employing various keys and rhythms.

**106, 306 PEP BAND** (0+3) 1 credit each
A performing group for university events. Maximum of 2 credits each.

**111, 311 CONCERT CHOIR** (3+0) 1 credit each
Performance of representative choral music of all periods; featured in local concerts and on tour. Maximum of 4 credits each.

**113 CLASS VOCAL INSTRUCTION** (1+0) 1 credit
Fundamentals of tone production, breath control, and practical techniques involved in reading and interpreting songs. Maximum of 4 credits.

**117, 317 MARCHING AND CONCERT BAND** (0+3) 1 credit each
Marching techniques and performances; performance of concert literature (after marching season). Prerequisite: previous band experience. Maximum of 6 credits each.

**118,318 SYMPHONIC BAND AND WIND ENSEMBLE** (0+3)1 credit each
Performance of representative literature for large bands and chamber winds. Prerequisite: previous band experience and audition. Maximum of 6 credits each.

**119, 319 SYMPHONIC CHOIR** (0+3) 1 credit each
Presentation of large-scale choral works. Maximum of 6 credits each.

**120 SURVEY OF JAZZ** (3+0) 3 credits
Chronological study of jazz music and musicians with emphasis on directed listening.

**121 MUSIC APPRECIATION** (3+0) 3 credits
Historical and cultural background of music. A general course in music appreciation open to all students. Representative works are heard and analyzed.

**122 MASTERWORKS OF MUSIC** (3+0) 3 credits
Major representative works of the standard repertory with emphasis on their historical and cultural milieu. Concert attendance required.

**123 CLASS STRING INSTRUCTION** (1+2) 2 credits
Elementary instruction in violin, viola, cello and bass.

**124 CLASS PERCUSSION INSTRUCTION** (1+2) 2 credits
Elementary instruction in the various percussion instruments.

**125, 325 UNIVERSITY ORCHESTRA** (0+3) 1 credit each
One or more concerts of representative orchestra literature are given each semester. Maximum of 6 credits each.

**131, 331 JAZZ IMPROVISATION** (1+1) 1 credit
Performance oriented study of improvisation in the jazz idiom. Audition required. Maximum of 4 credits each.

**149 STUDIO INSTRUMENT/VOICE FOR NONMAJORS** (1/2+0) 1 credit
Applied music instruction; includes style periods, literature, composers. Prerequisite: basic competency on instrument (audition). Maximum of 3 credits.

**151, 351, 751 PIANO** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: audition for 351 or 751.

**153 VOICE** (1/2 or 1+0) 1 to 3 credits each
MUS 218 is a corequisite for MUS 153 for students enrolling for 3 credits. Maximum of 12 lower-division credits.

**155, 355, 755 BRASS INSTRUMENTS** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: audition for 355 or 755.

**157, 357, 757 WOODWIND INSTRUMENTS** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: audition for 357 or 757.

**159, 359, 759 STRINGS** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: audition for 359 or 759.

**161, 361, 761 PERCUSSION** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: audition for 361 or 761.

**163, 363, 763 ORGAN** (1/2 or 1+0) 1 to 4 credits each
Maximum of 16 lower-division credits, 16 upper-division credits, 4 graduate credits. Prerequisite: MUS 282 or equivalent. Prerequisite: audition for 363 or 763.

**181-182 FUNCTIONAL PIANO I AND II** (0+2) 1 credit each
Class instruction for students with limited or no keyboard experience.

**201 MUSIC HISTORY I** (3+0) 3 credits
Survey of Western music: origins through the Baroque period.

**202 MUSIC HISTORY II** (3+0) 3 credits
Classical AND Romantic periods.

**203 MUSIC HISTORY III** (3+0) 3 credits
Twentieth century.

**204 CHAMBER MUSIC FOR NONMAJORS** (0+2) 1 credit
Performance of chamber music literature: knowledge of style periods, composers, literature. Prerequisite: sufficient performance competency (audition). Maximum of 3 credits.

**205, 405, 605 UNIVERSITY CHAMBER MUSIC ENSEMBLE** (0+2) 1 credit each
Performance of chamber music literature. Maximum of 6 credits each.

**207-208 THEORY I AND II** (3+0) 3 credits each
Counterpoint and harmony (written and keyboard). Prerequisite for MUS 208 is 207

**209-210 SIGHTSINGING AND DICTATION I and II** (0+2) 1 credit each
Solfege and dictation, rhythmic and melodic.

**215, 415, 615 BRASS QUINTET** (0+2) 1 credit each
Performing ensemble specializing in brass quintet literature. Maximum of 6 credits each.

**218 VOCAL REPERTORY COACHING** (1+0) 1 credit
Performance of art song literature of all styles and periods. Emphasis on performance of complete cycles and on contemporary song literature. Open to vocalist and pianist. Maximum of 6 credits.

**220, 420, 620 BRASS ENSEMBLE** (0+2) 1 credit each
A performance organization specializing in brass ensemble literature from the Renaissance to the present. Maximum of 6 credits each.

**221 SPECIAL STUDIES IN MUSIC LITERATURE** (2 or 3+0) 2 or 3 credits
Special topics may include: Jazz in America; the Classical Style; the American Musical Theatre. Maximum of 6 credits.

**222 ELECTRONIC MUSIC AND SOUND RECORDING TECHNIQUES** (1+2) 2 credits
Electronic music, analog and digital. Includes techniques of electro-acoustical recording (tape and computer sequencing).

**223 RECORDING TECHNIQUES AND MIDI** (1+2) 2 credits
Advanced musical instrument digital interface (MIDI) applications in computer sequencing with analog tape recording; includes computer sequencing, synthesizer programming effects. Prerequisite: MUS 222.

**229, 429, 629 TECHNIQUES OF PIANO ACCOMPANIMENT** (1+1) 1 credit each
Practical experience in accompanying vocal and instrumental performers. Prerequisite: audition required. Maximum of 4 credits each.

**230, 430, 630 UNR CONCERT JAZZ BAND** (0+2) 1 credit each
A performing ensemble specializing in jazz and rock literature and performance practices. Maximum of 6 credits each.

**270 OPERA THEATRE I** (0+2) 1 credit
Beginning music theatre techniques for singers, pianist-coaches, stage directors, including production and performance. Maximum of 4 credits.

**281-282 FUNCTIONAL PIANO III AND IV** (0+2) 1 credit each
Class instruction for students with minimal keyboard experience or as a continuation of MUS 181-182.

**301-302 THEORY III AND IV** (3+0) 3 credits each
Continuation of MUS 207-208, including study of diatonic and chromatic harmony. Prerequisite: MUS 207-208 or equivalent.

**303 KEYBOARD HARMONY** (2+0) 2 credits
Keyboard approach to the study of chord progressions, the realization of figures basses, and harmonization of melodies and basses. Designed for piano and organ majors.

**307-308 SIGHTSINGING AND DICTATION III AND IV** (0+2) 1 credit each
Advanced solfege and dictation, rhythmic and melodic. Prerequisite: MUS 210.

**310 ORCHESTRATION** (3+0) 3 credits
Arranging music for full orchestra, band and chorus. Transposition, voicing transcriptions from piano score. Prerequisite: MUS 301-302.

**321 EXPLORING WORLD MUSIC** (3+0) 3 credits
Music and human culture focusing on non-Western traditions. Representative societies explored. Field study, music-making projects, performance analysis required. Prerequisite: MUS 121 or 203.

**322 INSTRUMENTAL CONDUCTING** (2+0) 2 credits
Technique of the baton and score reading. Practical leadership experience may be gained by directing the band, orchestra or ensembles.

**323 MUSIC METHODS FOR ELEMENTARY MUSIC SPECIALIST** (3+0) 3 credits
Methods, materials and special approaches for teaching elementary classroom instrumental and vocal music, grades K-6. Prerequisite: MUS 208.

**324 FUNDAMENTALS AND METHODS FOR ELEMENTARY TEACHERS** (3+0) 3 credits
Basic music fundamentals for classroom teachers; methods of teaching songs, using instruments, creative activities, listening, movement and rhythmic response.

**337 STAGE BAND ARRANGING** (2+2) 2 credits
Analysis of the jazz harmonic idiom as applied to the instrumentation of the modern dance orchestra in which arrangements are written and played. Prerequisite: MUS 207-208.

**350 KEYBOARD LITERATURE** (2+0) 2 credits
Literature for harpsichord, organ and piano with particular reference to the historical and musical characteristics of the works. Recordings and student performances are utilized. Prerequisite: functional keyboard reading ability.

**352 CHORAL CONDUCTING AND METHODS** (3+0) 3 credits
Rehearsal problems and techniques for standard choral literature. Materials, planning and organization of choral groups. Prerequisite: MUS 322.

**353, 753 VOICE** (1/2 or 1+0) 1 to 4 credits
Maximum of 16 upper-division credits, 4 graduate credits. Prerequisite: audition required.

**354 INSTRUMENTAL MUSIC METHODS** (3+0) 3 credits
Organization of bands, orchestra, instrumental ensembles in the public schools; materials, techniques and problems. Prerequisite: MUS 207-208, and participation in University Band, University Singers or University Community Symphony.

401 ADVANCED STAGE BAND ARRANGING (2+0) 2 credits
Analysis of materials and techniques developed in MUS 337. Writing and performance of arrangements on professional level are required. Prerequisite: MUS 337 or equivalent.

406, 606 PERFORMANCE PRACTICE (2+0) 2 credits
Performance practices of various eras and effect on presentation of representative works during the present and in their own time. Maximum of 6 credits. Prerequisite: MUS 201-202.

407, 607 SYMPHONIC LITERATURE (2+0) 2 credits
Detailed study and analysis of the development of the symphony. Prerequisite: MUS 201-202.

408 FORM AND ANALYSIS (3+0) 3 credits
Analysis of song forms, variations, rondo and sonata forms. Prerequisite: MUS 301-302 .

409-410, 609-610 COMPOSITION (2+0) 2 credits each
Original writing in the smaller forms for a variety of media with preparation for and presentation in public performance. Prerequisite: MUS 301-302.

414, 614 CHORAL LITERATURE (2+0) 2 credits
History and analysis of representative choral works from 1600 to the present. Prerequisite: MUS 201-202.

418 INTERMEDIATE VOCAL REPERTORY COACHING (1+0) 1 credit
Performance of art song literature of all styles and periods. Emphasis on performance of complete cycles and on contemporary song literature. Open to vocalists and pianists. Prerequisite: MUS 218. Maximum of 6 credits.

422, 622 MUSIC OF TODAY (2+0) 2 credits
Recent trends in music and their relationship with the past. Analysis of special harmonic, melodic and structural features of 20th century music. Prerequisite: MUS 201-202.

423, 623 CHAMBER MUSIC LITERATURE (2+0) 2 credits
Music written for small groups in Baroque, Classical, 19th and 20th century periods. Prerequisite: MUS 201-202.

424, 624 AMERICAN MUSIC (2+0) 2 credits
Detailed examination of the music of the U.S. from the Revolutionary War to the present. Prerequisite: MUS 201-202.

426, 626 VOCAL LITERATURE (2+0) 2 credits
Solo and chamber vocal music from the Renaissance to the present. Prerequisite: MUS 201-202.

427 MARCHING BAND PROBLEMS (2 + 0) 2 credits
Organization, development and rehearsal techniques used in the marching band, including pageantry and precision drill. Prerequisite: prior experience and approval of instructor.

428, 628 OPERA LITERATURE (2+0) 2 credits
Detailed consideration of selected operas of the various nationalities and periods in music history. Prerequisite: MUS 201-202.

447, 647 DIRECTORS' WORKSHOP (1+0) 1 credit
Scheduled during Tahoe Music Camp; designed to use band, choral and orchestral groups for demonstration.. Special attention to new repertoire, program planning and supervised conducting. Individual conferences are scheduled with guest and resident music camp faculty. Maximum of 3 credits.

448, 648 ADVANCED BAND ADMINISTRATION AND RELATED PROBLEMS (2+0) 2 credits
Organizing the program, administering the physical plant and equipment, establishing favorable teacher-pupil relations, directing the musical program and reviewing recent developments in the field. Prerequisite: teaching experience or exceptional background in the area.

449, 649 CHORUS PROBLEMS (2+0) 2 credits
Demonstration and lecture on aspects of vocal technique and organization involved in directing high school and college choruses.

450, 650 PIANO MATERIALS AND METHODS (2+0) 2 credits
Mechanics of piano teaching; technical and pedagogical literature, typical problems and solutions, the historical development of piano pedagogy.

470 OPERA THEATRE II 1 to 3 credits
More advanced music theatre techniques, including major roles for singers in UNR Opera Theater productions and one-act opera projects for directors and pianist-coaches. Maximum of 8 credits.

483, 683 PIANO SEMINAR (0+2) 1 credit
Special problems in performance, literature and pedagogy. Maximum of 4 credits.

484, 684 WORKSHOP/CONFERENCE IN MUSIC (0+2 per credit) 1 to 3 credits
Topics in music and music education. Maximum of 12 credits each

485, 685 INTERNSHIP IN MUSIC EDUCATION (0+2 per credit) 1 to 3 credits
Application of course content included in MUS 323, 352 or 354 in the schools or community agencies under the supervision of school or agency personnel and university staff members. Prerequisite: MUS 323, 352 or 354. Maximum of 12 credits each.

495, 695 INDEPENDENT STUDY 1 to 3 credits
Maximum of 6 credits.

498 SEMINAR IN MUSIC (2+0) 2 credits
Synthesizes formal training in performance, theory and the history of music Prerequisite: MUS 201, 308; piano proficiency.

499 SENIOR RECITAL 0 credits *S/U only*
(a) Applied music. Full recital. (b) Music education. One-half recital.

618 VOCAL REPERTORY COACHING (1+0) 1 credit
Performance of art song literature of all styles and periods. Emphasis on performance of complete cycles and on contemporary song literature. Open to vocalists and pianists. Maximum of 12 credits each.

621 ADVANCED INSTRUMENTAL PERFORMANCE (0+3) 1 credit
Offered for (a) marching and concert band, (b) symphonic band and wind ensemble, (c) university orchestra, or (d) jazz improvisation. Prerequisite: prior college orchestra or band experience and superior ability as a performer. Maximum of 12 credits each.

627 ADVANCED CHORAL PERFORMANCE (0+3) 1 credit
Study and performance of representative choral music of all periods, including major choral works. Appearance in concerts locally and on tour required, as well as work beyond ensemble participation, such as that of assistant conductor, section leader or soloist. Offered for (a) concert choir, or (b) symphonic choir. Maximum of 12 credits.

705 ADVANCED OPERA PERFORMANCE 1 or 2 credits
Performance of major roles in University Opera productions. Maximum of 12 credits.

709 CONTEMPORARY THEORY AND PRACTICE (3+0) 3 credits
Advanced harmonic practice and contemporary analytical procedures concentrating on music since 1900. Prerequisite: MUS 301-302.

721 ADVANCED CHORAL CONDUCTING (2+0) 2 credits
Skills required for effective direction of choral groups. Prerequisite: MUS 322 or equivalent. Maximum of 4 credits.

722 ADVANCED INSTRUMENTAL CONDUCTING (2+0) 2 credits
Advanced techniques of instrumental conducting. The techniques of interpretation and study of band and orchestra scores. Prerequisite: MUS 322 or equivalent. Maximum of 4 credits.

730 INTRODUCTION TO GRADUATE STUDY (3+0) 3 credits
Bibliography and research methods in music.

731 ADVANCED MUSIC HISTORY (3+0) 3 credits
Intensive study of western music from the Medieval, Renaissance and Baroque periods. Prerequisite: MUS 201, 203.

732 ADVANCED MUSIC HISTORY (3+0) 3 credits
Intensive study of western music from the Classical, Romantic and Modern periods. Prerequisite: MUS 201-202.

740 MUSIC EDUCATION RESEARCH MATERIALS AND TECHNIQUES (3+0) 3 credits

Introduction to music education research literature, techniques, interpretation of research findings, research design in descriptive, experimental and philosophical studies; use of computer searches.

**741 NEW DEVELOPMENTS IN MUSIC EDUCATION** (3+0) 3 credits
Significant new directions in elementary and secondary music curricula; impact of Orff, Kodaly, Suzuki and other arts; education approaches.

**749 SECONDARY INSTRUMENT OR VOICE** (1/2+0) 1 credit
Individual instruction. Offered in (a) piano, (b) voice, (c) brass, (d) woodwind, (e) string, (f) percussion, (g) organ. Maximum of 12 credits.

**790 SEMINAR IN MUSIC** 1 to 3 credits
Special problems in music history or theory with their professional implications. Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 3 credits
For master of music (Plan B) students.

**797 THESIS** 1 to 6 credits
(a) Research, master of arts, (b) performance, master of music. With approval of the student's committee a professional paper may meet 2 of the 6 performance credits.

*Inactive Courses*
303 KEYBOARD HARMONY (2+0) 2 credits
348 ADVANCED INSTRUMENTAL TECHNIQUES (2+0) 2 credits
403 COUNTERPOINT (3+0) 3 credits
446 PRECISION DRILL WORKSHOP (1+3) 1 credit
700-701 ADVANCED COMPOSITION (2+0) 2 credits each
702 THE AESTHETICS AND PHILOSOPHY OF MUSIC (2+0) 2 credits
715 STUDIES IN ELIZABETHAN AND TUDOR MUSIC (2+0) 2 credits
724 PHILOSOPHY OF MUSIC EDUCATION (2+0) 2 credits

# NURSING (NURS)

**300 SPECIAL TOPICS** 1 to 10 credits
Topics may be chosen from one or more of the following: (a) adult nursing, (b) maternal-child nursing, (c) psychiatric/mental health nursing, (d) issues in nursing, (e) foundations of nursing, (f) levels of health care needs. Maximum of 10 credits.

**301 HEALTH ASSESSMENT** (2+3) 3 credits
Theory of and practice in nursing assessment skills required to provide primary health care. Corequisite: NURS 303, 317, 318.

**303 NURSING INTERVENTIONS** (1+3) 3 credits
Focus is on individuals who require human care nursing interventions for basic human needs. Includes practice of psychomotor skills. Corequisite: NURS 301, 317, 318. For nursing majors only.

**317 INTRODUCTION TO HUMAN CARE NURSING** (3+0) 3 credits
Introduction to the art and science of nursing. Focus is on nursing theories, historical and ethical issues, and utilization of nursing process. Prerequisite: admissin to major. Corequisite: NURS 301, 303, 318.

**318 NURSING PRACTICE** (0+15) 5 credits
Application of the nursing process to care of individuals in restorative and acute health care settings. Prerequisite: admission to major. Corequisite: NURS 301, 303, 317.

**322 HERITAGE OF NURSING** (3+0) 3 credits
Social, political, economic, cultural and historical factors influencing nursing as a discipline. Intended for nursing and non-nursing majors.

**327 CARE OF FAMILIES THROUGOUT LIFECYCLES: THEORY** (4+0) 4 credits
Focus on theory related to human care nursing of families. Emphasis on experiences of childbearing/childrearing families throughout lifecycles.

**328 CARE OF FAMILIES THROUGHOUT LIFECYCLES: PRACTICE** (0+18) 6 credits
Nursing process is utilized in care of families throughout lifecycles. Emphasis is on human care of childbearing/childrearing families in a variety of settings. Prerequisite: NURS 301, 303, 490.

**337 PATHOPHYSIOLOGY** (3+0) 3 credits
Emphasis on altered physiological processes across the lifespan. Etiological factors, clinical manifestations and management of altered processes are discussed. Prerequisite: BIOL 251, 262, 263.

**391 INDEPENDENT STUDY** 1 to 6 credits
Opportunity for students to master areas of knowledge through independent organization and assimilation of materials under guidance of faculty advisers.

**417 CLIENTS AT RISK FOR ALTERATIONS IN HEALTH: THEORY** (4+0) 4 credits
Theories of nursing, behavioral and natural sciences, and humanities related to disease prevention, promotion, maintenance and restoration of health for individuals, families, groups, and communities. Prerequisite: NURS 327, 328, 337. Corequisite: NURS 418.

**418 CLIENTS AT RISK FOR ALTERATIONS IN HEALTH: PRACTICE** (0+18) 6 credits
Focus is on health promotion, disease prevention, maintenance and restoration of health for individuals, families, groups and communities. A holistic approach is applied in care. Prerequisite: NURS 327, 328, 337. Corequisite: NURS 417.

**419 ESSENTIALS OF RESEARCH IN NURSING** (3+0) 3 credits
Research process and its relationship with nursing theory and practice. Emphasis on evaluation and utilization of nursing research.

**427 CLIENTS WITH CRITICAL ALTERATION IN HEALTH:THEORY** (3+0) 3 credits
Focus is on theories of human care nursing for individuals, families, groups and communities experienced critical alterations in health. Prerequisite: NURS 417, 418, 419. Corequisite: NURS 428, 441, 450.

**428 CLIENTS WITH CRITICAL ALTERATIONS IN HEALTH: PRACTICE** (0+6) 6 credits
Focus on the application of creative problem with individuals, families, groups and communities experiencing critical alterations in health in a variety of settings. Prerequisite: NURS 417, 418, 419. Corequisite: NURS 427, 441, 450.

**430, 630 AGING AND HEALTH** (3+0) 3 credits
Increases awareness of health issues in aging. Issues include definitions of health, high-risk elderly, and future aging.

**441 NURSING MANAGEMENT/LEADERSHIP** (3+0) 3 credits
Introduction to select theories of leadership, decision making, motivation and management. Focus on leadership styles conducive to caring/supportive nursing practice environments. Corequisite: NURS 427, 428, 450.

**445 NURSING RESEARCH PRACTICUM** (1+3 per credit) 2 or 3 credits
Practicum in ongoing research projects. Emphasis on data collection methods, analysis, interpretation, and report writing.

**450 LEADERSHIP PRACTICUM** (0+6) 2 credits
Beginning leadership and management skills under the direct supervision of professional nurse managers in various health care settings. Corequisite: NURS 427, 428, 441. Prerequisite: NURS 427, 428, 441.

**490, 690 SPECIAL PROBLEMS AND PRACTICES IN NURSING** 1 to 10 credits
Individual or group study in areas relevant to nursing theory and/or practice. Maximum of 10 credits.

**491 INDEPENDENT STUDY** 1 to 6 credits
(See NURS 391 for description.)

**701 ROLE OF THE NURSE ADMINISTRATOR** (3+0) 3 credits
Functions of the nurse administrator in any health care organization are analyzed and appraised for predicted application.

**703 ROLE OF THE NURSE EDUCATOR** (3+0) 3 credits
Learning theories, principles of curriculum development and evaluation, teaching methods and modern technology are within the teaching role of the nurse. Prerequisite: NURS 706.

**704 PRACTICUM IN NURSING EDUCATION** (0+9) 3 credits
Application of teaching/learning principles and synthesis of the nurse educator role in vocational or technical nursing education, hospital inservice or patient education programs. Prerequisite or corequisite: NURS 703.

706 THEORETICAL FOUNDATIONS OF NURSING (3+0) 3 credits
Analysis of conceptual nursing frameworks with focus on issues related to theory development in nursing.

708 NURSING THEORIES AND FAMILY HEALTH PATTERNS (3+0) 3 credits
Analysis of functional and dysfunctional family health patterns in relation to nursing practice. Synthesis of nursing and family theories with emphasis on nursing interventions. Prerequisite: NURS 706.

715 CLINICAL PHYSIOLOGY (2+3) 3 credits
Basic theoretical physiology for clinicians. Clinical conference workshops in addition to didactic lectures.

716 ADVANCED AMBULATORY PHARMACY (3+0) 3 credits
Reviews drug therapy in ambulatory practice, including major drug categories and patient responses. Legal aspects of prescribing, dispensing, sampling in primary care are addressed.

720 RESEARCH IN NURSING (2+3) 3 credits
Introduction to process of scientific inquiry and literature of nursing research. Includes development of research proposal. Prerequisite: NURS 706.

721 CLINICAL PHENOMENA I (3+0) 3 credits
Analysis of models of health focusing on human responses to illness/transitions throughout the life span. Prerequisite or corequisite: NURS 708.

722 ADVANCED NURSING PRACTICE I: ADULT HEALTH (0+9) 3 credits
Clinical practicum focusing on patterns of human responses to illness/transitions in adults. Emphasis on explanatory decisions related to adult health problems. Prerequisite: NURS 721. Prerequisite or corequisite: advanced physiology cognate.

723 ADVANCED NURSING PRACTICE I: PSYCHIATRIC/MENTAL HEALTH (0+9) 3 credits
Clinical practicum focusing on patterns of human responses to stress throughout the life span. Emphasis on explanatory decisions related to psychosocial problems. Prerequisite NURS 721. Prerequisite or corequisite: advanced social/behavioral cognate.

724 ADVANCED NURSING PRACTICE I: CHILDREARING FAMILY (0+9) 3 credits
Clinical practicum focusing on patterns of human responses to illness or transitions in childrearing families. Emphasis on explanatory decisions related to childbearing or childrearing. Prerequisite: NURS 721. Prerequisite or corequisite: advanced physiology cognate.

730 THEORETICAL FOUNDATIONS FOR CHANGE (3+0) 3 credits
Exploration and analysis of current health issues affecting advanced nursing practice. Emphasis on the nurse as a change agent within health care organizations.

731 CLINICAL PHENOMENA II (3+0) 3 credits
Continuation of analysis of human responses to illness/transitions throughout the life span in specialty areas of clinical nursing practice. Prerequisite: NURS 722 or 723 or 724.

732 ADVANCED NURSING PRACTICE II: ADULT HEALTH (0+9) 3 credits
Clinical practicum with continued focus on patterns of human responses to illness/transitions in adults. Emphasis on analysis of managerial decisions related to adult health problems. Prerequisite: NURS 722. Prerequisite or corequisite: NURS 731.

733 ADVANCED NURSING PRACTICE II: PSYCHIATRIC/MENTAL HEALTH (0+9) 3 credits
Clinical practicum with continued focus on patterns of human responses to stress throughout the life span. Emphasis on analysis of managerial decisions related to psychosocial problems. Prerequisite: NURS 723. Prerequisite or corequisite: NURS 731.

734 ADVANCED NURSING PRACTICE II: CHILDREARING FAMILY (0+9) 3 credits
Clinical practicum, continued focus on patterns of human responses to illness/transitions in childrearing families. Emphasis on analysis of managerial decisions related to childbearing/childrearing. Prerequisite: NURS 724. Prerequisite or corequisite: NURS 731.

735 ADVANCED NURSING PRACTICE II: NURSING ADMINISTRATION (0+9) 3 credits
Application and testing of organizational and administrative theory within a selected health care setting. Prerequisite: NURS 722 or 723 or 724.

742 ADVANCED NURSING PRACTICE III: ADULT HEALTH (0+9) 3 credits
Synthesis of clinical specialist role in adult health. Analysis of managerial decisions; emphasis on planning, implementation, evaluation of nursing interventions. Includes clinical conference. Prerequisite: NURS 732.

743 ADVANCED NURSING PRACTICE III: PSYCHIATRIC/MENTAL HEALTH (0+9) 3 credits
Synthesis of clinical specialist role in psychiatric/mental health. Analysis of managerial decisions; emphasis on planning, implementation, evaluation of nursing interventions. Includes clinical conference. Prerequisite: NURS 733.

744 ADVANCED NURSING PRACTICE III: CHILDREARING FAMILY (0+9) 3 credits
Synthesis of clinical specialist role with childrearing family. Analysis on managerial decisions; emphasis on planning, implementation, evaluation of nursing interventions. Includes clinical conference. Prerequisite: NURS 734.

745 ADVANCED NURSING PRACTICE III: NURSING ADMINISTRATION (0+9) 3 credits
Synthesis of the nurse administrator role. Analysis of managerial decisions; emphasis on planning, implementation, evaluation of administrative interventions. Includes clinical conference. Prerequisite: NURS 735.

749 HEALTH AND HEALTH CARE IN RURAL CULTURES (3+0) 3 credits
Examines health/health care patterns of people in rural cultures. Focus on development of culturally congruent delivery of primary care/nursing roles.

750 ADVANCED HEALTH ASSESSMENT AND PROMOTION (2+9) 5 credits
Physiological/psychosocial processes relevant to development of selected human pathologies across life span. Evaluation/synthesis of assessment data in relation to human experience.

751 MANAGEMENT OF ACUTE EMERGENT ILLNESS (2+9) 5 credits
Examines pathophysiological/psychosocial/human basis for occurrence, detection and management of selected acute emergent illness across lifespan. Management focuses on prevention, entervention, evaluation and human experiences.

752 MANAGEMENT OF CHRONIC ILLNESS (2+9) 5 credits
Examines pathophysiological/psychosocial/human basis for occurrence, detection and management of selected chronic illnesses across lifespan. Management focuses on prevention, intervention, evaluation and human experiences.

753 CLINICAL PRACTICUM IN FAMILY HEALTH (0+27) 5 credits
Synthesis of the family nurse practitioner role in primary care in selected rural/urban settings.

791 SPECIAL TOPICS 1 to 3 credits
Guided literature review and analysis.

793 INDEPENDENT STUDY 1 to 6 credits
Independent research or project in an area of special interest.

794 COLLOQUIA 3 credits
Discussion of advanced selected topics by students and faculty.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

796 PROFESSIONAL PAPER 3 credits
Required of all students who wish to complete a master of science degree in nursing under Plan B.

797 THESIS 1 to 6 credits
Required of all students who wish to complete a master of science degree in nursing under Plan A.

# NUTRITION (NUTR)

**121 HUMAN NUTRITION** (3+0) 3 credits
The principles of nutrition and their application to well balanced diets. Four laboratory sessions are included each semester.

**223 PRINCIPLES OF NUTRITION** (3+0) 3 credits
Nutrient functions and bases for nutrient requirement at the cellular level. Prerequisite: CHEM 101, 142.

**225 PRINCIPLES OF FOOD SCIENCE** (2+3) 3 credits
Principles of food preparation based on physical and chemical changes. Development of professional skills in (a) manipulation of variables using class representative foods, and (b) critical evaluation of food quality.

**273 FOOD AND NUTRITION** (3+0) 3 credits
Influences of economic, cultural, aesthetic and sociopsychological aspects of food habits on dietary patterns and nutrition of individuals.

**320 QUANTITY FOOD PURCHASING** (2+3) 3 credits
Food purchasing for food service systems, understanding of cost factors, marketing factors, food laws, quality standards and basic manufacturing processes.

**321 FOOD SERVICE SYSTEMS MANAGEMENT** (3+0) 3 credits
Organization and operation of food services; management principles; food service personnel; labor laws; regulatory agencies; food cost control; record keeping.

**325 NUTRITIONAL ANTHROPOLOGY** (3+0) 3 credits
Historical roots and current manifestations of food habits and dietary patterns in different cultures and ethnic groups.

**400, 600 SPECIAL PROBLEMS** 1 to 5 credits
Individual study or research in nutrition. Maximum of 10 credits.

**419, 619 PRINCIPLES OF HUMAN NUTRITION AND METABOLISM** (3+0) 3 credits
Major dietary nutrients and follows their digestion, absorption, metabolism, regulation and role in human disease states. Prerequisite: NUTR 223.

**421, 621 READINGS IN FOODS AND NUTRITIONS** (2+0) 2 credits
Intensive investigation of current research in foods and nutrition through critical evaluation of recent studies. Prerequisite: 15 credits of physical or behavioral science. Maximum of 4 credits.

**422, 622 NUTRITION IN THE LIFE CYCLE** (1+0) 1 credit
Relationship between nutrient needs, development and feeding practices throughout life cycle: (a) pregnancy and lactation, (b) infancy, (c) childhood, (d) adolescence, (e) adults 20-40 years, (f) middle and later life. Prerequisite: introductory nutrition course. Maximum 1 credit per topic.

**425, 625 BEVERAGES IN THE HOSPITALITY INDUSTRY** (3+0) 3 credits
Survey of the history, classification, production, storage and service of wines, beers and spirits. Sensory evaluation of beverage quality and characteristics. Prerequisite: must be 21 or older.

**426, 626 DIET THERAPY** (3+0) 3 credits
Modification of the normal diet for the prevention and treatment of diseases. Prerequisite: NUTR 223 plus approved biochemistry or 15 credits of life science.

**427, 627 NUTRITIONAL ASSESSMENT AND PHYSICAL PERFORMANCE** (2+2) 3 credits
Current concepts including dietary evaluation, anthropometric, clinical and biochemical techniques; evaluation of weight control techniques; examination of relationship between nutrition and physical performance. Prerequisite: NUTR 121 or 223.

**433, 633 VITAMINS AND MINERALS** (3+0) 3 credits
Metabolism of micronutrients including absorption, transport, storage, interaction and excretion; historical perspectives, dietary requirements, effects of excesses and deficiencies, and role in health and disease. Prerequisite: NUTR 223.

**440, 640 ADVANCED NUTRITION** (3+0) 3 credits
Examination of physiologic/biochemical functions of major nutrients. Prerequisite: NUTR 223.

**470 PREPROFESSIONAL INTERNSHIP** 3 credits *S/U only*
Work with one or more community agencies or firms that utilize hc economics subject matter as they work with clientele. Combines a semi with supervised field experience.

**700 INDEPENDENT STUDY: RESEARCH AND CLINICAL PROBL SOLVING** 1 to 3 credits

**725 NUTRITION AND HEALTH** (3+0) 3 credits
Nutrition in various disease states. Focuses on research studies methodology in the current literature.

**726 SEMINAR IN NUTRITION** (1+0) 1 credit
An examination of current nutrition issues and research foci. Maximur 3 credits.

**727 NUTRITION PRACTICUM** (0+3 per credit) 1 to 3 credits
Selected clinical nutrition experiences with faculty guidance and supe sion. Prerequisite: NUTR 725.

**729 COLLOQUIUM** (1+0) 1 credit
Presentation and analysis of original research. Maximum of 4 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

# OBSTETRICS AND GYNECOLOGY (OBGY

**451, 651 CLERKSHIP** (1+21) 8 credits
Hospital and ambulatory clinical experiences with preceptorial supe sion and daily conferences to develop knowledge (practical, theoret basic science), technical and interpersonal skills basic to practicing ob rics and gynecology.

**461, 661 ELECTIVES** 2 to 8 credits
Elective experiences in the major subspecialities of obstetrics and gyn ogy including: (a) advanced gynecology, (b) obstetrics/gynecology pal ogy, (c) clinical obstetrics, (d) gynecological oncology, (e) obstetrics/g cology radiology, (f) office obstetrics/gynecology, (g) surgical anatom societal perceptions, (j) bioethical issues, (k) history of obstetrics/gyn ogy, (m) nutrition in pregnancy, (n) nutrients in prenatal care, (p) obst cal/gynecological literature. Prerequisite: third- or fourth-year me students. Maximum of 8 credits in any one subtopic. Maximum total cr for any combination of subtopics is 16.

**490 690 INDEPENDENT STUDY** 1 to 4 credits
Individualized in-depth study of a specific area of obstetrics and gynecol

# PATHOLOGY AND LABORATORY MEDICINE (PATH)

**462, 662 PRECEPTORSHIP** (0+8) 3 or 4 credits
Observe and participate in forensic autopsies, including microscopics and field investigations, carried out by medical examiner/coroners.

**472, 672 MEDICAL PHOTOGRAPHY AND PHOTOMICROGRAI** (2+3) 3 credits
Application of sophisticated macroscopic and microscopic photogra techniques and methods to depict normal and abnormal gross and m scopic features. Primarily for medical students.

**490, 690 INDEPENDENT STUDY** 1 to 4 credits
Research in subject of interest to pathology with approval of departm committee. Medical students only. Maximum of 8 credits.

**601 GENERAL HUMAN PATHOLOGY** (3+3) 4 credits
Basic pathology including reactions to disease, i.e., inflammation, re neoplasia, circulatory disturbances, cytogenetics, and forensic princi demonstrated by gross and microscopic laboratory exercises. Prerequ ANAT 601; PHSY 601.

**602 SYSTEMIC HUMAN PATHOLOGY** (4+6) 6 credits
General pathophysiological principles applied to diseases of organ systems. Laboratory consists of seminars, autopsies, CPCs and in-depth study of gross and microscopic appearances of diseased organs. Prerequisite: PATH 601.

**603 LABORATORY MEDICINE I** (1+3) 2 credits
Theory and practical applications for ordering and interpreting laboratory tests. Special emphasis on clinical chemistry and hematology, including coagulation and blood banking. Involves certain simple laboratory tests.

**604 LABORATORY MEDICINE II** (2+0) 2 credits
Theory and practical applications for ordering and interpreting laboratory tests. Special emphasis on clinical chemistry and endocrinology testing, clinical microscopy, and urinalysis. Involves certain simple laboratory tests.

## PEDIATRICS (PEDI)

**451, 651 CLERKSHIP** (1+21) 8 credits
Hospital and ambulatory clinical experience with preceptorial supervision to develop knowledge (practical, theoretical, basic science), technical and interpersonal skills basic to practicing pediatrics.

**461, 661 ELECTIVES** 2 to 8 credits each
Elective experiences in the major pediatrics subspeciality areas including: (a) adolescent medicine, (b) behavioral pediatrics, (c) neonatal-perinatal medicine, (f) allergy and immunology, (g) cardiology, (h) neonatal medicine, (j) endocrinology, (k) perinatology, (m) pediatric hematology/onocology, (n) PICU/pulmonary. Prerequisite: third- or fourth-year medical students. Maximum of 8 credits in any one subtopic. Maximum total credits for any combination of subtopics is 16.

**490, 690 INDEPENDENT STUDY** 1 to 3 credits

**491, 691 CARE OF THE HANDICAPPED CHILD** (3+25) 2 credits
Participation in the care of children with handicapping conditions for one week in July at Camp Galilee in Glenbrook, Nevada. For any student enrolled in the School of Medicine.

## PHARMACOLOGY (PHAR)

**401, 601 MEDICAL PHARMACOLOGY I** (9+0) 9 credits
Principles, mechanisms of action, therapeutic indications, contra-indications, side-effects and toxic manifestations of pharmacological agents. Prerequisite: B CH 401; PHYS 402 or equivalent.

**492, 692 PROBLEMS IN CLINICAL PHARMACOLOGY AND THERAPEUTICS** (1+0 per credit) 1 to 4 credits
Discussion and literature search of therapeutic problems in specific case histories; indications and contraindications of drug therapy in relation to basic pharmacologic properties; expected beneficial results, possible side effects, adverse reactions, and drug interactions.

**495, 695 SEMINAR** (1+0) 1 credit
Presentation on special topics in pharmacology. Maximum of 2 credits.

**497, 697 SELECTED TOPICS** (1 to 3+0) 1 to 4 credits
Emphasizes current literature of pharmacologic interest. Maximum of 8 credits. Prerequisite: background course in pharmacology.

**499, 699 DIRECTED RESEARCH** (0+3 per credit) 1 to 4 credits
Guided research in any of the areas of mutual interest to the student and faculty. Maximum of 8 credits.

**793 INDEPENDENT STUDY** 1 to 6 credits
Prerequisite: major in pharmacology or cell and molecular biology.

## PHILOSOPHY (PHIL)

**110 INTRODUCTION TO PHILOSOPHY** (3+0) 3 credits
Basic problems in different areas of philosophy such as ethics, political theory, metaphysics and epistemology.

**112 WORLD RELIGIONS** (3+0) 3 credits
Main moral and religious doctrines of Hinduism, Buddhism, Confusianism, Taoism, Islam, Judaism and Christianity.

**114 INTRODUCTION TO SYMBOLIC LOGIC** (3+0) 3 credits
Principles of correct reasoning, using modern symbolic techniques of the propositional calculus and simple quantification theory.

**125 INTRODUCTION TO ETHICAL THEORY** (3+0) 3 credits
Representative classical ethical theories, e.g., Aristotle, Hume, Kant, utilitarianism, emotive ethics.

**130 INTRODUCTION TO METAPHYSICS** (3+0) 3 credits
Selected problems concerning human nature and reality, e.g., the mind-body problem, freedom and determinism, the existence of God, space and time.

**200 CRITICAL THINKING AND REASONING** (3+0) 3 credits
Nonsymbolic introduction to logical thinking in everyday life, law, politics, science, advertising; common fallacies; the uses of language, including techniques of persuasion.

**202 INTRODUCTION TO THE PHILOSOPHY OF THE ARTS** (3+0) 3 credits
Topics include aesthetic standards, artistic creativity and the nature of art and its role in society.

**203 INTRODUCTION TO EXISTENTIALISM** (3+0) 3 credits
Readings from Kierkegaard, Nietzsche, Jaspers, Sartre, Heidegger. An examination of the existentialist concepts "being" and "nonbeing," "estrangement," "dread," "anxiety" and "freedom."

**207 INTRODUCTION TO SOCIAL AND POLITICAL PHILOSOPHY** (3+0) 3 credits
Theories concerning the nature of society and political structure. Readings from classical and contemporary philosophers.

**211 ANCIENT PHILOSOPHY** (3+0) 3 credits
Major figures in history of philosophy from the pre-Socratics through the early medieval thinkers.

**212 MEDIEVAL PHILOSOPHY** (3+0) 3 credits
Major figures in philosophy from the early Church fathers to Ockham.

**213 MODERN PHILOSOPHY** (3+0) 3 credits
Philosophy from the Renaissance through the 18th century. Readings from Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume and Kant.

**224 INTRODUCTION TO PHILOSOPHY OF SCIENCE** (3+0) 3 credits
Philosophical problems and implications of scientific inquiry, such as the nature of laws, theories, explanations, scientific revolutions, limits of knowledge, space and time.

**301-302 IDEAS, VALUES AND CULTURES I AND II** (3+0) 3 credits each
Ideas, values and cultures as they relate to concepts of man, society and the cosmos. Includes Western, non-Western and women's primary source material.

**308 INTRODUCTION TO FOUNDATIONS OF MATHEMATICS** (3+0) 3 credits
(See MATH 308 for description.)

**314 19TH CENTURY PHILOSOPHY** (3+0) 3 credits
Readings from Hegel, Schopenhauer, Marx, Nietzsche, Bentham, Mill, Bradley and others. Prerequisite: 3 credits in philosophy.

**315 20TH CENTURY PHILOSOPHY** (3+0) 3 credits
Significant movements in 20th century philosophy such as phenomenology, pragmatism, logical positivism, British analytic philosophy, and the later Wittgenstein and his followers. Prerequisite: 3 credits in philosophy.

**316 AMERICAN PHILOSOPHY** (3+0) 3 credits
Development of philosophical thought in America with particular emphasis on pragmatism. Prerequisite: 3 credits in philosophy.

**323 PHILOSOPHY OF RELIGION** (3+0) 3 credits
Nature and validity of religious experience. Topics include various concep-

tions of the nature of God, His existence, the problems of immortality and evil and the possibility of religious knowledge. Prerequisite: 3 credits in philosophy.

**325 PHILOSOPHY OF HISTORY** (3+0) 3 credits
Discussion of historical methods, the idea of progress and meaning in history. Prerequisite: 3 credits in philosophy.

**326 SYMBOLIC LOGIC** (3+0) 3 credits
Developments in modern logic, including characteristics of deductive systems, analysis of propositions and techniques of deduction. Prerequisite: PHIL 114. (Same as MATH 307.)

**401, 601 ETHICS** (3+0) 3 credits
Detailed discussion of major ethical theories. Prerequisite: 6 credits in philosophy.

**402,602 AESTHETICS** (3+0) 3 credits
Investigation of modern trends in aesthetics. Prerequisite: 6 credits in philosophy.

**403, 603 THEORY OF KNOWLEDGE** (3+0) 3 credits
Examination of the nature of knowledge emphasizing the problem of our knowledge of the external world. Prerequisite: 6 credits in philosophy.

**404, 604 METAPHYSICS** (3+0) 3 credits
Theories concerning the nature of reality. Prerequisite: 6 credits in philosophy.

**405 605 PHILOSOPHY OF MIND** (3+0) 3 credits
Various theories concerning the relation between mind and body. Other topics may include an analysis of thinking, intending and a discussion of the possibility of private languages, etc. Prerequisite: 6 credits in philosophy.

**406, 606 PHILOSOPHY OF LANGUAGE** (3+0) 3 credits
Examination of selected problems in the philosophy of language such as meaning, reference, truth and analyticity. Prerequisite: 6 credits in philosophy.

**407, 607 SOCIAL AND POLITICAL PHILOSOPHY** (3+0) 3 credits
Detailed discussion of theories of society and the nature of political obligation. Prerequisite: 6 credits in philosophy.

**410, 610 PLATO** (3+0) 3 credits
Development of Plato's thought, focusing upon the dialogues of his middle and late period. Prerequisite: 6 credits in philosophy.

**411, 611 ARISTOTLE** (3+0) 3 credits
Detailed study of selected major works in Aristotle. Prerequisite: 6 credits in philosophy.

**413, 613 BRITISH EMPIRICISTS** (3+0) 3 credits
Detailed study of the major writings of Locke, Berkeley and Hume. Prerequisite: 6 credits in philosophy.

**414, 614 CONTINENTAL RATIONALISTS** (3+0) 3 credits
Detailed study of the major writings of Descartes, Spinoza and Leibniz. Prerequisite: 6 credits in philosophy.

**415, 615 KANT** (3+0) 3 credits
Intensive study of the *Critique of Pure Reason* and related works. Prerequisite: 6 credits in philosophy.

**465, 665 PHILOSOPHY AND METHOD OF THE PHYSICAL SCIENCES** (3+0) 3 credits
Interdepartmental course examining the basic presuppositions and procedures in the physical sciences.

**481, 681 PROBLEMS IN THE HISTORY AND PHILOSOPHY OF SCIENCE** (3+0) 3 credits
(See HIST 481, 681 for description.)

**494, 694 SELECTED TOPIC IN PHILOSOPHY** (3+0) 3 credits
Major topic or issue in philosophy. May be repeated to a maximum of 9 credits when content differs. Prerequisite: 6 credits in philosophy.

**499, 699 INDIVIDUAL RESEARCH** 1 to 6 credits
Pursuit by the advanced student of special interests in philosophy. Maximum of 12 credits.

**708 SEMINAR IN PHILOSOPHICAL PSYCHOLOGY** (3+0) 3 credits
(See PSY 708 for description.)

**711 SEMINAR IN MAJOR FIGURES IN THE HISTORY OF PHILOSOPHY** (3+0) 3 credits
Maximum of 9 credits when content differs.

**712 SEMINAR IN MAJOR MOVEMENTS IN THE HISTORY OF PHILOSOPHY** (3+0) 3 credits
Maximum of 9 credits when content differs.

**713 SEMINAR IN PHILOSOPHICAL PROBLEMS** (3+0) 3 credits
Intensive analysis of major topic or issue in philosophy. Maximum of 9 credits when content differs.

**737 TEACHING METHODS IN PHILOSOPHY** (1+0) 1 credit
Effective procedures of teaching philosophy on the college or university level. Maximum of 4 credits.

**793 INDEPENDENT STUDY** 1 to 6 credits Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits
Maximum of 6 credits.

*Inactive Courses*
321 PHILOSOPHY OF EDUCATION (3+0) 3 credits
794 COLLOQUIA (3+0) 3 credits

# PHYSICS (PHYS)

*Stated course prerequisites must be observed unless an equivalent preparation is approved by the department.*

**100 INTRODUCTORY PHYSICS** (3+0) 3 credits
Concise treatment of mechanics, electricity, magnetism, heat, light, sound, relativity, and quantum mechanics. Knowledge of basic algebra and geometry is essential.

**106 ENVIRONMENTAL SCIENCE** (3+0) 3 credits
Introduction for the nonspecialist to the principles which control the behavior of atmosphere and oceans, circulation of atmosphere and oceans; weather and climate; weather prediction and its economic implications; clouds and precipitation; pollution of the atmosphere; application to urban problems.

**109 PLANETARY ASTRONOMY** (3+0) 3 credits
Descriptive introduction to current concepts of the solar system. Modern observational techniques and their results. Supplementary use of telescopes and planetarium facilities. Elementary algebra is occasionally used.

**110 STELLAR ASTRONOMY** (3+0) 3 credits
Descriptive introduction to stellar and galactic systems. The life cycle of stars. Theories of the universe and its formation. Supplementary use of telescopes and planetarium facilities. Elementary algebra is occasionally used.

**117 METEOROLOGY** (3+0) 3 credits
Description of the behavior of the atmosphere with special emphasis on the physical processes involved in the weather.

**151-152 GENERAL PHYSICS** (3+0) 3 credits each
General physics primarily for students in arts and science, medicine, and agriculture. Lectures, experimental demonstrations and problem work. Prerequisite: elementary algebra, geometry, knowledge of trigonometry.

**153-154 GENERAL PHYSICS LABORATORY** (0+2) 1 credit each
To accompany PHYS 151-152. Experimental work, largely quantitative in character, designed to illustrate fundamental physical principles and to develop skill and accuracy in methods of physical measurement. Prerequisite: Elementary algebra, geometry, knowledge of trigonometry.

**201 PHYSICS FOR SCIENTISTS AND ENGINEERS I** (3+0) 3 credits
Discussions of vectors, rectilinear and plane motion, particle dynamics, work and energy, momentum, rotational mechanics, oscillations, gravitation, fluids, plastic waves and sound. Prerequisite: MATH 215 or 216.

**202 PHYSICS FOR SCIENTISTS AND ENGINEERS II** (3+0) 3 credits
Discussions of electric charge, field, potential, current, dielectrics, circuit elements, magnetic fields and materials, electromagnetic oscillations, light, reflection, optical systems, interference, diffraction, and polarization. Prerequisite: PHYS 201.

**203 PHYSICS FOR SCIENTISTS AND ENGINEERS III** (3+0) 3 credits
Discussions of thermodynamic laws, kinetic theory, relativity, wave aspects of particles, quantum mechanics, statistical mechanics, band theory, semiconductors, radioactivity, nuclear physics, elementary particles. Prerequisite: PHYS 202; MATH 215, 216.

**204 PHYSICS FOR SCIENTISTS AND ENGINEERS LABORATORY I** (0+2) 1 credit
Laboratory experiments on vectors, motion, particle, dynamics, work and energy, momentum, rotational mechanics, oscillatory motions, wave motion and sound. Prerequisite: MATH 215 or 216.

**205 PHYSICS FOR SCIENTISTS AND ENGINEERS LABORATORY II** (0+2) 1 credit
Laboratory experiments on electric charge, field, potential circuit elements, magnetic fields, light, reflection, refraction, interference, diffraction and polarization. Prerequisite: PHYS 201.

**206 PHYSICS FOR SCIENTISTS AND ENGINEERS LABORATORY III** (0+3) 1 credit
Laboratory experiments on thermodynamic laws, kinetic theory, wave aspects of particles, quantum mechanics, solid state physics, semiconductors, radioactivity, nuclear physics and elementary particles. Prerequisite: PHYS 202; MATH 215, 216.

**293 DIRECTED STUDY** 1 to 3 credits
Individual study conducted under the direction of a faculty member. Maximum of 6 credits. Prerequisite: PHYS 151 or 201.

**351 MECHANICS** (3+0) 3 credits
Newtonian mechanics. Mathematical formulation of dynamics of a particle and systems of particles including applications to atomic physics. Prerequisite: general physics and calculus. Differential equations desirable.

**352 MECHANICS** (3+0) 3 credits
Continuation of PHYS 351. Mechanics of continuous media using Fourier series. Introduction to generalized coordinates including methods of Lagrange and Hamilton. Prerequisite: PHYS 351.

**355 PHYSICAL ELECTRONICS** (2+3) 3 credits
Physical principles of electronic instrumentation used in physics. Emphasis on modern scientific instrumentation, components, circuits, active elements, systems. Prerequisite: general physics and calculus. Differential equations concurrently.

**361-362 LIGHT AND PHYSICAL OPTICS** (3+0) 3 credits each
Topics in physical optics including interference, diffraction and polarization, with applications. Nature of light. Survey of geometrical optics and optical instruments. Prerequisite: general physics and calculus.

**363-364 OPTICS AND SPECTROSCOPY LABORATORY** (0+3) 1 credit each
Basic optical measurements. Theory and use of spectrometers, spectrographs and interferometers. Excitation and recording of emission spectra. Corequisite: PHYS 361-362.

**411, 611 INTRODUCTION TO ATMOSPHERIC PHYSICS** (3+0) 3 credits
Atmospheric scattering of light; visibility; optical phenomena. Elements of radiative heat transfer and of cloud physics. Description of the upper atmosphere. Prerequisite: PHYS 203 or 152, 154; MATH 310, 320.

**412, 612 INTRODUCTION TO AIR POLLUTION** (3+0) 3 credits
Aerosol and gas phase classification and measurement; regulatory requirements and control technology Application to smog, acid deposition, the ozone layer. Local and long range transport. Prerequisite: PHYS 151,152, 203 or equivalent.

**421, 621 MODERN PHYSICS I** (3+0) 3 credits
Introduction to relativity and quantum mechanics. Prerequisite: PHYS 203 or equivalent, differential equations. Advanced calculus desirable.

**422, 622 MODERN PHYSICS II** (3+0) 3 credits
Applications of relativity and quantum mechanics to atomic and nuclear structure. Prerequisite: PHYS 421.

**423, 623 ADVANCED LABORATORY TECHNIQUES I** (0+3) 1 credit
Application of contemporary devices for the acquisition and interpretation of data obtaind from physical systems encountered in atomic, nuclear, solid state and particle physics. Prerequisite: PHYS 203, 206.

**424, 624 ADVANCED LABORATORY TECHNIQUES II** (0+3) 1 credit
Continuation of PHYS 423, 623. Prerequisite: PHYS 203, 206.

**425, 625 THERMAL PHYSICS** (3+0) 3 credits
Statistical basis of thermodynamics. Applications to fundamental processes; entropy, distribution functions, classical and quantum gases, phase transformations, low temperature phenomena. Prerequisite: MATH 217; PHYS 203.

**426, 626 INTRODUCTION TO SOLID STATE PHYSICS** (3+0) 3 credits
Most important properties of solids, including crystal symmetrics, lattice, vibrations, conductivity, magnetism, transport phenomena, the free electron model and band theory. Prerequisite: PHYS 421.

**466, 666 INTRODUCTION TO MICROCOMPUTER INTERFACING** (2+3) 3 credits
Introductory theory combined with laboratory work involving digital electronics, microcomputer programming, analog to digital conversion and data acquisition with microcomputers. Prerequisite: PHYS 355.

**473-474, 673-674 ELECTRICITY AND MAGNETISM** (3+0) 3 credits each
Electrostatics, magnetic fields, and electromagnetism. Maxwell's equations, theory of metallic conduction, motion of charged particles, radiation. Prerequisite: general physics, differential equations.

**483-484, 683-684 SPECIAL TOPICS IN PHYSICS** (1 to 3+0) 1 to 3 credits each
Topics of current interest which are not incorporated in regular offerings. Prerequisite: PHYS 201, 202 or 203.

**493, 693 SPECIAL PROBLEMS** 1 to 3 credits each
Laboratory or research work not specifically given in courses listed above. Maximum of 6 credits.

**701 MATHEMATICAL PHYSICS** (3+0) 3 credits
Designed to acquaint the student with some of the specific mathematical preliminaries to advanced study of theoretical physics. Prerequisite: graduate standing in physics.

**702 CLASSICAL MECHANICS** (3+0) 3 credits
Newtonian mechanics from an advanced point of view. Variational principles, Lagrange's and Hamilton's equations, central forces, rigid body motion, canonical transformations, Hamilton-Jacobi theory, small oscillations. Prerequisite: graduate standing in physics, PHYS 701.

**704 COMPUTATIONAL TECHNIQUES IN PHYSICAL SCIENCE** (3+0) 3 credits
Quantitative solutions of selected problems in classical, modern and atmospheric physics to develop skills in problem formulation, computer application and graphical output. Prerequisite: Fortran programming skill.

**706 COMPUTING AND STATISTICAL SIMULATION** (2+0) 2 credits
Computer simulation of random processes obeying specified probability distributions and time series frequency and relationships; theoretical derivations, coding structure and correct use of the computer. Prerequisite: Acquaintance with computers and Fortran coding skill.

**707 SOLID STATE PHYSICS** (3+0) 3 credits
Solid state properties related to the crystal lattice and the behavior of electrons in the lattice: band structure, electrontransport, phonons, X-ray diffraction, magnetism. Prerequisite: undergraduate solid state physics.

**708 NUCLEAR PHYSICS** (3+0) 3 credits
Nuclear properties including forces, moments and decay modes. Scattering, reactions and nuclear models. Prerequisite: graduate standing in physics.

**712 ELECTROMAGNETIC THEORY** (3+0) 3 credits
Relativistic formulation of electrodynamics. Motion of charges in electro-

magnetic fields. Radiation theory, cavities, wave guides. Wave scattering, diffraction, refraction, and dispersion. Multipole fields. Prerequisite: PHYS 701, 702.

**721 QUANTUM THEORY I** (3+0) 3 credits
Development of quantum theory. Schroedinger equation, operators, expectation values. Matrix formalism of Heisenberg, eigenvalue problems, wave packets, conjugate variables and uncertainty principle. Solution of wave equation for square potentials, harmonic oscillator and hydrogen-like atoms. Prerequisite: graduate standing in physics.

**722 QUANTUM THEORY II** (3+0) 3 credits
Perturbation theory, both time-independent and time-dependent Degeneracy, interaction of matter with radiation, selection rules. Scattering theory. Born approximation and other approximation methods. Dirac notation and an introduction to spin. Prerequisite: PHYS 721.

**732 STATISTICAL MECHANICS** (3+0) 3 credits
Ensembles, fluctuations and statistical basis of laws of thermodynamics. Distribution functions with application to cooperative phenomena, partition functions and quantum statistics. Prerequisite: graduate standing in physics.

**740 FLUID DYNAMICS** (3+0) 3 credits
Navier-Stokes equations; viscous and inviscid fluids; vorticity; boundary layer theory. Theoretical and numerical techniques; application to incompressible flow in the atmosphere. Prerequisite or corequisite: PHYS 701.

**741 ATMOSPHERIC MOTIONS I** (3+0) 3 credits
General circulation, meteorological analysis, hurricane, tropical and extra tropical cyclones. Prerequisite or corequisite: PHYS 701, 740.

**742 ATMOSPHERIC MOTIONS II** (3+0) 3 credits
Principles of fluid dynamics applied to the atmosphere. Analysis of atmospheric models used in numerical computations for several scales of motion. Prerequisite: PHYS 741.

**743 CLOUD AND AEROSOL PHYSICS** (3+0) 3 credits
Aerosol nucleation, growth and coagulation, cloud droplet and ice crystal nucleation and growth; cloud thermodynamics and chemistry; precipitation and electrification processes; measurement and modeling techniques. Prerequisite: PHYS 701.

**745 ATMOSPHERIC TURBULENCE** (3+0) 3 credits
Mechanical and statistical theory of turbulence. Application to convection, eddy diffusion, temperature, and wind profiles and related topics. Prerequisite: PHYS 742.

**748 MEASUREMENT IN THE ATMOSPHERE** (3+3) 4 credits
Measurement of physically meaningful parameters in a heterogeneous turbulent medium. Direct and remote sensing, data reduction, theory of instrument design. Prerequisite: an upper-division electronics course (PHYS 355 or equivalent) and a working knowledge of computer programming. Prerequisite or corequisite: PHYS 742, 743.

**749 PHYSICAL METEOROLOGY** (3+0) 3 credits
Introduction to radiative computations and diagrams as related to the atmosphere. Interaction of electromagnetic radiation with atmospheric particulates and molecules. Prerequisite: graduate standing in physics.

**750 WEATHER MODIFICATION** (3+0) 3 credits
Physics of precipitation growth and mechanisms of modification of fogs, orographic and cumulus clouds. Aerosol production, chemical composition, delivery and dispersion. Evaluation techniques. Prerequisite: PHYS 743.

**761 ATOMIC AND MOLECULAR PHYSICS** (3+0) 3 credits
Spectra of isolated atoms and atoms in external fields. Coupling of angular moments. Symmetries and spectra of simple molecules. Atomic interaction with electrons and photons. Prerequisite: PHYS 721, 722.

**762 PHYSICS OF FUNDAMENTAL INTERACTIONS** (3+0) 3 credits
Elementary particles, symmetries, and conservation laws. Strong and weak interactions, Applications to nuclear level structure. Prerequisite: PHYS 761. Recommended: PHYS 712.

**771 ADVANCED TOPICS** (1 to 3+0) 1 to 3 credits
Consists of lectures dealing with various aspects of one of the fields listed. (a) dynamics, (b) fluid mechanics, (c) plasma physics, (d) quantum theory, (e) nuclear physics, (f) atomic and molecular physics, (g) electron and ion physics, (h) low-temperature physics, (j) solid and/or liquid state, (k) cosmic rays, (m) relativity, (n) elementary particles, (p) astrophysics, (r) atmospheric physics, (s) geophysics, (t) meteorology of wind and solar energy, (u) air pollution, (v) remote sensing of the atmosphere, (w) cloud electrification, (x) atmospheric aerosol technology. Maximum of 12 credits in different fields. Prerequisite: PHYS 701-702 or 712 or 721-722 or 704, 740.

**790 SEMINAR** (1+0) 1 credit
Recent developments in theoretical and experimental physics. Maximum of 6 credits.

**792 SPECIAL PROBLEMS** 1 to 6 credits
Special study of advanced topics not specifically in courses or seminars. Maximum of 6 credits. Prerequisite: graduate standing in physics.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
108 INTRODUCTION TO SPACE SCIENCE (3+0) 3 credits
311 ENVIRONMENTAL PHYSICS: THE OCEANS AND ATMOSPHERE (3+0) 3 credits
391 INTRODUCTION TO ASTROPHYSICS (3+0) 3 credits
451-452, 651-652 ACOUSTICS (2+0) 2 credits each
465, 665 PHILOSOPHY AND METHOD OF THE PHYSICAL SCIENCES (3+0) 3 credits
711 ELECTROMAGNETIC THEORY I (3+0) 3 credits
744 UPPER ATMOSPHERE (3+0) 3 credits

# PHYSIOLOGY (PHSY)

**426, 626 BIOMEDICAL INSTRUMENTATION** (2+2) 3 credits
Principles of modern electronic design including microcomputer applications, transducer technology, digital design, interface design, biomedical information systems. (Same as E E 426, 626.)

**490, 690 INDEPENDENT STUDY** 1 to 4 credits

**499, 699 DIRECTED RESEARCH** 1 to 4 credits
Guided research in any of the areas of mutual interest to the student and faculty. Maximum of 8 credits.

**601 MEDICAL PHYSIOLOGY I** (4+3) 5 credits
Principles of axonology, muscle physiology, synaptology, autonomic nervous function, and cardiovascular physiology. Prerequisite: B CH 601; ANAT 601.

**602 MEDICAL PHYSIOLOGY II** (5+3) 6 credits
Principles of pulmonary, renal, gastrointestinal, neural, and endocrine function. Prerequisite: PHSY 601.

**701 ADVANCED MAMMALIAN SYSTEMS AND ORGANS PHYSIOLOGY I** (4+3) 5 credits
Principles of axonology, muscle physiology, synaptology, autonomic nervous function, and cardiovascular physiology. Prerequisite: MATH 215 or equivalent.

**702 ADVANCED MAMMALIAN SYSTEMS AND ORGANS PHYSIOLOGY II** (5+3) 6 credits
Principles of pulmonary, renal, gastrointestinal, neural and endocrine function. Prerequisite: PHSY 701.

**793 INDEPENDENT STUDY** 1 to 6 credits

# POLITICAL SCIENCE (P SC)

*P SC 101 or 103 is a prerequisite for all other political science courses except P SC 100.*

**100 CONSTITUTION OF NEVADA** (1+0) 1 credit
Nevada Constitution, including the historical development of Nevada from Territory to Statehood. Satisfies Nevada Constitution requirement. Not open to students who have obtained credit for P SC 103, 308, or HIST 102, 111, 217. (Offered through Correspondence Division only.)

**101 AMERICAN POLITICS: PROCESS AND BEHAVIOR** (3+0) 3 credits
American government and the discipline of political science; surveys participation, pursuit and use of power, and contemporary political issues. Satisfies the U.S. Constitution requirement.

**103 PRINCIPLES OF AMERICAN CONSTITUTIONAL GOVERNMENT** (3+0) 3 credits
Constitutions of the U.S. and Nevada with additional attention to various principles and current problems of government. Satisfies U.S. and Nevada Constitution requirements.

**104 GREAT ISSUES OF POLITICS** (3+0) 3 credits
Selected writings in political thought with special attention to issues such as equality, justice, and authority.

**210 AMERICAN PUBLIC POLICY** (3+0) 3 credits
Analysis of the interplay of forces involved in policy-making at all levels of American government. The impact of policy on individuals and institutions.

**211 COMPARATIVE GOVERNMENT AND POLITICS** (3+0) 3 credits
Analysis of similarities and differences in the governing processes of different societies.

**231 WORLD POLITICS** (3+0) 3 credits
International relations stressing the principles of a systematic approach to world politics.

**300 CONGRESSIONAL INTERNSHIP** (6+0) 6 credits *S/U only*
Selected students serve in senator's or congressman's office in Washington. Prerequisite: 9 political science credits, including P SC 304 or examination.

**301 LEGISLATIVE INTERNSHIP** 3 or 6 credits *S/U only*
Lecture plus field research on scientific methods in behavior and mental processes. Prerequisite: PSY 101, 210.

**304 THE LEGISLATIVE PROCESS** (3+0) 3 credits
Analysis of legislative process in the political process—nation, state and community. Emphasis on legislative behavior and legislative decision-making.

**305 THE AMERICAN PRESIDENCY** (3+0) 3 credits
Constitutional position of the President and development of the presidential powers; recruitment and party leadership; functional requirements of executive leadership; presidential participation in legislation and adjudication.

**308 AMERICAN STATE AND LOCAL GOVERNMENTS** (3+0) 3 credits
Organization, working principles, and functional processes of state and local governments in the U.S. (Satisfies the legislative requirements for the Nevada Constitution.)

**309 THE JUDICIAL PROCESS** (3+0) 3 credits
Administration of justice in American courts, emphasizing the nature and function of law, court organization, participants in the system, trial processes, impact of court rulings.

**323-324 HISTORY OF POLITICAL THOUGHT** (3+0) 3 credits each
Analytical and critical survey of political theories from the Classical Period to the present.

**336 MANAGING INTERNATIONAL INTERDEPENDENCE** (3+0) 3 credit
Strategies and institutions for managing problems and opportunities of global and regional interdependency: United Nations system, international economic institutions; European community; North American integration. Prerequisite: P SC 231 or EC 458.

**341 ELEMENTS OF PUBLIC ADMINISTRATION** (3+0) 3 credits
Introduction to administrative theory, politics and responsibilities; bureaucracy; and public financial and personnel administration.

**353 ETHNIC POLITICS IN THE UNITED STATES** (3+0) 3 credits
Changing roles and special problems of ethnic groups in American politics and in comparative perspective with emphasis on the American Indian, Mexican-American and Black communities. Maximum of 6 credits.

**354 POLITICS AND WOMEN** (3+0) 3 credits
Women's political movements, differential political socialization processes, and the economic and legal status of women.

**400, 600 THE SUPREME COURT AND PUBLIC POLICY** (3+0) 3 credits
Major decisions of recent terms of the Supreme Court; their impact upon federal-state relations, the executive and legislative branches and contemporary social issues. (Satisfies the legislative requirement for the U.S. Constitution.)

**404, 604 JURISPRUDENCE** (3+0) 3 credits
Problems of legal theory from the analytical, philosophical and sociological points of view. Particular attention to modern theories of law.

**406, 606 URBAN POLITICS** (3+0) 3 credits
Analysis of policy alternatives and governmental systems in urban areas. The role of officials, planners, interest groups and citizens in influencing the direction of policy.

**407, 607 AMERICAN POLITICAL PARTIES AND ELECTORAL BEHAVIOR** (3+0) 3 credits
Analysis of the nature, structure and functions of American political parties and electoral participation. Special emphasis on theories of elections, voting habits and patterns and campaigns in American politics.

**409, 609 CONSTITUTIONAL LAW** (3+0) 3 credits
Role of the Supreme Court in the political system, emphasizing constitutional development and judicial analysis of social and political issues; includes a study of administrative law. (Satisfies the legislative requirement for the U.S. Constitution.)

**410, 610 POLITICAL TERRORISM AND VIOLENT POLITICAL MOVEMENTS** (3+0) 3 credits
Groups and movements that use terrorism, guerrilla warfare and other violent techniques to challenge political regimes; causes and consequences of political violence within nations. Prerequisite: P SC 211 or 231.

**411, 611 GOVERNMENT AND POLITICS IN WESTERN EUROPE** (3+0) 3 credits
Political systems of the major Western European states and the social situations from which they have arisen.

**414, 614 GOVERNMENT AND POLITICS IN EAST ASIA** (3+0) 3 credits
Political evolution of Japan, Taiwan, South Korea; their histories, political cultures, institutions; democratization; the role of the state in economic development

**415, 615 GOVERNMENT AND POLITICS IN LATIN AMERICA** (3+0) 3 credits
Comparison of the structure and dynamics of Latin American politics and government.

**416, 616 GOVERNMENT AND POLITICS IN THE SOVIET UNION AND EASTERN EUROPE** (3+0) 3 credits
States compared as to political culture, structures, forces, control and other problems.

**417, 617 GOVERNMENT AND POLITICS IN CHINA** (3+0) 3 credits
Contemporary China as a Communist nation; its ideology, history, politics, planned economy; causes, nature, evolution and reform of a Communist state.

**418, 618 PROBLEMS IN DEVELOPED POLITICAL SYSTEMS** (3+0) 3 credits
Aspects of political life common to such areas as Europe and North America. Maximum of 6 credits.

**421, 621 POLITICAL ECONOMY** (3+0) 3 credits
Examination of governmental policies as they are influenced by political theories and economic doctrines.

**423, 623 CONTEMPORARY POLITICAL THEORY** (3+0) 3 credits
Survey of theories linking political systems with socio-economic systems,

e.g., politics in preindustrial and industrial societies, totalitarianism and democracy related to industrialization, postindustrialization theories.

**426, 626 AMERICAN POLITICAL THOUGHT** (3+0) 3 credits
American political thought from the colonial period to the present, including, among others, Puritanism, Republicanism, Jacksonian Democracy, Transcendentalism, Pragmatism and Social Darwinism.

**431, 631 HOLOCAUST AND GENOCIDE** (3+0) 3 credits
Antisemitism, Nazism, and the effort to eliminate European Jewry; multicultural and multidisciplinary contexts. Prerequisite: W T 202.

**432, 632 AMERICAN FOREIGN POLICY** (3+0) 3 credits
Environmental influences on U.S. policy; post-World War II problems; interests, principles, objectives, policies and commitments of current policy. Prerequisite: P SC 231.

**433, 633 CONDUCT OF AMERICAN FOREIGN AFFAIRS** (3+0) 3 credits
Organization and administrative machinery involved in the conduct of American foreign affairs. Prerequisite: P SC 231.

**434, 634 SOVIET FOREIGN POLICY** (3+0) 3 credits
International role of the Soviet Union in comparative perspective, emphasizing defense policies; links with other Communist parties and states; decision-making in crises. Prerequisite: P SC 231.

**435, 635 INTERNATIONAL POLITICAL ECONOMY: NORTH-SOUTH RELATIONS** (3+0) 3 credits
Theories of Third World development emphasizing the role of the state; selected political-economic issues of concern for the Third World. Prerequisite: P SC 231 or 336.

**436, 636 INTERNATIONAL HUMAN RIGHTS** (3+0) 3 credits
Violation and protection of human rights in international law and politics; major issues since 1945 in various countries and regions. Prerequisite: W T 202, 203.

**437, 637 INTERNATIONAL CONFLICT** (3+0) 3 credits
Classical and contemporary literature on the causes of war among nations and the conditions of international peace. Prerequisite: P SC 231.

**438, 638 THE MIDDLE EAST IN WORLD AFFAIRS** (3+0) 3 credits
Political life in the Middle East with particular emphasis on the Arab-Israeli conflict, the politics of oil and problems of development and instability. Prerequisite: P SC 211 or 231.

**439, 639 PROBLEMS OF WORLD POLITICS** (3+0) 3 credits
Analysis of selected contemporary problems of world politics. Prerequisite: P SC 231. Maximum of 6 credits.

**441, 641 PUBLIC FINANCIAL ADMINISTRATION** (3+0) 3 credits
Analysis of fiscal agencies in federal, state and local governments and discussion of the problems and processes of governmental budgeting, accounting, auditing, purchasing, tax administration and treasury management

**442, 642 PUBLIC PERSONNEL ADMINISTRATION** (3+0) 3 credits
Methods of recruiting, examining, training and other techniques utilized in the management of employees in government service.

**443, 643 THE POLITICS OF ADMINISTRATION** (3+0) 3 credits
Process of translating legislative and executive decision into administrative action; effect of structure upon policy; manipulating and following public opinion; formal and informal decision-making.

**444, 644 COMPARATIVE PUBLIC ADMINISTRATION** (3+0) 3 credits
Examination of basic administrative concepts in different cultural settings, in both technologically advanced countries and the developing nations.

**445, 645 THEORIES OF PUBLIC ADMINISTRATION** (3+0) 3 credits
Development and application of theories of public administration, especially their relevance to complex organizations, decision-making, group behavior and politics.

**446, 646 ADMINISTRATIVE LAW** (3+0) 3 credits
Legal setting of public administrative, adjudicative and rule-making authority. Remedies for abuse of administrative authority. Prerequisite: P SC 341.

**447, 647 INTERGOVERNMENTAL RELATIONS** (3+0) 3 credits
Analysis of the interactions between federal, state and local governments. Theoretical foundations of federalism, issues of public policy and administration.

**450, 650 PUBLIC SERVICE INTERNSHIP** 1 to 6 credits
Students serve in federal, state or local government offices or in nongovernmental public service organizations. Prerequisite: P SC 341 recommended. *S/U only for 450; regular grading for 650.*

**451, 651 PUBLIC OPINION AND POLITICAL PSYCHOLOGY** (3+0) 3 credits
Analysis of the psychological aspects of politics in relation to public opinion, propaganda, personality and political socialization.

**452, 652 CITIZEN PARTICIPATION, PRESSURE GROUPS AND POLITICAL MOVEMENTS** (3+0) 3 credits
Examination of non-violent ways citizens directly and indirectly influence government beyond voting; interest group activity, protest behavior and direct involvement in government. Prerequisite: P SC 210.

**455, 655 ENERGY AND RESOURCE POLICY** (3+0) 3 credits
Politics shaping American energy and resource policies examined within international, federal and partisan contexts. Special attention given to Western regional and public lands controversies. Prerequisite: P SC 210.

**456, 656 PROBLEMS IN AMERICAN PUBLIC POLICY** (3+0) 3 credits
Analysis of selected contemporary problems in American public policy. Maximum of 6 credits.

**457, 657 ENVIRONMENTAL POLICY** (3+0) 3 credits
Evaluation of policies in environmental areas. (Same as ENV 457.)

**458, 658 LAND AND WATER RESOURCE POLICY** (3+0) 3 credits
Issues surrounding the allocation and use of land and water resources in the U.S. Emphasis on issues affecting Western states.

**460 POLILTICS AND LITERATURE IN THE 20TH CENTURY** (3+0) 3 credits
Literature as political expresision in Western and non-Western contexts. Prerequisite: W T 203.

**497, 697 INDEPENDENT STUDY** 1 to 3 credits
Maximum of 6 credits.

**701 SEMINAR IN AMERICAN POLITICS** (3+0) 3 credits
Exploration of selected approaches to American politics. Emphasis on analysis of problems. Maximum of 9 credits.

**711 SEMINAR IN COMPARATIVE POLITICS** (3+0) 3 credits
Maximum of 9 credits.

**723 SEMINAR IN POLITICAL THEORY** (3+0) 3 credits
Maximum of 9 credits.

**731 SEMINAR IN INTERNATIONAL RELATIONS** (3+0) 3 credits
Maximum of 9 credits.

**741 SEMINAR IN PUBLIC ADMINISTRATION** (3+0) 3 credits
Examination of the conceptual foundations of public administration.

**742 TOPICS IN PUBLIC ADMINISTRATION** (3+0) 3 credits
Analysis of selected aspects of public administration. Maximum of 9 credits.

**750 SEMINAR IN PUBLIC POLICY** (3+0) 3 credits
Examination of underlying theories of policy development and the politics of the policy process.

**754 POLICY ADMINISTRATION AND IMPLEMENTATION** (3+0) 3 credits
Concepts, methods and issues of administration and oversight of public policies.

**755 PROGRAM DESIGN AND EVALUATION** (3+0) 3 credits
Concepts, problems, issues and techniques involved with formulating and assessing governmental programs. Prerequisite: P SC 782.

**780 RESEARCH IN POLITICAL SCIENCE** (2+2) 3 credits
Concepts and methods of political science research: includes legal research, information retrieval, interviews and surveys and development of quantitative data. Prerequisite: PSY 210 or SOC 210 or equivalent.

**781 POLITICAL SCIENCE AS A DISCIPLINE** (3+0) 3 credits
Examination of conceptual foundations of political science.

**782 ADVANCED RESEARCH METHODS IN POLITICAL SCIENCE** (2+2) 3 credits
Techniques and methodologies currently employed in political science, including statistical measures, survey research and the relating of research to theory. Prerequisite: PSY 210 or SOC 210 or equivalent.

**785 LEADERSHIP IN PUBLIC ORGANIZATIONS** (3+0) 3 credits
Theories of leadership and their application to public management and the political process. Prerequisite: P SC 642, 741, 750, 780.

**791 SPECIAL TOPICS** 1 to 3 credits Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 1 to 3 credits *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Courses*
401-402 POLITICAL SCIENCE SYMPOSIUM (3+0) 3 credits each
412 612 GOVERNMENT AND POLITICS IN AFRICA (3+0) 3 credits
419 619 PROBLEMS OF DEVELOPING POLITICAL SYSTEMS (3+0) 3 credits

# PSYCHIATRY AND BEHAVIORAL SCIENCES (PCHY)

**402, 602 HUMAN BEHAVIOR II** (4+0) 4 credits
Substance abuse, human sexuality, and basic principles of psychopathology and psychotherapy as applied to behavioral problems in medicine.

**451, 651 CLERKSHIP** (1+21) 8 credits
Hospital and ambulatory clinical experience with preceptorial supervision to develop knowledge (practical, theoretical, basic science), technical and interpersonal skills basic to practicing psychiatry.

**461, 661 ELECTIVES** 2 to 8 credits each
Elective experiences in the major subspecialty areas of psychiatry and behavioral sciences including: (a) addictive disorders, (b) drug and alcohol abuse, (c) medical hypnosis, (d) outpatient psychiatric assessment, (f) sports medicine, (g) marital therapy, (h) clinical research in psychiatry and medicine. Prerequisite: third- or fourth-year medical students. Maximum of 8 credits in any one subtopic. Maximum total credits for any combination of subtopics is 16.

**468, 668 INDIVIDUAL STUDY IN BEHAVIORAL SCIENCE** 1 to 3 credits
Library research in selected topics in behavioral science and discussions with faculty. Maximum of 6 credits.

**469, 669 DIRECTED RESEARCH IN BEHAVIORAL SCIENCE** 1 to 3 credits
Guided research in any area of mutual interest to the student and faculty. Maximum of 6 credits.

**490, 690 INDEPENDENT STUDY** 1 to 4 credits

**601 HUMAN BEHAVIOR I** (3+0) 3 credits
Human development, stress, communication and interpersonal and family dynamics as applied to behavioral problems in medicine.

**660 INTRODUCTION TO CLINICAL MEDICINE** (2+3) 3 credits
Interpersonal skills necessary to establish and maintain constructive student-physician-patient relationships, principles and skills of medical interviewing and history taking, personal responsibility toward the patient and their family, professional treatment of patient information.

# PSYCHOLOGY (PSY)

**101 INTRODUCTION TO PSYCHOLOGY AS A SOCIAL SCIENCE** (3+0) 3 credits
Presents psychology as a science concerned with the actions of organisms in a social and cultural context.

**102 PSYCHOLOGY OF PERSONAL AND SOCIAL ADJUSTMENT** (2+0) 2 credits
Deals with personality adjustment in normal persons. Adjustment techniques and reactions to frustration and conflict in the context of various social groups are considered. Prerequisite: PSY 101.

**103 INTRODUCTION TO PSYCHOLOGY AS A NATURAL SCIENCE** (2+2) 3 credits
Measurement of actions of individual biological organisms acting in and upon an environment.

**205 ELEMENTARY ANALYSIS OF BEHAVIOR** (2+2) 3 credits
Survey of principles of reinforcement theory in the analysis of behavior. Principles of learning demonstrated in the laboratory. Prerequisite: PSY 101.

**210 STATISTICAL METHODS** (3+2) 4 credits
Practice with statistical methods especially useful in the presentation and interpretation of psychological, sociological and educational data, including elementary computer programming. Prerequisite: PSY 101 or SOC 101; a standard score of 18 or better in the mathematics portion of the ACT or a grade of C or better in MATH 101. (Same as SOC 210.)

**232 INFANCY** (3+0) 3 credits
Psychological aspects of development in infancy (ages 0-2). Examination of biological, behavioral, social, cognitive, affective and cultural factors. Theory and research in infant development. Prerequisite: PSY 101.

**233 CHILD PSYCHOLOGY** (3+0) 3 credits
Psychological aspects in the development of children through preadolescence. Examination of behavioral, social, cognitive, affective and cultural factors. Theory and research on developmental stages. Prerequisite: PSY 101.

**234 PSYCHOLOGY OF ADOLESCENCE** (3+0) 3 credits
Psychological and social psychological growth and development during adolescence in contemporary Western society. Covers puberty to early adulthood. Prerequisite: PSY 101.

**261 SOCIAL PSYCHOLOGY I: THE PERSON AND SOCIAL INFLUENCE** (3+0) 3 credits
Nature of the person and of interpersonal relationships, their formation and maintenance and their institutional, ideological and societal contexts; empirical examination of beliefs, attitudes, influence. Prerequisite: PSY 101 or SOC 101. (Same as SOC 261.)

**275 UNDERGRADUATE RESEARCH** (1 to 3+0) 3 credits
Independent or collaborative empirical research. Maximum of 6 credits. Prerequisite: PSY 101.

**299 SPECIAL TOPICS** (1 to 5+0) 1 to 5 credits
Suitable topic under the supervision of a staff member. Maximum of 5 credits. Prerequisite: PSY 101.

**301 EXPERIMENTAL PSYCHOLOGY** (3+6) 5 credits
Lecture, plus field research on scientific methods in behavior and mental processes. Prerequisite: PSY 101, 210.

**321 EDUCATIONAL PSYCHOLOGY** (3+0) 3 credits
Educational applications of psychology to learning, discipline, and social, emotional and intellectual behavior. Educational and psychological tests and measurements. Prerequisite: PSY 101.

**333 ENVIRONMENTAL PSYCHOLOGY** (3+0) 3 credits
Investigation of human environment interactions: perception of and behavior in environment, both natural and built and including the city as a special habitat. Prerequisite: PSY 101.

**362 SOCIAL PSYCHOLOGY II: GROUP STRUCTURE AND PROCESS** (3+0) 3 credits
(See SOC 362 for description.)

375 UNDERGRADUATE RESEARCH (1 to 3+0) 1 to 3 credits
Independent or collaborative empirical research. Maximum of 6 credits. Prerequisite: PSY 101.

391 INDUSTRIAL AND PERSONNEL PSYCHOLOGY (3+0) 3 credits
Application of psychological principles to personnel problems of government, business and industry. Topics include selection, management and supervision, morale and productivity. Prerequisite: PSY 101.

392 RESEARCH METHODS (3+0) 3 credits
(See SOC 392 for description.)

403, 603 PHYSIOLOGICAL PSYCHOLOGY (2+2) 3 credits
Physiological mechanisms associated with reflex action, emotions, motor skills, thinking and language. Effects of drugs, internal secretions and neural lesions on behavior. Prerequisite: PSY 101.

405, 605 PERCEPTION (3+0) 3 credits
Basic principles by which man perceives his environment. Topics can include the perception of form, color, space and depth. Prerequisite: PSY 101.

406, 606 APPLIED BEHAVIOR ANALYSIS (3+0) 3 credits
Application of behavioral principles and techniques in the home, school, hospital and institution. Emphasis on motivational and learning procedures for use with problem behaviors in children and adults. Prerequisite: PSY 101 or 203-204 .

408, 608 HISTORY OF PSYCHOLOGY (3+0) 3 credits
Historical background of psychology from the Greek period to the present. Development of psychology as a science and advances during this century. Prerequisite: PSY 101.

410, 610 PHILOSOPHICAL CRITICISMS OF PSYCHOLOGICAL RESEARCH (3+0) 3 credits
Review of criticisms of psychological research by philosophers in the tradition of ordinary language analysis. Prerequisite: PSY 101.

411, 611 THINKING AND PROBLEM SOLVING (3+0) 3 credits
Experimental and applied concepts. Thinking and hypothesis testing, schema, and information processing. Examples from both traditional areas of experimental psychology and related areas in cognitive psychology.

412, 612 INTRODUCTION TO PSYCHOLOGICAL ASSESSMENT (3+0) 3 credits
Theoretical and psychometric bases of psychological assessment. Survey of standard test, interview and observational techniques for evaluating behavioral cognitive and personality characteristics of individuals. Prerequisite: PSY 101.

413 ANIMAL INTELLIGENCE (3+0) 3 credits
Recent experimental studies of topics such as tool use and tool making, mirror image recognition, imitation, problem solving, concept formation, and communication. Prerequisite: ANTH 101, BIOL 111 or PSY 101.

421, 621 CONDITIONING AND LEARNING (3+0) 3 credits
Factors and conditions which enhance or retard learning. Survey of learning theories and basic principles of classical conditioning, instrumental conditioning and discrimination learning. Prerequisite: PSY 101.

422, 622 SOCIAL PSYCHOLOGICAL THEORIES (3+0) 3 credits
(See SOC 422 for description.)

427, 627 COMPUTER APPLICATIONS IN SOCIAL AND BEHAVIORAL SCIENCES (3+0) 3 credits
(See SOC 427, 627 for description.)

431, 631 COGNITIVE PSYCHOLOGY (3+0) 3 credits
Current developments in cognitive psychology with major emphasis on research in human learning, memory, information processing, problem solving, concept formation and thinking. Prerequisite: PSY 101.

433, 633 PSYCHOLOGICAL ASPECTS OF RACIAL DIFFERENCES (3+0) 3 credits
Multicultural view of existence in the U.S. from the perspective of ethnic minorities. Psychological implications and consequences of racial identity, socio-cultural factors and racism. Prerequisite: PSY 101.

435, 635 PERSONALITY (3+0) 3 credits
Survey of major theories of personality. Personality development, structure and dynamics. Examination of major areas of research on personality. Prerequisite: PSY 101.

441, 641 ABNORMAL PSYCHOLOGY (3+0) 3 credits
Psychology of abnormal behavior—primarily neuroses and psychoses—stressing symptomatology, etiology, dynamics and problems in diagnosis. Prerequisite: PSY 101. PSY 641 not open to psychology majors.

444, 644 PSYCHOLOGY OF EXCEPTIONAL CHILDREN (3+0) 3 credits
Devoted to the study of children who are mentally deficient or mentally superior and children with sensory deficiencies or orthopedic handicaps. Prerequisite: PSY 101.

446, 646 PSYCHOLOGICAL ASPECTS OF AGING (3+0) 3 credits
Introduction to theories and research on the aging process. Practical applications.

447, 647 GEROPSYCHOLOGY FIELD EXPERIENCE (0+9) 3 credits
Supervised experience in community agencies with a focus on psychological approaches to working with older people. Prerequisite: PSY 446, 646. Maximum of 6 credits.

448, 648 GEROPSYCHOLOGY: INDEPENDENT STUDY 1 to 3 credits
Directed research projects. Maximum of 6 credits. Prerequisite: PSY 446, 646.

451, 651 BASIC PRINCIPLES OF PSYCHOTHERAPY (3+0) 3 credits
Basic psychological principles and theoretical approaches of individual psychotherapy. Prerequisite: PSY 101.

463, 663 SOCIAL PSYCHOLOGY m SOCIAL PSYCHOLOGY OF EDUCATION (3+0) 3 credits
Effects on learning of such social psychological factors as family, social class, school social structure, classroom structure and allocation of the teacher role are considered. Prerequisite: PSY 101 or SOC 101, PSY 261 or SOC 261 or PSY 362 or SOC 362. PSY 663 not open to psychology majors. (Same as SOC 463.)

472, 672 EXPERIMENTAL ANALYSIS OF BEHAVIOR (3+0) 3 credits
Review of current research in the experimental analysis of behavior. Prerequisite: PSY 101.

473, 673 RADICAL BEHAVIORISM (3+0) 3 credits
Survey of Skinner's work. Emphasis on the role of private events in a natural science, the analysis of verbal behavior and the conduct of psychological research. Prerequisite: PSY 101.

475 HONORS THESIS (3+0) 3 credits
Research investigation conducted and written in thesis form. Prerequisite: admission to departmental honors program in psychology.

480, 680 MOTIVATION (3+0) 3 credits
Basic principles of motivation. Examination of major themes and contemporary research in the field. Application of motivational psychology to special areas, including educational and business. Prerequisite: PSY 101.

481, 681 PRINCIPLES OF ANIMAL BEHAVIOR (3+0) 3 credits
Review of field and laboratory studies on the determinants and mechanisms of animal behavior to establish relations between behavior of similar and different species. Prerequisite: PSY 101, BIOL 111. (Same as BIOL 481, 681.)

482, 682 ANIMAL BEHAVIOR LABORATORY (0+3) 1 credit
Observational study of behavior, in both laboratory and field, of various animal species. Emphasis on elements of ethogram preparation and between species comparisons. Prerequisite: previous or concurrent registration in PSY 481 or 681 or BIOL 481 or 681. (Same as BIOL 482.)

483, 683 ANIMAL COMMUNICATION (3+0) 3 credits
Review of field and laboratory studies on animal communication and human nonverbal communication. Prerequisite: PSY 101; BIOL 111.

499, 699 SPECIAL TOPICS (1 to 3+0) 1 to 3 credits
Study in a suitable topic under supervision of a faculty member. Maximum of 9 credits. Prerequisite: PSY 101.

*Prerequisite for following 700-level courses: admission to graduate standing in the Department of Psychology.*

704 PSYCHOLOGICAL INTERVENTION I (3+0) 3 credits
Principles and methods of psychological intervention with children. Theoretical rationale, symptoms, causes and target behaviors. Special techniques, including opaant procedures and other psychotherapeutic methods. Prerequisite: enrollment in clinical psychology program.

705 PSYCHOLOGICAL INTERVENTION II (3+0) 3 credits
Principles and methods of psychological intenention with adults. Special techniques, including individual and group psychotherapy, desensitization, psychodrama, hypnotherapy and encounter groups. Prerequisite: enrollment in clinical psychology program.

706 INTERMEDIATE STATISTICS I (3+0) 3 credits
Theory and application of statistical inference with special emphasis on probability, parameuic and nonparametric techniques including simple and complex analysis of variance, multiple comparison techniques and trend analysis. Praequisite: PSY 210 or equivalent. (Same as SOC 706.)

707 INTERMEDIATE STATISTICS II (3+0) 3 credits
Theory and application of statistical infaence with special emphasis on multivariate models, including multipk and partial regression, factor analysis, path analysis and discriminant function analysis. Prerequisite: PSY 706. (Same as SOC 707.)

708 SEMINAR IN PHILOSOPHICAL PSYCHOLOGY (3+0) 3 credits
Sekcted topics in recent philosophical psychology. Prerequisite: PSY 408. (Same as PHIL 708.)

710 EXPERIMENTAL DESIGN (3+0) 3 credits
Theory and application of principles used in the construction of experimental designs primarily as derived from the analysis of variance. Prerequisite: PSY 706, 707.

711 PSYCHOLOGICAL ASSESSMENT I (3+0) 3 credits
Theory and practice of psychological assessment of children. Inrerview, test, and observational techniques for evaluating behavioral, developmental, cognitive, perceptual-motor and pasonality factors.

712 PSYCHOLOGICAL ASSESSMENT II (3+0) 3 credits
Theory and practice of psychological assessment of adults. Special techniques including intaview, systematic observation, intdligence and pasonality tests, and functional behavioral analysis.

714 THEORY AND APPLICATION OF Clinical psychology: ADULT I (3+0) 3 credits
Supervised theoretical and ~xperiential application of adult psychotherapy and assessment approaches in clincial psychology. Praequisite: admitted to clinical psychology program

715 THEORY AND APPLICATION OF CLINICAL PSYCHOLOGY: ADULT II (3+0) 3 cledits
Supenised theoretical and experiential application of advanced adult and coupk approaches in psychothaapy and assessment. Prerequisite: admitted to the clinical psychology program

716 THEORY AND APPLICATION OF CLINICAL PSYCHOLOGY: CHILD I (3+0) 3 credits
Supenised theoretical and experiential application of child-family approaches in psychotherapy, assessment and community psychology. Prerequisire: admitted to the clinical psychology program.

717 THEORY AND APPLICATION OF CLINICAL PSYCHOLOGY: CHILD II (3+0) 3 credits
Supervised theoretical and experiential application of advanced child-family approaches in psychotherapy, assessment and community psychology. Prerequisite: admitted to the clinical psychology program.

718 RESEARCH METHODS IN SOCIAL PSYCHOLOGY (3+0) 3 credits
Theon constnuction and the application of research methods in social psychology. (Same as SOC 718.)

720 SEMINAR IN SENSATION AND PERCEPTION (3+0) 3 credits
Experiments and problems in sensation and perception. Prerequisite: PSY 405 or equivalent.

721 ADVANCED PSYCHOPHYSIOLOGY (3+0) 3 credits
Current developments and animal physiological research relating to genaal principks of sensation, perception and behavior. Prerequisite: PSY 403 or equivalent.

725 SOCIALIZATION (3+0) 3 credits
(See SOC 725 for description.)

726 INTERPERSONAL TRANSACTIONS (3+0) 3 credits
(See SOC 726 for description.)

727 GROUP BEHAVIOR (3+0) 3 credits
(See SOC 727 for description.)

728 COLLECTIVE BEHAVIOR AND MASS SOCIETY (3+0) 3 credits
(See SOC 728 for description.)

730 SEMINAR IN MOTIVATION AND LEARNING (3+0) 3 credits
Contemporan, theory and research in the areas of motivation, emotion, and karning. Prerequisite: PSY 421 or 480 or equivalent.

731-732 THEORES OF LEARNLNG (3+0) 3 credits each
Examination of research on learning and theories which attempt to explain the processes of learning. Prerequisite: PSY 421 or equivalent.

733 PSYCHOBIOLOGY OF LANGUAGE (3+0) 3 credits
Critical review and discussion of the literature concerning the relationship of cognitive and communicative behavior to linguistic behavior with particular emphasis on research with animals.

736 ADVANCED STUDES IN DEVELOPMENTAL PSYCHOLOGY (3+0) 3 credits
Principles, theories, and research in human development with emphasis on the normal individual. Includes supervised research in special problems. Prerequisite: PSY 233 or 234 or 444 or equivalent.

737 SURVEY RESEARCH METHODS (3+0) 3 credits
(See SOC 737 for description.)

738 METHODS AND INNOVATIONS IN ASSESSMENT (3+0) 3 credits
Theory of assessment of persons and situation. Survey of newer assessment techniques and instrumenrs. Methods of constructing tests and other assessment devices. Prerequisite: graduate standing in behavioral sciences. (Same as SOC 738.)

739 RESEARCH METHODS IN CLINICAL AND PERSONALITY PSYCHOLOGY (3+0) 3 credits
Historical and philosophical background of psychological research. Theon construction, experimental design and scientific writing. Current trends in clinical and personality research methodology.

740 BEHAVIOR PROBLEMS (3+0) 3 credits
Behavioral problems encountered in clinical practice Developmental, emotional and organic disturbances; alcoholism, marital discord, drug abuse and other psychological problems of contemporay living. Prerequisite: PSY 441 or equivalent.

741 NONPATHOLOGICAL PROBLEMS OF BEHAVIOR AND PERSONALITY (3+0) 3 credits
Emphasis on the concerns of normal individuals such as competence, aggression, achievement and anxiety; recent trends in research and contributions of major and micropersonality theorists.

742 AGING AND MENTAL HEALTH (3+0) 3 credits
Research, assessment, and treatment. Includes depression, dementias, grief, wellness, creativity, and wisdom. Prerequisite: graduate standing in behavioral or health sciences.

744-745 SEMINAR IN PERSONALITY (3+0) 3 credits each
Contemporary theory and research on personality. Recent trends and issues.

748 COMMUNITY PSYCHOLOGY (3+0) 3 credits
Mental health problems of population, including psychological epidemiology and mental health needs of communities. Mental health consultation and education. Crisis intervention. Prerequisite: graduate standing in behavioral or health sciences.

749 SEMINAR IN COMMUNITY PSYCHOLOGY (3+0) 3 credits
Advanced study of community psychology. Emphasis on community

intervention approaches, systems analysis and community change. Prerequisite: graduate standing in behavioral or health sciences.

750-751 SEMINAR IN CLINICAL PSYCHOLOGY (3+0) 3 credits each
Consideration of contemporary theory, research and practices in the field of clinical psychology.

752 GRADUATE RESEARCH 1 to 5 credits
Research projects in psychology carried out under supervision. Maximum of 6 credits.

753 RESEARCH PRACTICUM (1 to 3+0) 1 to 3 credits
Research apprenticeship in ongoing research projects. Familiarization with aims and methods of psychological research.

755 INDMDUAL READING 1 to 5 credits
Supervised reading with regular conferences between student and instructor. Maximum of 9 credits.

761-762 CONTEMPORARY ISSUES IN PSYCHOLOGY
(3+0) 3 credits each
Consideration in depth of selected topics of contemporary interest. Maximum of 6 credits each.

763 SPECIAL TOPICS IN EXPERIMENTAL PSYCHOLOGY
(3+0) 3 credits
Consideration of selected current research problems and conceptual issues in experimental psychology. Maximum of 9 credits.

764 SPECIAL TOPICS IN SOCIAL PSYCHOLOGY (3+0) 3 credits
Consideration of selected current research problems and conceptual issues in social psychology. Maximum of 9 credits. (Same as SOC 764.)

771 INTRODUCTION TO CLINICAL PSYCHOLOGY (3+0) 3 credits
Nature and history of clinical psychology, models of psychological intervention, diagnostic issues, evaluation of psychotherapy, ethical and professional standards, current professional issues. Prerequisite: admitted to the clinical psychology program.

772 RURAL MENTAL HEALTH (3+0) 3 credits
Special characteristics of rural mental health and the clinical psychologist's function as consultant in rural communities.

773 CLINICAL PSYCHOLOGY HALF-TIME EXTERNSHIP
1 to 5 credits *S/U only*
Includes half-time third-year externship as required by the clinical psychology program. Prerequisite: clinical psychology major.

774 CLINICAL PSYCHOLOGY FULL-TIME INTERNSHIP
1 to 5 credits *S/U only*
Includes full-time internship as required by the clinical psychology program. Prerequisite: clinical psychology major.

795 COMPREHENSIVE EXAMLNATION 0 credit *S/U only*

797 THESIS 1 to 6 credits

799 DISSERTATION 1 to 24 credits

*Inactive Courses*
203-204 ADVANCED GENERAL PSYCHOLOGY (3+0) 3 credits each
325 PARAPSYCHOLOGY (3+0) 3 credits

# RANGE, WILDLIFE AND FORESTRY (RWF)

*A number of courses require field trips and laboratory exercises that involve additional student expenses. Many courses are offered on an alternate year basis. Consult with the department prior to registration.*

100 PRINCIPLES OF RESOURCE MANAGEMENT (3+0) 3 credits
Scientific and managerial principles applied to forest, range, wildlife, hydrology and soil resources. One or two field trips.

271 WILDERNESS SURVIVAL (3+0) 3 credits
Skills and concepts to survive under wilderness conditions, including attitude, fire building, shelters, terrain hazards, location and preparation of edible plants and animals, clothing and equipment. Training and preparation necessary to make mountain and desert wildlands an enjoyable recreation resource.

304 HYDROLOGY FOR NATURAL RESOURCE MANAGEMENT
(3+0) 3 credits
Principles and methods of managing range and forest land in terms of water quantity, quality and timing. One or two field trips required. Prerequisite: MATH 115 or equivalent.

316, 416 INTERNSHIP (1 to 3+0) 1 to 3 credits *S/U only*
Coordinated work study programs in industry or government under the direction of a faculty adviser. Written progress reports are prepared periodically and at the conclusion of the internship.

341 PRINCIPLES OF RANGE MANAGEMENT (2+3) 3 credits
Conservation, management and multiple use of range resources. Prerequisite: BIOL 111 or equivalent. Field trips required.

345 RANGE AND FOREST PLANTS (3+6) 5 credits
Identification, distribution, and management of the major range plants and forest trees occurring in the western U.S.

347 PLANT ECOLOGY (3+3) 4 credits
(See BIOL 347 for description.)

351 REMOTE SENSING OF NATURAL RESOURCES (2+3) 3 credits
Measurements and interpretation of aerial photography and other remotely sensed- data. Conventional and digital mapping techniques for land measurements. Prerequisite: MATH 115, RWF 100.

401, 601 LOGGING SYSTEMS (2+3) 3 credits
Analysis and development of timber harvest plans for different forest types and silvicultural treatments with consideration of the transportation system, logging methods and costs, silvicultural and watershed protection principles, and taxation and legal requirements. Mandatory field trip. Prerequisite: RWF 100.

402, 602 FOREST MANAGEMENT (3+0) 3 credits
Organization of forest properties for sustained production of wood products; determination of rotation, regulation of cut and growing stock, management plans and forest valuation. Prerequisite: MATH 115; RWF 100.

404, 604 INTRODUCTION TO AEROSPACE REMOTE SENSING
(3+2) 3 credits
(See GEOL 404 for description.)

405, 605 SILVICULTURE AND REGIONAL SILVICULTURE
(4+3) 5 credits
Theory and methods of controlling establishment, composition, growth and quality of forest stands. Application of silvicultural practices to important species and forest types of the U.S. Mandatory field trips. Prerequisite: RWF 100, 345.

406, 606 FOREST TREE PHYSIOLOGY AND GENETICS (4+0) 4 credits
Photosynthesis, respiration, water relations, nutrition, shoot and root development, reproduction and genetics of forest trees. Application of physiological and genetic principles in predicting effects of silvicultural practices on tree growth and in tree improvement. Prerequisite: BIOL 111.

407, 607 QUANTITATIVE RANGE AND FOREST TECHNIQUES
(4+3) 5 credits
Range methods and forest mensuration techniques commonly used in quantifying natural resources. Statistical analyses and interpretation are stressed. Prerequisite: AGEC 270; MATH 115; RWF 345.

411, 611 ENVIRONMENTAL LAW (3+0) 3 credits
(See C E 411, 611 for description.)

414, 614 HYDROLOGIC FLUID DYNAMICS (3+0) 3 credits
(See GEOL 414, 614 for description.)

422, 622 SOIL PHYSICS (2+3) 3 credits
Physical properties of soil components; soil structure, temperature, aeration, soil-water interactions; methods of measurements; application to tillage and soil management. Prerequisite: MATH 115; AGRO 222. (Same as AGRO 422, 622.)

**425, 625 CONSERVATION OF LARGE MAMMALS AND THEIR ECOSYSTEMS** (3+0) 3 credits
Presentation of key scientific concepts and examination of factors required for conservation of marine and terrestrial mammals including primates, ungulates, carnivores, and cetaceans. Prerequisite: BIOL 314, 378.

**427, 627 WILDLIFE HABITAT MANAGEMENT** (2+3) 3 credits
Cultural practices, including mechanical, chemical and biological techniques to manipulate terrestrial environments, meeting specific habitat objectives. Field trips required. Prerequisite: BIOL 314, RWF 302.

**435, 635 CONSERVATION OF NATURAL RESOURCES** (3+0) 3 credits
(See GEOG 435 for description.)

**444, 644 SOIL MORPHOLOGY AND CLASSIFICATION** (2+3) 3 credits
Morphological description and identification of soils; kinds of soils; principles of soil mapping; use of soil maps, soil genesis; predicting behavior from morphology and taxonomic identity; some field classes. Prerequisite: AGRO 222; GEOL 101 recommended.

**460, 660 RANGELAND RESOURCE MANAGEMENT** 3 credits
Capstone field course involving evaluation of actual rangeland management case studies. Prerequisite: BIOL 314; RWF 341, 345.

**467, 667 REGIONAL AND GLOBAL ISSUES IN ENVIRONMENTAL SCIENCES** (3+0) 3 credits
Scientific principles underlying large-scale environmental problems linking the atmosphere, biosphere and geosphere. Empirical and modeling techniques for studying global issues. Analysis of specific issues. Prerequisite: BIOL 314; CHEM 102. (Same as ENV 467, 667.)

**480 INDEPENDENT STUDY** 1 to 3 credits
Intensive study of a special problem in (a) forestry, (b) wildlife management, (c) range management, (d) outdoor recreation, (e) hydrology/hydrogeology, (f) soils. Maximum of 6 credits.

**482, 682 SMALL WATERSHED HYDROLOGY** (4+3) 5 credits
The role of land conditions in dealing with problems of applied hydrology with emphasis on the small watershed, limited data and land management situations. Prerequisite: AGRO 222; GEOL 101; MATH 115.

**483, 683 HYDROLOGY OF IRRIGATED AGRICULTURE** (3+0) 3 credits
Water supply and diversion for irrigation. Production functions and evapotranspiration modeling. Shallow groundwater management and safe disposal of drainage effluent. Prerequisite: MATH 115, AGRO 222.

**485, 685 SPECIAL TOPICS** (1 to 3+0) 1 to 3 credits
Presentation and review of recent research, innovations and developments. These may include such areas as multiple resource management, photogrammetric interpretation, water quality and game preserve management. Maximum of 6 credits.

**490, 690 ENVIRONMENTAL ISSUES IN PUBLIC LAND MANAGEMENT** (3+0) 3 credits
Critical presentations and discussions of selected topics.

**493, 693 RANGE AND FOREST ECOLOGY** (2+3) 3 credits
Ecologic and economic interpretations of major range and forest communities. The application of autecological synecological principles to range and forest ecosystems. Ecosystem influences and modeling. Field trips required. Prerequisite: BIOL 314 or equivalent.

**494, 694 RANGE AND FOREST ADMINISTRATION AND POLICY** (3+0) 3 credits
Public administration applied to forest and rangeland resource management. Development history of resource agencies and policies. Administrative procedures, policy formation, decision-making, and public participation principles as related to the present and future political environment of natural resource protection, development and management.

**497, 697 FOREST AND RANGE SOILS** (3+0) 3 credits
Soil types associated with forests and range. Biological, physical and chemical soil properties, productivity relations and management implications. Field trips required. Prerequisite: AGRO 222.

**701 ADVANCED RESOURCE MANAGEMENT** 1 to 3 credits
Special advanced course work in (a) forestry, (b) wildlife, (c) range management, (d) outdoor recreation, (e) hydrology/hydrogeology, (f) soils. Maximum of 6 credits.

**702 SOIL CHEMISTRY** (2+3) 3 credits
Concepts of soil chemistry. Considers the physical and chemical properties of soils: mineralogical and chemical composition, ion exchange phenomena, chemistry of salt-affected and acid soils, trace element chemistry. Methods of analysis and interpretation. Prerequisite: AGRO 327, CHEM 330. (Same as AGRO 702.)

**711 RESEARCH METHODS** (3+0) 3 credits
Research principles applied to natural resource problems. Experimental design, field data collection, statistical analysis, interpretation, presentation of results and preparation of publications. Prerequisite: AGEC 270; MATH 115.

**714 WILDLIFE ECOLOGY AND BEHAVIOR** (3+0) 3 credits
Seminar or lectures on topics and problems in current literature dealing with predators and herbivores, group living, mating systems and distributional patterns. Prerequisite: BIOL 378.

**715 PRESENTATION OF SCIENTIFIC INFORMATION** (2+0) 2 credits
Development of skills to improve visual and verbal presentation of research results to lay and scientific audiences.

**725 PLANT PHYSIOLOGICAL ECOLOGY** (3+0) 3 credits
Microenvironment and energy balance of plants. Acquisition of water, carbon and nutrients. Application of mechanistic, physiological processes to ecological relationships between plants and their environment. Prerequisite: BIOL 320 or 486; BIOL 347 or RWF 493; B CH 412 or BIOL 355.

**741 IRRIGATION WATER MANAGEMENT** (3+0) 3 credits
Evapotranspiration modeling and irrigation scheduling for optimal crop yield and water conservation. Effect of irrigation management on drainage quantity and quality. Drainage water disposal. Prerequisite: RWF 483, 683 or equivalent.

**742 SHALLOW GROUND WATER MANAGEMENT** (3+0) 3 credits
Recharge and quality of shallow aquifers. Pollution of surface waters and deep ground water. Potential, beneficial uses. Disposal methods of shallow ground water of unacceptable quality. Prerequisite: RWF 304; G E 684.

**745 RANGELAND GRAZING** (3+0) 3 credits
Co-evolutionary development of plant communities and native ungulate grazing. Development of modern livestock grazing strategies. Prerequisite: RWF 341.

**746 ADVANCED ANALYSIS METHODS IN NATURAL RESOURCES** (2+3) 3 credits
Applied use and interpretation of multivariate and modeling techniques for natural resources and biological studies. Prerequisite: MATH 213, 183 or E E 131, AGEC 270 or MATH 251, 313, 320, 330 recommended.

**760 RANGE ECOSYSTEM ANALYSIS** (1+3) 2 credits
Procedure for the investigation of range ecosystems, plant biomass, animal biomass, nutrition, vegetation-soil relationships, stratification, and vegetation sampling, mineral cycling, processes, systems and modeling. Prerequisite: course in statistics.

**782 HYDROLOGY/HYDROGEOLOGY SEMINAR** (0+3) 1 credit
Preparation of written reports and/or oral presentations. Guest lecturers. Maximum of 3 credits. (Same as GEOL 782.)

**790 SEMINAR** (1+0) 1 credit
Presentations of potential research projects and research results by graduate students and faculty. Maximum of 2 credits.

**793 INDIVIDUAL STUDY** 1 to 3 credits
Intensive study of a special problem in (a) forestry, (b) wildlife management, (c) range management, (d) outdoor recreation, (e) hydrology/hydrogeology, wildland conservation. Maximum of 6 credits in each topic.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 1 to 2 credits *S/U only*
Required of all graduate students who wish to complete the master of science degree under Plan B.

797 THESIS 1 to 6 credits
Thesis may be written in area of (a) forestry, (b) wildlife management, (c) range management, (d) hydrology/hydrogeology, (e) outdoor recreation.

799 DISSERTATION 1 to 24 credits

*Inactive Courses*
200 PRINCIPLES OF FOREST MANAGEMENT (2+0) 2 credits
291 RANGE AND FOREST FIRE SCIENCE (1+3) 2 credits
323 FISHERY MANAGEMENT (2+3) 3 credits
348 RANGE IMPROVEMENT (2+3) 3 credits
361 RECREATION RESOURCE MANAGEMENT (3+0) 3 credits
403 603 ADVANCED FOREST MENSURATION (2+3) 3 credits
420 620 INTEGRATED NATURAL RESOURCE MANAGEMENT (2+3) 3 credits
421, 621 UPLAND GAME AND WATERFOWL MANAGEMENT (3+3) 4 credits
450, 650 RANGE RESOURCE PLANNING (2+3) 3 credits
716 ADVANCED WILDLIFE MANAGEMENT (3+0) 3 credits
786 SNOW HYDROLOGY (1+6) 3 credits

# RECREATION, PHYSICAL EDUCATION AND DANCE (RPED)

*Special fees apply to many activity courses which are in addition to regular registration fee. Consult with the department prior to registration.*

**100-199 RECREATION-PHYSICAL EDUCATION ACTIVITY CLASSES**
A maximum of three credits from 100-199 may be taken during any one semester or summer session except for special programs listed in the class schedule. When beginning, intermediate or advanced classes are scheduled in an activity, the student should consult the department to determine in which level to enroll. A student may enroll in the same class four times for credit.

**200-797 RECREATION-PHYSICAL EDUCATION THEORY CLASSES**

**100-199 ACTIVITY CLASSES** (0+2) 1 credit *S/U only*

AQUATICS
101 Diving
102 Lifeguard Training
103 Sailing
104 Scuba
105 Swimming, Beginning[1]
106 Swimming, Intermediate
107 Swimming, Advanced
108 Swimming, Synchronized

DANCE[2]
110 Modern Dance, Beginning[1]
111 Modern Dance, Intermediate
112 Modern Dance, Advanced
115 Dance, Social
116 Dance Styles: Afro-Haitian, Tap, or Musical Comedy
117 Dance, Improvisation
118 Dance, Repertory
119 Dance, Jazz
120 Ballet, Beginning[1]
121 Ballet, Intermediate
122 Ballet, Advanced

GAMES (COURT)
125 Gymnastics
126 Basketball
127 Team Handball
128 Badminton
129 Softball
130 Handball, Beginning[1]
131 Handball, Inter.-Adv.
132 Racquetball, Beginning[1]
133 Racquetball, Inter.-Adv.
134 Squash
135 Tennis, Beginning[1]
136 Tennis, Intermediate
137 Tennis, Advanced
138 Volleyball, Beginning[1]
139 Volleyball, Inter.-Adv.

MOUNTAIN SPORTS
140 Angling and Casting
141 Backpacking
142 Bike Touring
143 Mountaineering
144 Orienteering
145 Rock Climbing, Beginning
146 Rock Climbing, Inter.-Adv.
147 Skiing, Alpine
148 Ski Touring

MARTIAL ARTS
152 Karate, Beginning[1]
153 Karate, Inter.-Adv.
154 Judo, Beginning[1]
155 Judo, Inter.-Adv.

MISCELLANEOUS ACTIVITIES
156 Archery
157 Bicycling
158 Bowling, Beginning[1]
159 Bowling, Inter.-Adv.
160 Golf, Beginning[1]
161 Golf, Intermediate
162 Golf, Advanced
163 Horsemanship (0+3)
165 Skating, Ice
166 Skating, Roller
168 Soccer
169 Yoga

CONDITIONING
174 Conditioning, Rhythmic Aerobic, Beginning
175 Conditioning, Rhythmic Aerobic, Intermediate
176 Conditioning, Rhythmic Aerobic, Advanced
177 Fitness Assessment and Exercise Prescription
178 Conditioning, Water Exercise
179 Conditioning, Intercollegiate Athletics
180 Conditioning and Body Building (Men and Women)
181 Conditioning, ROTC
182 Jogging
183 Weight Lifting

INTERCOLLEGIATE COMPETITIVE ACTIVITIES
184 Intercollegiate Baseball
185 Intercollegiate Basketball
186 Intercollegiate Boxing
187 Intercollegiate Cross Country
188 Intercollegiate Football
190 Intercollegiate Golf
193 Intercollegiate Skiing
194 Intercollegiate Softball
195 Intercollegiate Swimming
196 Intercollegiate Tennis
197 Intercollegiate Track and Field
198 Intercollegiate Volleyball

201 INTRODUCTION TO RECREATION AND PHYSICAL EDUCATION (2+2) 3 credits
Background, aims, objectives and current trends in RPED; skill and proficiency tests required for all RPED majors and minors.

202 THEORY OF MOVEMENT (2+0) 2 credits
Analysis of movement; comparison of movement patterns, purposes and organizations within sports and dance.

204, METHODS OF PLANNING AND EVALUATION IN ACTIVITIES (1+2) 2 credits
Techniques of assessment and pre-teaching activities that involve developing an instructional guide that incorporates concepts, objectives, and plans for teaching a subject, unit, or lesson.

[1]Maximum of 2 credits.
[2]Additional dance courses: RPED 219, 261, 262, 360,461, 661.

**216 METHODS OF TEACHING CROSS COUNTRY SKIING** (1+2) 2 credits
Designed for experienced cross country skiers who wish to become competent cross country ski instructors.

**217 METHODS OF TEACHING WATER SAFETY** (1+2) 2 credits
Water safety instructor course. American Red Cross Certificate awarded upon completion. Prerequisite: Life saving certificate.

**218 METHODS OF TEACHING SKIING** (1+2) 2 credits
Instruction in American, Austrian and French ski systems. Progressions, finished technical forms of ski maneuvers, mechanics and correction of errors.

**219 DANCE IN ELEMENTARY EDUCATION** (1+2) 2 credits
Methods of teaching a comprehensive elementary school dance program including movement exploration, creative dance-making, dance and rhythmic skills and simple folk dances.

**240 RECREATION AND PLAYGROUND LEADERSHIP** (1+2) 2 credits
Application of leadership techniques to community recreation and playground programs. Instruction and practical experience in specific recreation leadership skills.

*Courses numbered 250 through 259 are designed for majors in RPED.*

**250 BASIC AND EMERGENCY WATER SAFETY, INCLUDING CPR** (0+2) 1 credit

**251 METHODS OF TEACHING ARCHERY AND BADMINTON** (0+2) 1 credit

**252 METHODS OF TEACHING BASKETBALL AND TUMBLING** (0+2) 1 credit

**253 METHODS OF TEACHING DANCE AND RHYTHMS** (1+2) 2 credits

**254 METHODS OF TEACHING FLAG FOOTBALL AND WRESTLING** (0+2) 1 credit

**255 METHODS OF TEACHING GOLF AND TENNIS** (0+2) 1 credit

**256 METHODS OF TEACHING OUTDOOR AND RECREATIONAL GAMES** (0+2) 1 credit

**257 METHODS OF TEACHING PHYSICAL FITNESS AND RHYTHMATIC EXERCISE** (0+2) 1 credit

**258 METHODS OF TEACHING SOCCER AND TEAM HANDBALL** (0+2) 1 credit

**259 METHODS OF TEACHING SOFTBALL AND VOLLEYBALL** (0+2) 1 credit

**261 INTRODUCTION TO DANCE COMPOSITION** (1+2) 2 credits
Basic elements of choreography. Guided experiences in movement development, design and form. Prerequisite: one semester of dance.

**262 DANCE PRODUCTION** (2+2) 3 credits
Theory of and practical experience in producing a dance presentation. Prerequisite: one semester of dance or equivalent.

**263 AESTHETICS AND CRITICISM OF DANCE** (3+0) 3 credits
Readings and discussion of the changing perceptions, forms and trends in dance.

**264 HISTORY OF DANCE I: PRIMITIVE-19TH CENTURY** (3+0) 3 credits
Dance in primal cultures through the Romantic era.

**265 HISTORY OF DANCE II: 20TH CENTURY** (3+0) 3 credits
Survey of principal influences on and directions of dance in the 1900's, from modern ballet to music video.

**270 ADVANCED FIRST AID AND EMERGENCY CARE** (1+2) 2 credits
American Red Cross certificate awarded upon completion.

**271 INSTRUCTOR'S FIRST AID** (2+0) 2 credits
Regular Red Cross course. Those completing the course may be designated first-aid instructors. Prerequisite: RPED 270 or First Aid Certificate.

**290 FIELD EXPERIENCES IN RECREATION OR PHYSICAL EDUCATION** (0+3) 1 credit
Directed field work experience in teaching and/or directing physical education activities for school or recreation groups. Maximum of 3 credits.

**299 INDEPENDENT STUDY IN RECREATION OR PHYSICAL EDUCATION** (1 or 2+0) 1 or 2 credits
Individual study and/or research in areas of recreation or physical education not covered in other undergraduate courses. Maximum of 4 credits.

**301 ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION AND ATHLETICS** (3+0) 3 credits
Principles and methods of organizing and administering physical education and athletics in secondary schools. Prerequisite: RPED 201.

**302 ORGANIZATION AND ADMINISTRATION OF INTRAMURAL AND RECREATION PROGRAMS** (1+3) 2 credits
Theory of and active participation in the organization and administration of intramural and recreation sports programs.

**321 ORGANIZATION AND JUDGING OF GYMNASTIC MEETS** (0+2) 1 credit
Prerequisite: competitive or teaching experience in gymnastics.

**322 ORGANIZATION AND JUDGING OF TRACK AND FIELD MEETS** (0+2) 1 credit
Prerequisite: RPED 326.

**323 THEORY OF BASEBALL** (2+2) 3 credits
Lectures on theory of baseball; teaching techniques and practical demonstrations. Designed for those who wish to coach.

**324 THEORY OF BASKETBALL** (2+2) 3 credits
Lectures on theory of basketball; teaching techniques and practical demonstrations. Designed for those who wish to coach.

**325 THEORY OF FOOTBALL** (2+2) 3 credits
Lectures on theory of football; teaching techniques and practical demonstrations. Designed for those who wish to coach.

**326 THEORY OF TRACK AND FIELD** (2+2) 3 credits
lectures on theory of track and field; teaching techniques and practical demonstrations. Designed for those who wish to coach.

**327 THEORY OF SOFTBALL AND VOLLEYBALL** (2+2) 3 credits
Lectures on theory of softball and volleyball; teaching techniques and practical demonstrations. Designed for those who wish to coach.

**330 OFFICIATING MAJOR SPORTS** (2+0) 2 credits
Interpretations of rules, methods of officiating and characteristics of officials. Coeducational class: men's major sports in the fall semester, women's major sports in the spring semester. Maximum of 4 credits; one fall semester and one spring semester.

**331 PSYCHOLOGY OF COACHING** (3+0) 3 credits
Role of psychology in coaching athletic activities. Prerequisites: RPED 201, 323 or 324 or 325 or 326.

**340 CAMPING AND OUTDOOR RECREATION** (1+2) 2 credits
Practices and principles of camping in relation to school curriculum. Campcraft skills, techniques of group work, program planning and camp counseling.

**341 PLANNING CONCEPTS FOR RECREATION FACILITIES** (3+0) 3 credits
Developing and operating leisure service buildings, parks, and equipment.

**342 COMMUNITY RECREATION** (2+0) 2 credits
Operation of a recreation department and its relationship to other community agencies.

**343 RECREATION FOR LATER LIFE** (3+0) 3 credits
Practices and principles of recreation for the aged. Planning and directing activities.

**350 TEACHING PHYSICAL EDUCATION IN ELEMENTARY SCHOOLS** (2+2) 3 credits
Curriculum planning, lesson plans, and teaching methods for the classroom teacher with lab teaching experience.

**351 PHYSICAL EDUCATION ACTIVITIES FOR PRIMARY GRADES K-3** (2+2) 3 credits
Intensive study of movement activities and teaching methods in the K-3 curriculum. Practical experience teaching in lab and public schools.

**352 PHYSICAL EDUCATION ACTIVITIES FOR INTERMEDIATE GRADES 4-8** (2+2) 3 credits
Teaching lifetime fitness activities, fitness concepts and basic skills for lifetime sports participation. Practical experience in lab and public schools.

**354 PERSONAL HEALTH AND LIFE STYLES** (3+0) 3 credits
(See H R 354 for description.)

**360 COMPARATIVE DANCE STYLES** (2+2) 3 credits
In-depth study of selected dance forms; includes repertory and performance. Prerequisite: intermediate/advanced dance technique.

**363 CONCERT CHOREOGRAPHY** (0+3 per credit) 1 or 2 credits
Directed student choreographic projects for public performance; by audition only. Maximum of 6 credits.

**364 DANCE PEDAGOGY** (2+1) 2 credits
Foundations of ballet and modern dance techniques and teachings. Prerequisite: advanced technique level.

**365 ART OF PERFORMANCE** (1+2) 2 credits
Elements of the act of presentation: preparation, intent, focal skills, and metaphor.

**370 ATHLETIC INJURIES** (1+2) 2 credits
Prevention and treatment of common athletic injuries, including practical application.

**371 METHODS OF TEACHING HEALTH** (3+0) 3 credits
Emphasis on current health issues relevant for physical education majors to teach grades K through 12. Prerequisite: RPED 201.

**372 METHODS OF TEACHING PHYSICAL EDUCATION** (3+0) 3 credits
Preparation for student teaching.

**373 FIELD EXPERIENCE IN RECREATIONAL CRAFTS** (1+3) 2 credits
Crafts as applied to recreation. Major students assigned in crafts area of Reno Recreation Department under the supervision of staff member.

**396 PRACTICAL EXPERIENCE IN ACTIVITY CLASSES** (0+2) 1 credit
Students assist in advanced work in physical education activities classes. Maximum of 3 credits.

**401, 601 EVALUATION AND MEASUREMENT IN PHYSICAL EDUCATION** (2+0) 2 credits
Statistical methods including interpretations and presentation of data and basic computer programs. Prerequisite: RPED 201, 204 and three credits above the 300 level in RPED.

**402, 602 HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION** (2+0) 2 credits
Historical analysis of physical education. Philosophical bases and principles as guidelines for the profession. Prerequisite: RPED 201 and 4 credits above 300 in RPED.

**403 KINESIOLOGY** (3+0) 3 credits
Mechanical and anatomical analysis of motion as a basis for the teaching of RPED activities. Designed for those majoring in health science fields. Prerequisite: BIOL 262, 263.

**405, 605 MOTOR LEARNING** (3+0) 3 credits
Motor-perceptual system processes, with special attention to skill acquisition and skill levels as categories of human learning.

**406, 606 PHYSIOLOGY OF EXERCISE** (3+0) 3 credits
Physiological bases for planning RPED programs. Observations of respiratory, circulatory, nervous and metabolic adjustments to physical exercise. Designed for those majoring in health science fields. Prerequisite: BIOL 262, 263.

**407, 607 THERAPEUTIC ASPECTS OF MOVEMENT** (3+0) 3 credits
Therapeutic exercises and muscular activities adapted to individuals with physical handicaps, tensions or low muscular activity levels.

**408, 608 PHYSICAL FITNESS ASSESSMENT AND PRERSCRIPTION** (2+2) 3 credits
Theory and practice of determining fitness levels and developing appropriate exercise programs.

**420 COACHING CLINIC** (2+0) 2 credits *S/U only*
Lectures and demonstrations in techniques of coaching major sports for men. A maximum of 4 credits is acceptable toward the satisfaction of any department, college or university requirement.

**421 621 LIFETIME SPORTS PROGRAM** (2+2) 3 credits
Analyses, development and maintenance of skills. Purchase and maintenance of equipment.

**422 WOMEN'S COACHING WORKSHOP** (1+2) 2 credits
Instruction and participation in techniques of coaching women's sports. Maximum of 4 credits.

**440, 640 RECREATION ADMINISTRATION** (3+0) 3 credits
Comprehensive study of recreation administration including community organization, promotion, budgets, public relations and leadership. Prerequisite: RPED 201, 240 and 2 credits above 300.

**450, 650 MOVEMENT EDUCATION FOR ELEMENTARY SCHOOL CHILDREN** (1+2) 2 credits
Problem-solving approach to the teaching of motor skills to children. Prerequisite: 12 credits in RPED or elementary school teaching certificate.

**451, 651 ADAPTED PHYSICAL EDUCATION** (3+0) 3 credits
Understanding the role of physical education in providing special education service to the handicapped. Basic information regarding growth and development of handicapped.

**452, 652 SOCIAL PSYCHOLOGY OF SPORTS AND RECREATION** (2+0) 2 credits
Nature of the person and interpersonal relationships in sport and recreation environments. Topics include power, status, motivation, attitude, behavior and leadership.

**461, 661 CHOREOGRAPHY WORKSHOP** (1+2) 2 credits
Intermediate and advanced study of dance composition; philosophy, principles, conventional forms and choreographic resources. Prerequisite: RPED 261. Maximum of 4 credits.

**462 PHYSICAL EDUCATION WORKSHOP** 1 or 2 credits
Recent trends, changes and techniques in physical education, recreation and dance activities. Maximum of 4 credits.

**492, 692 RECREATION INTERNSHIP** 4 to 10 credits
Practical work experience in recreation agencies. Prerequisite: 20 credits in recreation and recreation major or minor. Maximum of 10 credits.

**493 INDEPENDENT STUDY IN DANCE** (1 or 2+0) 1 or 2 credits
Individual study and/or research in areas of dance not covered in other undergraduate courses. Maximum of 4 credits.

**495, 695 FIELD STUDIES IN RECREATION** 1 to 6 credits
Directed field work in observing recreation programs and facilities. Maximum of 6 credits.

**496, 696 FIELD STUDIES IN PHYSICAL EDUCATION** 1 to 6 credits
Directed field work in observing physical education programs and facilities. Maximum of 6 credits.

**497, 697 SPECIAL PROBLEMS IN PHYSICAL EDUCATION** (2+0) 2 credits
Maximum of 4 credits. Prerequisite: 12 credits in RPED.

**498 INDEPENDENT STUDY IN PHYSICAL EDUCATION** (1 or 2+0) 1 or 2 credits

Individual study and/or research in areas of physical education not covered in other undergraduate courses. Maximum of 4 credits.

**499 INDEPENDENT STUDY IN RECREATION** (1 or 2+0) 1 or 2 credits
Individual study and/or research in areas of recreation not covered in other undergraduate courses. Maximum of 4 credits.

**701 ADVANCED KINESIOLOGY** (2+0) 2 credits
Detailed study of the application of anatomical, mechanical and physiological principles to human motion and sports skill. Prerequisite: RPED 403.

**702 CRITICAL ISSUES IN PHYSICAL EDUCATION** (2+0) 2 credits
Examination of basic philosophies and objectives of physical education in relation to current societal needs.

**703 CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION** (2+0) 2 credits
Social and physiological principles underlying the development of a physical education curriculum consistent with goals of secondary education. Prerequisite: 24 credits in RPED.

**704 PHYSICAL EDUCATION SEMINAR** (2+0) 2 credits
Intensive study and discussion of selected areas in physical education. Maximum of 4 credits. Prerequisite: 15 credits in RPED.

**705 PHYSIOLOGICAL BASES OF CONDITIONING PROGRAM** (2+0) 2 credits
Systematic analysis of the physiological results of conditioning programs with particular emphasis on changes in muscular strength, endurance and coordination. Application of basic principles to the organization of conditioning programs. Prerequisite: RPED 406.

**771 ATHLETIC INJURIES II** (1+2) 2 credits
Methods of caring for athletic injuries. Prerequisite: RPED 370.

**792 READINGS IN PHYSICAL EDUCATION AND RECREATION** (1+0) 1 credit
Designed to acquaint advanced students with recent professional literature in physical education and recreation. One conference period per week. Maximum of 3 credits. Prerequisite: 15 credits in RPED.

**793 INDEPENDENT PROJECTS IN PHYSICAL EDUCATION** (1 or 2+0) 1 or 2 credits
Prerequisite: 15 graduate credits in RPED courses.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**796 PROFESSIONAL PAPER** 3 credits
Required of all graduate students who wish to complete an M.S. degree under Plan B.

**797 THESIS** 1 to 6 credits

*Inactive Courses*
100 CANOEING
114 SQUARE DANCE
149 FOIL FENCING
150 BEGINNING SABRE FENCING
151 INTERMEDIATE AND ADVANCED SABRE FENCING
164 SHOOTING
189 INTERCOLLEGIATE BOWLING
191 INTERCOLLEGIATE GYMNASTICS
192 INTERCOLLEGIATE RIFLERY
199 INTERCOLLEGIATE WRESTLING

# RELIGIOUS STUDIES (R ST)

*Interdisciplinary Courses*
**101 INTRODUCTION TO RELIGIOUS STUDIES** (3+0) 3 credits
Varieties of religious expression: belief, ritual, scripture, art. Religious issues: God, death, evil, salvation. Methods of studying religion.

# SOCIAL WORK (S W)

**220 INTRODUCTION TO SOCIAL WORK** (3+0) 3 credits
Overview of public and private social services and profession of social work, and analysis of their functions as modes of social problem-solving.

**230 CRISIS INTERVENTION** (3+0) 3 credits
Analysis of types of crisis, crisis theory, effects of crisis on the community, methods of and community resources for crisis intervention. Prerequisite: PSY 101.

**320 INDIVIDUAL IN SOCIETY** (3+0) 3 credits
Human growth and behavior within a sociocultural context, with special attention to professional practice and social policy formation in the helping professions, Prerequisite: S W 220.

**330 METHODS OF SOCIAL WORK I** (3+0) 3 credits
Principles of casework, group work, and community organization. Intervention at individual, family, peer group, and community level. Prerequisite: S W 220.

**331 METHODS OF SOCIAL WORK II** (3+0) 3 credits
Continuation of S W 330. Prerequisite: S W 330. Corequisite: S W 480.

**340 HUMAN VALUES AND PROFESSIONAL ETHICS** (3+0) 3 credits
(See CHS 340 for description.)

**375 THE CHILD AND THE LAW** (3+0) 3 credits
Philosophical, historical, legal origins of the government's role in child welfare services. Knowledge, skills, attitudes to aid in delivery of legal services to children and families.

**390 INTRODUCTION TO RESEARCH** (3+0) 3 credits
Methods for practitioners, community organizers and other professionals in social service and health education settings. Evaluation and interpretation of research and statistical analysis.

**430, 630 SOCIAL SERVICES IN DEATH AND DYING** (1+0) 3 credits
Examines attitudes towards death and associated grief processes. Prerequisite: S W 230 or 320.

**450, 650 SOCIAL WELFARE POLICY** (3+0) 3 credits
Analysis of the development and implementation of social welfare programs and services. Examines the social worker's role in the policy making process. Prerequisite: S W 220.

**460, 660 THE LAW AND SOCIAL SERVICES** (3+0) 3 credits
Legal foundations and structures of practice and administration in social services. Legal aspects of all modes of intervention in social problems. Prerequisite: S W 220.

**464, 664 AIDS: SOCIAL AND HEALTH CARE CONCERNS** (3+0) 3 credits
(See CHS 464. 664 for description.)

**472, 672 WOMEN: SOCIAL AND HEALTH CARE CONCERNS** (3+0) 3 credits
(See CHS 472, 672 for description.)

**473, 673 ETHNIC AND RACIAL MINORITIES SOCIAL AND HEALTH CME CONCERNS** (3+0) 3 credits
Analysis of social and health care problems unique to ethnic and racial minorities in the U.S.; knowledge of cultural characteristics to be considered in service delivery. Prerequisite: S W 220. (Same as CHS 473, 673.)

**474, 674 SOCIAL INTERVENTION IN ALCOHOL AND DRUG ABUSE** (3+0) 3 credits
(See CHS 474, 674 for description.)

**477, 677 THE CHILD IN THE COMMUNITY** (3+0) 3 credits
Analysis of the development and current programs in child welfare including the legal status of children. Prerequisite: SOC 101 or PSY 101.

**480-481 FIELD EXPERIENCE IN SOCIAL WORK** (2+12) 5 credits each *S/U only*
One-year course combining a two-hour seminar with at least 12 hours of field experience in an approved social or correctional agency under the supervision of an experienced agency worker. Prerequisite: S W 330.

**486, 686 SUPERVISION AND ADMINISTRATION IN SOCIAL WORK** (3+0) 3 credits
Analysis and application of the theory and methods of supervision and

administration in health and social work settings. Emphasis on case studies. Prerequisite: S W 330.

**496, 696 DIRECTED INDEPENDENT RESEARCH** 1 to 3 credits
Guided research in an area of mutual interest to the student and faculty. Maximum of 6 credits.

**498, 698 SPECIAL PROBLEMS** 1 to 3 credits
Maximum of 6 credits.

**499, 699 INDIVIDUAL READING** 1 to 3 credits
Supervised reading with regular conferences between student and instructor. Maximum of 6 credits.

**610 HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT** (3+0) 3 credits
Social systems framework for analysis of behavior including theories relating to biological, psychological, cognitive, and social development, both normal and abnormal.

**615 FOUNDATIONS OF SOCIAL WELFARE** (3+0) 3 credits
Key issues and concepts associated with policies and programs affecting children, families, and older adults in contemporary American society.

**620 FOUNDATIONS OF PRACTICE** (3+0) 3 credits
Basic principles and concepts of social work intervention, including casework, group work, and community organization.

**636 STRUCTURAL OPPRESSION** (2+0) 2 credits
Impact of institutional racism on victims. Emphasis on moral, ethical, and professional responsibility of social worker.

**640 RESEARCH METHODS** (3+0) 3 credits
Research design for both quantitative and qualitative studies. Emphasis on practice evaluation, needs assessment, and critical evaluation of research findings. Prerequisite: introductory statistics.

**714 ANALYSIS OF ORGANIZATIONS AND COMMUNITIES** (3+0) 3 credits
Characteristics and dynamics of organizations and communities as they related to social work practice.

**715 POLICY: RULE MAKING AND IMPLEMENTATION** (3+0) 3 credits
Perspectives on policymaking, implementation and evaluation, community organization, and political processes. Prerequisite: S W 615.

**721 INTERVENTION I—DIRECT** (3+0) 3 credits
In-depth examination of varied strategies for subventionary practice. Subject will include experiential activities.

**725 INTERVENTION II—INDIRECT** (3+0) 3 credits
Examination of the characteristics, methods, processes, and requisite competencies of instrumental practice. Prerequisite: S W 721.

**727 INTERVENTION III—SPECIAL POPULATIONS** (3+0) 3 credits
Concentration on methods of practice with particular vulnerable groups. Prerequisite: S W 721, 725.

**738 HUMAN DIVERSITY AND SPECIAL POPULATIONS** (2+0) 2 credits
Study of differences in race, ethnicity, gender, age, sexual orientation, class, religion, culture and physical and mental handicaps using biology, sociology, psychology and anthropology.

**739 GENDER ISSUES IN SOCIAL WORK** (2+0) 2 credits
Examination of the range of issues and problems unique to or that impact differentially on women. Emphasis on relationship to practice.

**740 ADVANCED RESEARCH METHODS** (2+3) 3 credits
Principles of research methodology applied to practice or policy with children and families or older adults. Research project carried out under supervision. Prerequisite: S W 640.

**780 PRACTICUM** (2+20) 6 credits *S/U only*
Supervised social work practice in community social agency with focus on development of foundation skills for practice with vulnerable population groups.

**790, 791 ADVANCED PRACTICUM I and II** (2+20) 6 credits *S/U only*
Supervised social work practice in a community social agency with focus on development of advanced skills for practice with disadvantaged and vulnerable populations. Prerequisite: S W 780 or equivalent.

**792 PROFESSIONAL ISSUES SEMINAR** (1+0) 1 credit
Focus on selected topics related to social work practice with strong emphasis on values and ethics.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

**797 THESIS** 1 to 6 credits

# SOCIOLOGY (SOC)

**101 PRINCIPLES OF SOCIOLOGY** (3+0) 3 credits
Sociological principles underlying the development, structure and function of culture, society, human groups, personality formation and social change.

**102 SOCIAL PROBLEMS** (3+0) 3 credits
Selected social problems, their causation and proposed solutions.

**202 AMERICAN SOCIETY** (3+0) 3 credits
Analysis of the structure of American society; its historical development and its contemporary institutional forms.

**204 COMPARATIVE SOCIOLOGY** (3+0) 3 credits
Comparative analysis of social structure in traditional and modern societies. Emphasis on a macro-sociological approach in the study of socioeconomic processes in different social systems.

**205 ETHNIC GROUPS IN CONTEMPORARY SOCIETIES** (3+0) 3 credits
(See ANTH 205 for description.)

**207 INTRODUCTION TO MAIN CURRENTS IN SOCIOLOGICAL THOUGHT** (3+0) 3 credits
The works of classical and contemporary sociological theorists. Emphasis on the development of sociological theory in the U.S. Prerequisite: SOC 101.

**210 STATISTICAL METHODS** (3+2) 4 credits
(See PSY 210 for description.)

**261 SOCIAL PSYCHOLOGY I: THE PERSON AND SOCIAL INFLUENCE** (3+0) 3 credits
(See PSY 261 for description.)

**275 MARRIAGE AND THE FAMILY** (3+0) 3 credits
Sex roles, dating patterns, mate selection, marital interaction and success and alternative forms of marriage and family life.

**333 SOCIOLOGY OF RELIGION** (3+0) 3 credits
Sociological and historical examination of institutionalized and noninstitutionalized religion with emphasis on religions in America. Prerequisite: SOC 101.

**342 SOCIAL STRATIFICATION** (3+0) 3 credits
Analysis of major theories of stratification and inequality. Historical development of class systems with emphasis on the social class structure of American society. Prerequisite: SOC 101.

**345 SOCIAL MOVEMENTS AND COLLECTIVE BEHAVIOR** (3+0) 3 credits
Processes involved in collective behavior and social movements; includes such topics as rumor, panic, riots, disaster and social movement organizations. Prerequisite: SOC 101.

**350 SOCIAL CHANGE** (3+0) 3 credits
Institutional change emphasizing the comparative perspective. A survey of various theories of social change and their applications in the analysis of various historical and contemporary societies. Prerequisite: SOC 101.

**352 JUVENILE DELINQUENCY** (3+0) 3 credits
Causes, conditions and prevention of juvenile crime. Prerequisite: SOC 101. Not open to those who have taken SOC 366 for credit.

**362 SOCIAL PSYCHOLOGY II: GROUP STRUCTURE AND PROCESS** (3+0) 3 credits
Topics include interpersonal attraction, power, status, group norms, leadership, group problem-solving, roles and role strain. Prerequisite: PSY 101 or SOC 101. (Same as PSY 362.)

**366 CRIMINOLOGY** (3+0) 3 credits
Major theories and research findings on the causes of delinquency and crime. Prerequisite: SOC 101 . Not open to those who have taken SOC 352 for credit. (Same as C J 366.)

**367 PENOLOGY** (3+0) 3 credits
Processes through which the apprehended offender passes: arrest, detention, probation, incarceration and parole. Critical evaluation of various programs for treatment and prevention of crime. Prerequisite: SOC 352 or 366. (Same as C J 367.)

**369 SOCIOLOGY OF LAW** (3+0) 3 credits
Examination of relationship of legal institutions and society, focusing on law as a social product and the social psychology of jury processes and plea bargaining.

**371 SOCIAL ORGANIZATION** (3+0) 3 credits
Examination of major social institutions in terms of structure, function and change. Prerequisite: SOC 101.

**373 POLITICAL SOCIOLOGY** (3+0) 3 credits
Sociological theories and concepts brought to bear on various aspects of political theory and behavior. Prerequisite: SOC 101.

**376 THE COMMUNITY** (3+0) 3 credits
Description and analysis of American urban, suburban and rural communities including communes. Emphasis on variation in community institutions and processes. Prerequisite: SOC 101.

**379 ETHNIC AND RACE RELATIONS** (3+0) 3 credits
Social, psychological, economic and political aspects of minority problems in American society. Prerequisite: SOC 101. Not applicable toward an advanced degree in sociology

**391 BUREAUCRACY AND LARGE SCALE ORGANIZATIONS** (3+0) 3 credits
Sociology of modern large scale organizations with emphasis on government agencies, corporations, political parties and labor unions. Prerequisite: SOC 101.

**392 RESEARCH METHODS** (3+0) 3 credits
Major techniques and problems encountered in both survey and experimental research in the behavioral sciences. Prerequisite: PSY 101 or SOC 101. (Same as PSY 392.)

**393 INDUSTRIAL SOCIOLOGY** (3+0) 3 credits
Examinations of various work settings such as factories and "white collar" industries and third impact upon individual employees, emphasizing the development of alienation. Prerequisite: SOC 101.

**401-402, 601-602 ADVANCED GENERAL SOCIOLOGY** (3+0) 3 credits
Intensive survey of major areas of sociology. Prerequisite: SOC 101 or admission to honors program.

**404, 604 SOCIOLOGY OF DEVELOPING SOCIETIES** (3+0) 3 credits
Analysis of major theories of development as applied to the experience of contemporary Third World societies. The socioeconomic development in countries of Asia, Africa and Latin America examined from a comparative-historical perspective. Prerequisite: SOC 101.

**410, 610 SOCIOLOGY OF AGING** (3+0) 3 credits
Examination of sociological factors affecting the aging process in modern societies. Prerequisite: SOC 101.

**422, 622 SOCIAL PSYCHOLOGICAL THEORIES** (3+0) 3 credits
Review of theories in social psychology. Emphasizes classical studies and the developmental trends which led to current perspectives in social psychology. Prerequisite: SOC 101 or PSY 101. (Same as PSY 422.)

**427, 627 COMPUTER APPLICATIONS IN SOCIAL AND BEHAVIORAL SCIENCE** (3+0) 3 credits
Advanced use of computer in a variety of areas of the social and behavioral sciences. Prerequisite: SOC 210 or PSY 210, SOC 101 or PSY 101. (Same as PSY 427, 627.)

**453, 653 THE SOCIOLOGY OF GENDER** (3+0) 3 credits
Socialization to sex roles, effects of sex on personality, relations between the sexes in organizational and informal groups, sexual deviancy and alternative sex roles. Prerequisite: SOC 101.

**463, 663 SOCIAL PSYCHOLOGY III: SOCIAL PSYCHOLOGY OF EDUCATION** (3+0) 3 credits
(See PSY 463 for description.)

**464, 664 CONFORMITY AND DEVIATION** (3+0) 3 credits
Systematic analysis of the sources of normative and nonnormative conduct. The nature and types of social deviations, their causes, description and consequences. Prerequisite: SOC 101.

**480, 680 THE FAMILY** (3+0) 3 credits
Forms and functions of the family as a social institution. Emphasis on present trends. Prerequisite: SOC 101.

**485, 685 SOCIOLOGY OF KNOWLEDGE** (3+0) 3 credits
Reciprocal influence of social structure on personal perception and values. Prerequisite: SOC 101.

**491, 691 HISTORY OF SOCIAL THOUGHT** (3+0) 3 credits
Development of social and economic thought from prehistoric times to the period of the English and French Enlightenment. Prerequisite: SOC 101.

**492, 692 CONTEMPORARY SOCIAL THEORY** (3+0) 3 credits
Development of social theory from the Enlightenment to the present day. Emphasis on recent developments in theory. Prerequisite: SOC 101.

**494 SOCIAL FOUNDATIONS OF ECONOMIC LIFE** (3+0) 3 credits
Influence of noneconomic institutions on the productive relations of society. The family, the political community, religion and culture as they affect the economic structure of modern society.

**497, 697 SPECIAL TOPICS** 1 to 3 credits
Seminar on selected problems from the study of sociology. Maximum of 6 credits. Prerequisite: SOC 101.

**499, 699 SPECIAL PROBLEMS IN SOCIOLOGY** 1 to 3 credits
Maximum of 6 credits.

**701 INDIVIDUAL READING** 1 to 5 credits
Supervised reading with regular conferences between student and instructor. Maximum of 6 credits.

**702 GRADUATE RESEARCH** 1 to 5 credits
Research projects in sociology carried out under supervision. Maximum of 6 credits.

**704 SEMINAR IN SOCIAL ORGANIZATION** (3+0) 3 credits
Consideration of selected topics in social organization.

**705 SEMINAR IN SOCIAL THEORY** (3+0) 3 credits
Consideration of selected topics on sociological theory.

**706 INTERMEDIATE STATISTICS I** (3+0) 3 credits
(See PSY 706 for description.)

**707 INTERMEDIATE STATISTICS II** (3+0) 3 credits
(See PSY 707 for description.)

**718 RESEARCH METHODS IN SOCIAL PSYCHOLOGY** (3+0) 3 credits
(See PSY 718 for description.)

**725 SOCIALIZATION** (3+0) 3 credits
Social psychological approaches to the individual, including field theory, theories of balance and congruency, and other conceptual approaches to social perception, interpersonal attraction and stability of personality. (Same as PSY 725 .)

**726 INTERPERSONAL TRANSACTIONS** (3+0) 3 credits
Basic processes of social interaction including person perception, communication, attraction and power in social relationships. (Same as PSY 726.)

**727 GROUP BEHAVIOR** (3+0) 3 credits
Analysis of behavior in small and intermediate size groups, including organizational behavior and intergroup relations. (Same as PSY 727.)

**728 COLLECTIVE BEHAVIOR AND MASS SOCIETY** (3+0) 3 credits
Analysis of social behavior at the societal level, including attitude formation, mass communication, crowd behavior and social movements. (Same as PSY 728.)

**737 SURVEY RESEARCH METHODS** (3+0) 3 credits
Strategies and techniques of survey research, including planning, sampling, questionnaire construction, coding and data analysis. (Same as PSY 737.)

**738 METHODS AND INNOVATIONS IN ASSESSMENT** (3+0) 3 credits
(See PSY 738 for description.)

**764 SPECIAL TOPICS IN SOCIAL PSYCHOLOGY** (3+0) 3 credits
(See PSY 764 for description.)

**795 COMPREHENSIVE EXAMINATION** 0 credits *S/U only*

**797 THESIS** 1 to 6 credits

**799 DISSERTATION** 1 to 24 credits

*Inactive Course*
384 POPULATION (3+0) 3 credits

# SPEECH COMMUNICATION (SPCM)

**105-106, 205-206, 305-306, 405-406 INTERCOLLEGIATE FORENSICS** (0+3) 1 credit each
Participation in intercollegiate debate and individual events as a member of the university debate squad, plus participation in related on-campus events. Does not fulfill requirements for a major in speech communication.

**113 FUNDAMENTALS OF SPEECH COMMUNICATION** (3+0) 3 credits
Principles and theories of speech communication. Participation in public speaking and interpersonal communication activities.

**210 INTRODUCTION TO COMMUNICATION** (3+0) 3 credits
Survey of theories of human communications; study of the nature of speech communication process.

**212 INTRODUCTION TO COMMUNICATION RESEARCH** (3+0) 3 credits
Basic approaches to research in speech communication. Introduction to historical, analytical, critical and empirical methods of investigation.

**213 PUBLIC SPEAKING** (3+0) 3 credits
Theory and practice in the composition and delivery of public speeches. Advanced techniques of message development, organization and style.

**217 ARGUMENTATION AND DEBATE** (3+0) 3 credits
Theory and practice of oral argumentative discourse; intensive study of argumentative principles and debate fundamentals; participation in class discussions, speeches and debates.

**315 SMALL GROUP COMMUNICATION** (3+0) 3 credits
Speech communication in face-to-face and coacting groups. Analysis of group cohesiveness, leadership, role structure, information processing and decision-making.

**319 LEGAL ARGUMENTATION** (3+0) 3 credits
Practice of argumentation theory in law, utilizing legal research, writing, and speaking; designed especially for the pre-law student.

**329 BUSINESS AND PROFESSIONAL SPEAKING** (3+0) 3 credits
Practice of the principles of public speaking, conference methods and group discussions which are applicable to the business and professional community.

**410, 610 NONVERBAL COMMUNICATION** (3+0) 3 credits
Principles, implications and effects of nonverbal communication, the ways in which unspoken elements modify communication.

**411, 611 INTERPERSONAL COMMUNICATION** (3+0) 3 credits
Investigation into the role of interpersonal communication in human relations.

**412, 612 INTERCULTURAL COMMUNICATION** (3+0) 3 credits
Factors important to meaningful communication across cultures with emphasis on intercultural differences in North America.

**427, 627 COMMUNICATION AND SOCIAL CHANGE** (3+0) 3 credits
Critical review of theory and research.

**428, 628 ORGANIZATIONAL COMMUNICATION** (3+0) 3 credits
Analysis of communication functions and networks in organizational settings. Organizational structures and dynamics and their effect upon the communication process.

**433, 633 HUMAN COMMUNICATION THEORY** (3+0) 3 credits
Review and comparative analysis of contemporary behavioral theories of human communication.

**434, 634 COMMUNICATION AND CONFLICT RESOLUTION** (3+0) 3 credits
Theory and research in conflict and negotiation; emphasis on conflict management in interpersonal settings.

**435, 635 PERSUASION** (3+0) 3 credits
Contemporary theory and research in persuasive communication; role of speech communication in changing beliefs, attitudes, values, intentions, and behavior.

**480, 680 COMMUNICATION TRAINING SYSTEMS** (3+0) 3 credits
Development and evaluation of innovative speech communication training programs and classroom methods.

**490, 690 SPECIAL PROBLEMS IN SPEECH COMMUNICATION** 1 to 3 credits
Designed for students who wish to study in depth a particular area of general speech, rhetoric and public address or communication theory. Maximum of 6 credits.

**495, 695 INDEPENDENT STUDY** 1 to 3 credits
Open to juniors and seniors specializing in speech communication. Maximum of 8 credits.

**700 RESEARCH METHODS** (3+0) 3 credits
Research methodologies in speech communication. Prerequisite: undergraduate statistics course or CAPS 440, 640.

**710 SEMINAR: SMALL GROUP COMMUNICATION** (3+0) 3 credits
Critical review of literature in problem-solving processes within the small group.

**720 SEMINAR: INTERPERSONAL COMMUNICATION** (3+0) 3 credits
Theory and research in one-to-one communication.

**730 SEMINAR: ORGANIZATIONAL COMMUNICATION** (3+0) 3 credits
Communication behavior and the evaluation-decision process in human organizations.

**740 SEMINAR: PUBLIC COMMUNICATION** (3+0) 3 credits
History and critical analysis of rhetorical advocacy.

**750 SEMINAR: PERSUASION** (3+0) 3 credits
Literature on strategies and techniques of persuasive discourse.

**760 SEMINAR: COMMUNICATION THEORY** (3+0) 3 credits
Communication theory as it applies to the design, research and management of communication systems.

**793 INDEPENDENT STUDY** 1 to 3 credits
Maximum of 6 credits.

**795 COMPREHENSIVE EXAMINATION** 0 credit *S/U only*

797 THESIS 1 to 6 credits

798 INTERNSHIP: APPLIED COMMUNICATION SYSTEMS
1 to 3 credits
Professional work experience in close association with selected executives—managers in education, business and governmental agencies. Maximum of 6 credits.

*Inactive Courses*
430, 630 MODERN THEORIES OF PUBLIC COMMUNICATION
(3+0) 3 credits

# SPEECH PATHOLOGY AND AUDIOLOGY (SPA)

259 PHONETICS (3+0) 3 credits
Practical course in the science of speech sounds with emphasis on transcription of the International Phonetic Alphabet.

310 SPEECH AND LANGUAGE DEVELOPMENT (3+0) 3 credits
Traditional and psycholinguistic approaches to language and speech development in the individual.

320 INTRODUCTION TO GENERAL SEMANTICS (3+0) 3 credits
Emphasizes the distinctively human functions of creating and using symbols. Reveals the relationship of symbol systems and the bodily process of symbolizing experience to the development of language, psycholinguistics, personality and society. Prerequisite: SPA 310.

356 SURVEY OF SPEECH PATHOLOGY (3+0) 3 credits
Designed particularly for the classroom teacher. Stresses correction of minor speech problems and understanding of more involved disorders.

357 COMMUNICATION SCIENCE (3+0) 3 credits
Anatomical, neurological, physiological, and physical bases of speech and voice production.

359 ASSESSMENT OF COMMUNICATION DISORDERS
(1+0 per credit) 1 to 3 credits
Developmental, environmental, organic, and psychogenic bases of disorders of speech and voice. Prerequisite: SPA 259, 357.

360 METHODS OP CLINICAL MANAGEMENT (3+0) 3 credits
Therapy and clinical management of problems of defective speech. Includes clinical equipment and public school speech correction programs. Prerequisite: SPA 359.

361 ARTICULATION DISORDERS (2+3) 3 credits
Assessment and treatment of phonemic disorders.

362 INTRODUCTION TO AUDIOLOGY (3+0) 3 credits
Physics of sound, anatomy and physiology of the ear, medical and surgical aspects of hearing loss, basic audiometric techniques, and hearing conservation.

363 PRACTICUM IN SPEECH PATHOLOGY (0+6) 2 credits
Supervised clinic experience in the treatment and management of children and adults with speech and hearing defects. Prerequisite: SPA 259, 357, 359, 360. Maximum of 12 credits.

364 PREVENTION OF COMMUNICATIVE DISORDERS (3+6) 3 credits
Familiarization with developmental landmarks of communication, causes of communicative disorders, and application of methods for prevention and early intervention of communicative disorders.

365 ADVANCED AUDIOLOGICAL TESTING (3+0) 3 credits
Calibration of test equipment. Rationale and procedures used in the evaluation of hearing loss. Laboratory exercises. Prerequisite: SPA 362.

421 COMMUNICATION PROBLEMS OF THE AGED (3+0) 3 credits
Speech and hearing disorders common to the aged. Current methods of evaluation and treatment are considered.

459, 659 SEMINAR IN CLINICAL PROCEDURE (2+0) 2 credits
Advanced study in specialized areas of the field. Maximum of 8 credits.

460, 660 ASPECTS OF SPEECH PATHOLOGY AND AUDIOLOG
(1+0) 1 credit
Pathologies affecting the auditory and speech mechanisms including central nervous system involvement. Special emphasis on medical and surgical treatment and speech and language pathology from the physician's viewpoint.

461, 661 ADVANCED SPEECH PATHOLOGY (2+0) 2 credits
Diagnosis of speech disorders, with special emphasis on stuttering and allied problems and organic speech disorders.

463, 663 INTERNSHIP IN SPEECH PATHOLOGY AND AUDIOLOGY
(0+18 or 24) 6 or 8 credits
Clinical experience in the diagnosis and management of children and adults with speech or hearing defects. Experience to be gained in an off-campus rehabilitation program.

464, 664 PRACTICUM IN AUDIOLOGICAL TESTING
(0+3 or 6) 1 or 2 credits
Supervised clinical procedures in descriptive and diagnostic hearing examinations. May be repeated. Prerequisite: SPA 362, 365.

465, 665 MEDICAL AUDIOLOGY (3+0) 3 credits
Differential hearing tests and their interpretation from a medical and surgical viewpoint.

466, 666 REHABILITATION FOR HEARING HANDICAPPED
(3+0) 3 credits
Problems of adjustment and language involvement of the hearing handicapped. Use of amplification, auditory training, and lipreading principles. Prerequisite: SPA 310, 362.

467, 667 LANGUAGE DISORDERS IN CHILDREN (3+0) 3 credits
Conditions leading to delayed language in children. Emphasis on methods of teaching language. Prerequisite: SPA 310.

494 WORKSHOPS AND INSTITUTES 1 to 3 credits
Intensive study of special topics in speech pathology and audiology. Maximum of 6 credits.

495 INDEPENDENT STUDY 1 to 3 credits
Intensive study of special topics in speech pathology or audiology on an individual basis. Maximum of 6 credits.

720 INTRODUCTION TO GRADUATE STUDY (3+0) 3 credits
Research methods in the communicative arts and sciences.

721 CRANIOFACIAL DISORDERS (2+3) 3 credits
Causes and treatment of communicative disorders related to cleft palate and lip. The interdisciplinary team approach will be stressed.

751 DYSPHASIA (2+3) 3 credits
Language and speech disorders related to central nervous system deficits.

752 STUTTERING (2+3) 3 credits
Disorders of speech rhythm and fluency.

753 COMMUNICATION DISORDERS IN THE CEREBRAL PALSIED
(3+0) 3 credits
Causes, assessment, and treatment of communicative disorders among the cerebral palsied.

754 SEMINAR IN PHYSICAL ANOMALIES (2+0) 2 credits
Anatomical and neurological deficits of the speech mechanism to include alaryngeal speech.

757 EXPERIMENTAL PHONETICS (3+0) 3 credits
Speech production and reception and the physical characteristics of speech and instrumentation for speech analysis.

759 SEMINAR IN CLINICAL PROCEDURES (2+0) 2 credits
Advanced study in specialized areas of the field. Maximum of 8 credits.

762 DISORDERS OF VOICE (2+3) 3 credits
Causes, diagnosis, and treatment of disorders of voice.

765 ADVANCED AUDIOLOGY (2+3) 3 credits
Calibration of test equipment. Rationale and procedures used in the evaluation of hearing loss. Laboratory exercises. Prerequisite: SPA 362.

767 ADVANCED PRACTICUM (0+6) 2 credits
Supervised clinical experience in the treatment and management of children and adults with complex communicative disorders.

768 SEMINAR IN AUDIOLOGY (3+0) 3 credits
Special topics; hearing aids, psychophysics of audition; current research and publications in clinical hearing measurement or rehabilitation. Maximum of 6 credits.

769 SEMINAR IN AUDIOLOGICAL MEASUREMENT (2+0) 2 credits
Special topics in the measurement of hearing, hearing aids, psychophysics of audition, and special tests.

793 INDEPENDENT STUDY 1 to 3 credits

794 WORKSHOPS AND INSTITUTES 1 to 3 credits
Intensive study of special topics in speech pathology or audiology. Usually offered during Summer Session. Maximum of 8 credits.

795 COMPREHENSIVE EXAMINATION 0 credit *S/U only*

797 THESIS 1 to 6 credits

## SURGERY (SURG)

451, 651 CLERKSHIP (2+30)12 credits
Hospital and ambulatory clinical experience to develop knowledge (practical theoretical, basic science), technical and interpersonal skills basic to understanding pathophysiology and treatment of surgical diseases.

461, 661 ELECTIVES 2 to 8 credits
Elective experiences in the major surgical subspecialities including: (a) acute orthopedics, (b) anesthesiology, (c) burn surgery, (d) cardiothoracic surgery, (e) emergency room techniques, (f) acting internship in general surgery, (g) neurosurgery, (h) ophthalmology, (j) orthopedic surgery, (k) otorhinolatyngology, (m) plastic surgery, (q) trauma surgery, (r) urology, (s) thoracic surgery, (t) third-world medicine and surgery. Prerequisite: third- or fourth-year medical students. Maximum of 8 credits in any one subtopic. Maximum total credits for any combination of subtopics is 16.

490,690 INDEPENDENT STUDY 1 to 4 credits

## TEXTILE AND APPAREL MERCHANDISING (TAM)

200 SPECIAL TOPICS 1 to 6 credits
Study under supervision of a staff member on topics of special interest to the learner. Maximum of 6 credits.

202 FIELD STUDY 1 to 3 credits *S/U only*
Student-faculty seminar including group travel for field study experience. Maximum of 6 credits.

210 APPAREL PRODUCT ANALYSIS (3+0) 3 credits
Recognition and evaluation of commercial construction techniques as related to garment cost, durability, and appearance. Prerequisite: TAM 216.

211 PATTERN DESIGN (1+4) 3 credits
Basic principles of pattern construction and design through a combination of draping and drafting techniques. Prerequisite: TAM 210.

212 TEXTILE, APPAREL, AND RETAIL INDUSTRIES (3+0) 3 credits
Structure, operation, and interrelationship of industries involved in the production, distribution, and merchandising of textile goods. Exploration of career opportunities.

216 TEXTILES (2+2) 3 credits
Consumer orientation to textiles. Serviceability, concepts of durability, care, comfort, and aesthetic appearance are used to evaluate textile alternatives for various end uses.

270 FIELD EXPERIENCE 1 to 3 credits *S/U only*
Coordinated work experience in the apparel/retail industry under direction of a faculty adviser. Prerequisite: TAM 210, 212, 216.

309 MUSEOLOGY (3+0) 3 credits
(See ANTH 309 for description.)

310 FASHION THEORY (1+0) 1 credit
Fashion theories, cycles, and influences. Prerequisite: SOC 101; PSY 101.

311 CLOTHING AS NON-VERBAL COMMUNICATION (1 +0) 1 credit
Impact of clothing and appearance on social interaction. Prerequisite: SOC 101; PSY 101.

312 CLOTHING AESTHETICS (1+0) 1 credit
Application of elements and principles of design to clothing. Prerequisite: SOC 101; PSY 101.

315 HISTORIC COSTUMES AND TEXTILES (3+0) 3 credits
Textile fabrics and dress as they record the cultural, social and economic trends of significant design periods.

318 CREATIVE TEXTILES (2+2) 3 credits
Design of textiles structures using fibers, yarns and fabrics. Historical and traditional aspects studied in relation to potential in design of contemporary fabric forms.

375 PERSPECTIVES ON THE FAMILY'S NEAR ENVIRONMENT (3+0) 3 credits
Exploration of the family and its near environment. Focus on the relationship of design technology and environment to human behavior. Prerequisite: NUTR 121; PSY 101; SOC 101.

400, 600 SPECIAL PROBLEMS 1 to 10 credits
Individual study or research in fields of special interest. Maximum of 10 credits.

414 APPAREL RETAIL MANAGEMENT (3+0) 3 credits
Case study approach to managerial and marketing responsibilities in planning, purchasing, and controlling operations with emphasis on apparel retail environments. Prerequisite: MGRS 310, 312; TAM 212.

416, 616 ADVANCED TEXTILES (3+0) 3 credits
Advanced study of fabric performance and selection of textiles for specific end uses. Introduction to laboratory testing of fabrics. Prerequisite: TAM 216.

419, 619 CULTURAL, SOCIAL, AND PSYCHOLOGICAL ASPECTS OF DRESS (3+0) 3 credits
Exploration of dress as a communicator of the social, psychological and cultural aspects of society. Prerequisite: 6 credits of social science or human development.

470 PREPROFESSIONAL INTERNSHIP 3 credits *S/U only*
Managerial work experience in apparel or retail industry under the direction of a faculty adviser. Prerequisite: TAM 270, 414.

## THEATRE (THTR)

100 INTRODUCTION TO THE THEATRE (3+0) 3 credits
Survey of the art and craft of the theatre including representative plays.

110 THEATRE: A CULTURAL CONTEXT (3+0) 3 credits
Exploration of cultural factors affecting the art of theatre from various historical periods and environments.

118 ORIENTATION TO PERFORMING THEATRE (3+0) 3 credits
Lecture, discussion, and performance encompassing the philosophy and techniques of interpretation, acting and directing. May not be taken for audit.

119 ORIENTATION TO TECHNICAL THEATRE (3+0) 3 credits
Lecture and discussion encompassing the philosophy and techniques of technical theatre.

**121 STAGE MAKEUP** (2+2) 3 credits
Specialized instruction in the theory and experience in the application of stage makeup as related to the visual impact of an actor on stage.

**203, 403 NEVADA REPERTORY COMPANY** 3 credits each *S/U only*
Performance and production of plays for the University Theatre season. Includes instruction and research relative to the selected program of plays. Since company assignments are announced after registration the student may enroll in the semester following participation. Maximum of 9 credits each. May not be taken for audit.

**219-220 PROJECTS IN TECHNICAL THEATRE** (3+0) 3 credits each
Specialized instruction in the theory and practice of such areas as scenery, lighting, sound properties and costuming. Prerequisite: THTR 119.

**221 INTERPRETATION** (3+0) 3 credits
Oral interpretation of the forms of literature. Lectures and performance.

**230 DESIGN AESTHETICS AND DRAFTING FOR THE THEATRE** (3+0) 3 credits
Fundamentals of visual composition, design theory and drafting techniques for the stage.

**240 INTRODUCTION TO COSTUMING** (3+0) 3 credits
Practical applications of construction and planning techniques involved in costuming a theatre production.

**250-251, 350-351 LABORATORY THEATRE: ACTING** (2+3) 3 credits each
Lectures and discussion providing fundamentals for laboratory workshops. Prerequisite: THTR 118. May not be taken for audit.

**260 THEATRE SPEECH** (3+0) 3 credits
Practice in using the actor's voice.

**321 ADVANCED INTERPRETATION** (3+0) 3 credits
Advanced techniques of oral expression. Prerequisite: THTR 221.

**330 STAGE LIGHTING** (3+0) 3 credits
Theory and practice of lighting design and control. Prerequisite: THTR 230.

**339 LIGHTING PRACTICUM** (0+3 per credit) 1 to 3 credits
Practical experience as lighting designer in a production situation; creating the design, coordinating its execution and creating light cues. Maximum of 6 credits.

**340 STAGE COSTUMING** (3+0) 3 credits
Theory and practice of drafting historic and modern costumes for the stage.

**349 COSTUMING PRACTICUM** (0+3 per credit) 1 to 3 credits
Specialized study related to construction of garments, building of accessories, shop management and/or maintenance of wardrobe in theory and practice. Maximum of 6 credits.

**360 EXPERIMENTAL THEATRE** (3+0) 3 credits
Concentrates on specific areas of contemporary theatre practice, such as mime, improvisations, mixed media, musical theatre, etc. Specific content announced in advance. Maximum of 6 credits.

**370 TOURING THEATRE** 1 to 3 credits *S/U only*
Intensive road experience in planning for and rehearsing, setting up, performing and striking productions in various locations and for a variety of audiences. Maximum of 6 credits.

**409 SCENERY PRACTICUM** (0+3 per credit) 1 to 3 credits
Practical experience as scene designer or technical director in an actual production situation. Maximum of 6 credits.

**419 SCENIC DESIGN** (3+0) 3 credits
Art of scenic interpretation through play analysis; rendering, color, style, ground plans, construction plans; research in history of design and period styles. Prerequisite: THTR 230.

**421, 621 READERS THEATRE** (3+0) 3 credits
Preparation and performance of literary selections for a theatrical environment.

**431-432, 631-632 CHILDREN'S THEATRE** (2+3) 3 credits
Laboratory and conference course offering practical experience in a children's theatre.

**440 COSTUME DESIGN AND RENDERING** (3+0) 3 credits
Art and theory of costume interpretation through play analysis, research in history of design and period style and rendering.

**450, 650 THEORIES AND STYLES OF ACTING** (3+0) 3 credits
Practice in period acting styles. Prerequisite: THTR 118. May not be taken for audit.

**452-453, 652-653 LABORATORY THEATRE: PLAYWRITING** (2+3) 3 credits each
Lectures and discussion to provide fundamentals for laboratory workshop.

**454-455, 654-655 LABORATORY THEATRE: DIRECTING** (2+3) 3 credits each
Lectures and discussion providing fundamentals for laboratory workshops. Prerequisite: 2 semesters of Laboratory Theatre: Acting. May not be taken for audit.

**471, 671 HISTORY OF THEATRE I** (3+0) 3 credits
Development of theatrical art from its beginning to 1642.

**472, 672 HISTORY OF THEATRE II** (3+0) 3 credits
Development of theatrical art from 1642 to present.

**473, 673 SEMINAR IN THEATRICAL PERIODS** (3+0) 3 credits
Intensive study into a specific historical period or significant movement, subject to be listed in class schedule. Maximum of 6 credits.

**474, 674 THEATRE FIELD STUDY** 1 to 3 credits
Student-faculty seminar including group travel to theatre centers within the U.S. and abroad for field study experience. Maximum of 6 credits.

**495, 695 INDEPENDENT STUDY** 1 to 3 credits
Open to juniors and seniors specializing in theatre. Maximum of 8 credits.

*Inactive Courses*
700 RESEARCH METHODS (3+0) 3 credits
719 SEMINAR: TECHNICAL THEATRE (3+0) 3 credits
721 SEMINAR: ORAL INTERPRETATION (3+0) 3 credits
729 THEATRE CRITICISM AND AESTHETICS (3+0) 3 credits
792 SPECIAL PROJECTS IN THEATRE (3+0) 3 credits

## VETERINARY MEDICINE (V M)

**100 VETERINARY MEDICINE** (1+0) 1 credit
An orientation course limited to students intending to pursue veterinary medicine as a career.

**413, 613 ANATOMY OF LARGE ANIMALS** (2+6) 4 credits
Comparative study of the anatomy of the skeletal, articular, muscular, digestive, urinary, reproductive, endocrine, nervous, circulatory, integumentary, and sensory systems of domestic animals. Prerequisite: BIOL 111.

**485 SPECIAL TOPICS** (1 to 3+0) 1 to 3 credits
Review of recent research, innovations and development in the area of animal health and disease control. Maximum of 6 credits.

**793 INDEPENDENT STUDY** 1 to 6 credits
Intensive study of a special problem in molecular biology as it relates to veterinary medicine or related disciplines.

## WESTERN TRADITION (W T)

**201 FOUNDATIONS OF WESTERN CULTURE** (3+0) 3 credits
Introduction to Greek, Roman and Judeo-Christian traditions through the Middle Ages. Prerequisite: ENGL 102.

**202 THE MODERN WORLD** (3+0) 3 credits
Intellectual, literary and political history of Europe from Renaissance to present. Prerequisite: W T 201.

**203 THE AMERICAN EXPERIENCE AND CONSTITUTIONAL CHANGE** (3+0) 3 credits

Emphasis the origins of the U.S. and Nevada Constitutions and issues such as equality and civil rights; individualism and civil liberties; federalism; environmentalism; urbanization and industrialization; and religious and cultural diversity. Prerequisite: W T 201 . Satisfies the U.S. and Nevada constitution requirements.

## WOMEN'S STUDIES (W S)

**101 INTRODUCTION TO WOMEN'S STUDIES** (3+0) 3 credits
Interdisciplinary analysis of women in culture and society from historical and cross-cultural perspectives.

**250 MEN AND MASCULINITIES** (3+0) 3 credits
Interdisciplinary analysis of historical and comparative male gender roles. Race, culture, social class, sexual orientation, and ot her dimensions among men.

**297 SPECIAL TOPICS** 1 to 3 credits
Topics of current interest not incorporated in regular offerings. Maximum of 4 credits.

**430 GENDER, LITERATURE AND THE ARTS** (3+0) 3 credits
Examines gender bias in science, the impact of new tecyhnologies on gender roles, and biology and gender.

**440 GENDER, SCIENCE AND TECHNOLOGY** (3+0) 3 credits
Examines gender bias in science, the impact of new technologies on gender roles, and biology and gender.

**450 FEMINIST THEORY AND METHODS** (3+0) 3 credits
Survey of contemporary theory and method in women's studies. Examines practical and philosophical issues in feminist thought on the construction and significance of gender difference.

**490 INDEPENDENT STUDY** 1 to 3 credits
Supervised reading and research open to women's studies minors. Prereq-uisite: W S 101. Maximum of 6 credits.

**497 SPECIAL TOPICS** 1 to 3 credits
Topics of current interest not incorporated in regular offerings. Maximum of 4 credits.

# University Service Awards

## Distinguished Teacher Award

1990 Carol Olmstead, Lecturer in Mathematics
1989 James C. McCormick, Professor of Art
1988 Christopher H. Exline, Professor of Geography
David W. Hettich, Associate Professor of English
1987 Dana J. Davis, Professor of Accounting and Information Systems
1986 David Ehrke, Associate Professor of Music
1985 Edward A. Zane, Professor of Accounting and Information Systems
1984 B.J. Fuller, Associate Professor of Accounting and Information Systems
1983 Donald C. Pfaff, Associate Professor of Mathematics
1982 Donald W. Winne, Assistant Professor of Managerial Sciences
1981 Kenneth C. Kemp, Professor of Chemistry
1980 Fred A. Ryser, Jr., Professor of Biology
1979 Richard A. Curry, Associate Professor of Foreign Languages and Literatures
1978 Larry J. Larsen, Professor of Economics
1977 Alan A. Gubanich, Assistant Professor of Biology
1976 Elwood L. Miler, Associate Professor of Forestry and Recreation
1975 Rosella Linskie, Professor of Curriculum and Instruction
1974 Richard D. Burkhart, Professor of Chemistry
1973 F. Donald Tibbitts, Professor of Biology

## Outstanding Researcher Award

1990 Morris Brownell, Professor of English
1989 David P. Westfall, Professor of Pharmacology
1988 Thomas J. Nickles, Professor of Philosophy
1987 Paul W. McReynolds, Professor of Psychology
1986 Bruce E. Blackadar, Professor of Mathematics
1985 Bruce M. Douglas, Professor of Civil Engineering
1984 Gary J. Blomquist, Assistant Professor of Biochemistry
1983 William H. Jacobsen, Jr., Professor of English
1982 No award was given
1981 Alan S. Ryall, Professor of Geology and Geography
1980 Lawrence T. Scott, Associate Professor of Chemistry
1979 Baldev K. Vig, Professor of Biology
1978 David A. Lightner, Professor of Chemistry
1977 Thomas F. Cargill, Associate Professor of Economics
1976 Beatrice Gardner, Professor of Psychology
R.A. Gardner, Professor of Psychology
1975 Hyung K. Shin, Professor of Chemisty

## Foundation Professorships

1990 Richard Burkhart, Professor of Chemistry
William Eadington, Professor of Economics
Rodney Harrington, Professor of Biochemistry
1989 Morris R. Brownell, Professor of English
John H. Peacock, Professor of Physiology
James T. Richardson, Professor of Sociology
1988 Don D. Fowler, Professor of Historic Preservation and Anthropology
R.A. Gardner, Professor of Psychology
Ross W. Smith, Professor of Chemical and Metallurgical Engineering
1987 David A. Lightner, Professor of Chemistry and Biochemistry
W. Shane Templeton, Professor of Curriculum and Instruction
David P. Westfall, Professor of Pharmacology
1986 Thomas F. Cargill, Professor of Economics
Thomas J. Nickles, Professor of Philosophy
Baldev K. Vig, Professor of Biology
1985 Gary J. Blomquist, Professor of Biochemistry
Beatrice T. Gardner, Professor of Psychology
Lawrence T. Scott, Professor of Chemistry
1984 Hyung K. Shin, Professor of Chemistry
Thomas R. Kozel, Professor of Microbiology
Bruce M. Douglas, Professor of Civil Engineering

## Classified Employee of the Year

1990 Alice Kellames, Management Assistant III, Mackay School of Mines
1989 Nadine Santina, Admissions and Records Specialist, Student Services
1988 Charles "Red" Schultz, Assistant Superintendent of Buildings and Grounds
1987 Cheryl Hinman, Management Assistant II, Biochemistry
1986 Mena Porta, Coordinator, Advisement Center, Student Services

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# University Faculty

*The date following each description designates the time of original appointment to the faculty of the university. (Dates of resignation and reappointment are not indicated.) A second date indicates the beginning of service in present rank when this differs from the date of original appointment.*

## CHANCELLOR, UNIVERSITY OF NEVADA SYSTEM

**Mark H. Dawson, M.H.E.A.**
B.A., University of Utah, Salt Lake City, 1963; M.H.E.A., Weber College, 1961. (1965-1987)

## PRESIDENT, RENO CAMPUS

**Joseph N. Crowley, Ph.D.**
B.A., University of Iowa, 1959; M.A., Fresno State College, 1963; Ph.D., University of Washington, 1967. (1966-1979)

## ACTIVE

**Deborah Achtenberg,* Ph.D., Associate Professor of Philosophy.**
B.A., St. John's College, 1973; M.A., New School for Social Research, 1977; Ph.D., 1982. (1982-1990)

**Gary E. Adams, Ph.D., Clinical Associate Professor of Internal Medicine.**
B.A., California State University, Long Beach, 1968; M.A., 1970; Ph.D., Southern Illinois University, 1973. (1980)

**Richard Adams, B.A., Assistant Baseball Coach.**
B.A., Cal State Northridge, 1977. (1990)

**William P. Adamski, M.A., Clinical Instructor, Psychiatry and Behavioral Sciences.**
A.A., Wayne Community College, Detroit, 1974; M.A., Merrill-Palmer Institute of Human Development, Detroit, 1979. (1987)

**John Adan, M.D., Clinical Assistant Professor of Internal Medicine.**
Faculty of Medicine, Queen's University of Belfast, Northern Internal, 1974. (1990)

**Rod L. Aeschlimann, M.Ed., Director, Residential Life/Housing.**
A.A., Northeastern Junior College, 1971; B.A., University of Northern Colorado, 1973; M.Ed., Colorado State University, 1979. (1989)

**Rodger Agre, M.D., Clinical Assistant Professor of Psychiatry and Behavioral Sciences.**
B.S., Dartmouth College, New Hampshire, 1959; M.D., Jefferson Medical College, Philadelphia, 1963. (1989)

**Fernando J. Aguirre,* Ph.D., Associate Professor of Chemical Engineering.**
B.S., Universidad Santa Maria, Chile, 1977; M.S., 1978; M.S.CH.E., University of Pittsburgh, 1980; Ph.D., 1982. (1986)

**Robert H. Ahlstrom, M.S., Clinical Assistant Professor of Orthodontia.**
B.S., Arizona State University, 1972; D.D.S., University of the Pacific, 1975; M.S., University of North Carolina, 1977. (1984)

**Sang Sun Ahn, M.D., Clinical Assistant Professor, Pediatrics.**
M.D., Yousei University, College of Medicine, Korea, 1972. (1987)

**Eric Albers, Ph.D., Associate Professor of Social Work.**
B.A., University of Nebraska, 1972; M.S.W., Our Lady of the Lake College, 1976; Ph.D., Texas Women's University, 1981. (1989)

**Duncan M. Aldrich, M.L.S., Assistant Government Publications Librarian.**
B.A., Ohio University, Athens, 1974; M.A., University of Oklahoma, 1977; M.L.S., 1985. (1986)

**Heather Allen, M.D., Clinical Assistant Professor of Internal Medicine.**
B.A., Stanford University, 1972; M.D., University of California, San Diego, 1976. (1986)

**Allen J. Allie, M.D., Clinical Assistant Professor of Surgery.**
A.B., Hanover, College, 1954; M.D., Wayne State University College of Medicine, 1961. (1989)

**Derek Allister, Assistant Basketball Coach, Intercollegiate Athletics.** (1987)

**Philip L. Altick,* Ph.D., Professor of Physics.**
B.S., Stanford University, 1955; M.A., University of California, Berkeley, 1960; Ph.D., 1963. (1963-1975)

**John C. Altrocchi,* Ph.D., Professor of Psychiatry and Behavioral Sciences.**
A.B., Harvard University, 1950; Ph.D., University of California, Berkeley, 1957. (1970)

**Lenore A. Amante, M.D., Clinical Assistant Professor, Radiology.**
B.A., Rice University, Houston, 1971; M.D., University of Texas Medical Branch, Galveston, 1975. (1987)

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# Campus Buildings and Names

**Anderson Medical Sciences**
*Fred M. Anderson, M.D.*, (1906-), Reno physician and surgeon, member of the board of regents, 1956-1978 Anderson was instrumental in helping establish the School of Medicine.

**Edna S. Brigham Clinical Education Building/Family Medicine Center**
*Edna S. Brigham*, director of the University of Nevada System Endowment and formerly development officer at the School of Medicine from 1976 to 1983. The building was dedicated in 1986.

**Robert Cashell Field House**
*Robert A. Cashell*, northern Nevada businessman active in many community organizations; Honorary Alumnus (1976); member of the board of regents (1979-1982); Lieutenant Governor for the State of Nevada (1983-1987); Distinguished Nevadan Award (1988).

**Church Fine Arts Complex**
*James Edward Church* (1869-1959), professor of Latin, German, classical art, and history, 1892-1959. Developed the first snow surveying techniques, which led to the science of evaluating regional water storage. Also developed system of analyzing avalanche hazards. Brought worldwide scientific honor to the University of Nevada. The building was remodeled and expanded in 1986.

**Clark Administration**
*Alice McManus Clark*, native Nevadan, wife of William A. Clark, Jr., son of a Montana senator who built railroads in southern Nevada. Mrs. Clark gave several scholarships to the university. After her death, her husband donated the Clark Library in her name (1926). This building was the cultural and research center of the university for more than three decades until the library moved to its present location in 1962.

**Fleischmann Agriculture** (Fleischmann College of Agriculture)

**Fleischmann Greenhouse**

**Fleischmann Life Science**
*(See also:* Fleischmann Planetarium and Sarah H. Fleischmann Building) *Max C. Fleischmann* (1877-1951), Nevada philanthropist, food industry millionaire (Standard Brands), benefactor of the university with gifts of land, scholarships and endowments. From the Max C. Fleischmann Foundation established by Fleischmann for the purpose of distributing his wealth, came the funds to construct the College of Agriculture and School of Home Economics, and, later, the life science wing of the agriculture building. The Fleischmann Foundation contributed further millions to the university in gifts, scholarships, and assistance in establishing the Computing Center, Laboratory in Environmental Patho-Physiology, Fleischmann Planetarium, Desert Research Institute, the Water Resources Building, and the Judicial College Building.

**Fleischmann Planetarium** (Charles and Henriette Fleischmann Planetarium) Named for the parents of Max C. Fleischmann

**Frandsen Humanities** (Formerly Agriculture Building)
Named for Peter Frandsen, (1876-1967) founder of the biology department; professor of biology, zoology, embryology, anatomy, bacteriology, 1900-1942.

**Getchell Library**
*Noble H. Getchell* (1875-1960), Nevada mining man, state senator.

**Hartman Hall**
*Leon W. Hartman* (1876-1943), professor of physics, 1908-1938; president of the University of Nevada, 1938-1943.

**Howard Medical Sciences**
*Claude I. Howard*, Las Vegas businessman and major benefactor of the School of Medicine; credited with enabling the medical program to develop into an accredited four-year medical school. Named a Distinguished Nevadan in 1979; awarded an Honorary Degree in 1982. The building was dedicated in 1982.

**Jones Visitor Center**
*Clarence K. and Martha H. Jones* provided an endowment that preserved the Old Journalism Building, constructed in 1914 as the UNR Library and dedicated in 1983 as the Visitor Center. Jones is an investment counselor and former Reno newspapers executive. He was named a Distinguished Nevadan in 1977. Martha, the former Martha Washington Hansen, received the President's Medal in 1985.

**Jot Travis Student Union**
*Ezra "Jot" Travis*, early western stagecoach manager. His son, Wesley E. Travis, born in Hamilton, Nevada, bequeathed funds (1952) to the university for a student facility to be named for his father.

**Knudtsen Resources Center**
*Molly Flagg Knudtsen*, ranch owner near Austin, Nevada; member of the board of regents for 18 years (1960-1972 and 1974-1980). Born in New York, Mrs. Knudtsen came to Nevada in 1942, wrote about central Nevada ranches in her book "Here is Our Valley," and has also been published in several journals under the name of Molly Magee.

**Lawlor Events Center**
*Glenn "Jake" Lawlor* (1907-1980), one of UNR's best-known athletes and coaches. He played and coached football, basketball, tennis, golf, baseball, and track. Lawlor was also the university's athletic director (1959-1970).

**Laxalt Mineral Engineering Center**
*Paul D. Laxalt* (1922- ), governor of the state of Nevada, 1967-1971; United States senator, 1974-1987.

**Leifson Physics**
*Sigmund W. Leifson* (1897-1984), professor of physics, 1925-1963; chairman of the physics department, 1938-1963. Nationally recognized nuclear physicist; pioneer in the theory of atomic energy.

**Lincoln Hall**
*Abraham Lincoln* (1809-1865), sixteenth president of the U.S.

**Lombardi Recreation**
*Louis E. Lombardi, M.D.* (1907-1990), Reno physician and surgeon; member of the board of regents, 1951-1980.

**Mack Social Science**
*Effie Mona Mack* (1888-1969), Nevada historian and educator; university benefactor.

**Mackay Mines**
**Mackay Stadium**
*John W. Mackay* (1831-1902), one of the "Big Four" successful mining men of the bonanza days on the Comstock, Virginia City, Nevada. Buildings, land, and endowments were presented to the university in his honor by his widow, Marie Louise, and son, Clarence H. Mackay.

**Mackay Science** (Mackay Science Hall)
*Clarence H. Mackay* (1874-1938), New York financier, son of John W. Mackay (see above). Mackay Science Hall, dedicated in 1930, was one of numerous gifts made to the university by Clarence H. Mackay. "Mackay Day," celebrated each spring, is named in his honor.

**Manville Medical Sciences**
*H. Edward Manville, Jr.* (1906-1984), industrialist, philanthropist, civic leader, former chairman of the School of Medicine Advisory Board. His estate provided the school with $1 million to establish the H. Edward Manville endowed professor in internal medicine.

**Morrill Hall**
Named for the Morrill Land Grant Act of 1862 after *Justin S. Morrill* (1810-1898), U.S. senator from Vermont. The act established the system of land-grant colleges, including, in 1864, the University of Nevada. Completed in 1886, Morrill Hall was the first building erected on the Reno campus of the University. Until 1889 it *was* the University of Nevada.

**Nye Hall**
Named for Nye County, Nevada, after *James W. Nye* (1814-1876), Nevada territorial governor, 1861-1864; U.S. senator from Nevada, 1864-1873.

**Orvis School of Nursing**
*Arthur E. Orvis* (1888-1965), Nevada adoptive resident, who, with his wife, Mrs. Mae Zenke Orvis, contributed sizable cash sums to the university, making possible the construction (1965-1966) of the School of Nursing.

**Palmer Engineering**
*Stanley G. Palmer* (1887-1975), professor of electrical engineering, 1915-1941; dean, College of Engineering, 1941-1957.

**Ross Hall**
*Silas E. Ross* (1887-1975), professor of chemistry, 1909-1914; Reno mortician; member of the board of regents, 1932-1956.

**Sarah H. Fleischmann Building**
Named for Mrs. Max C. Fleischmann.

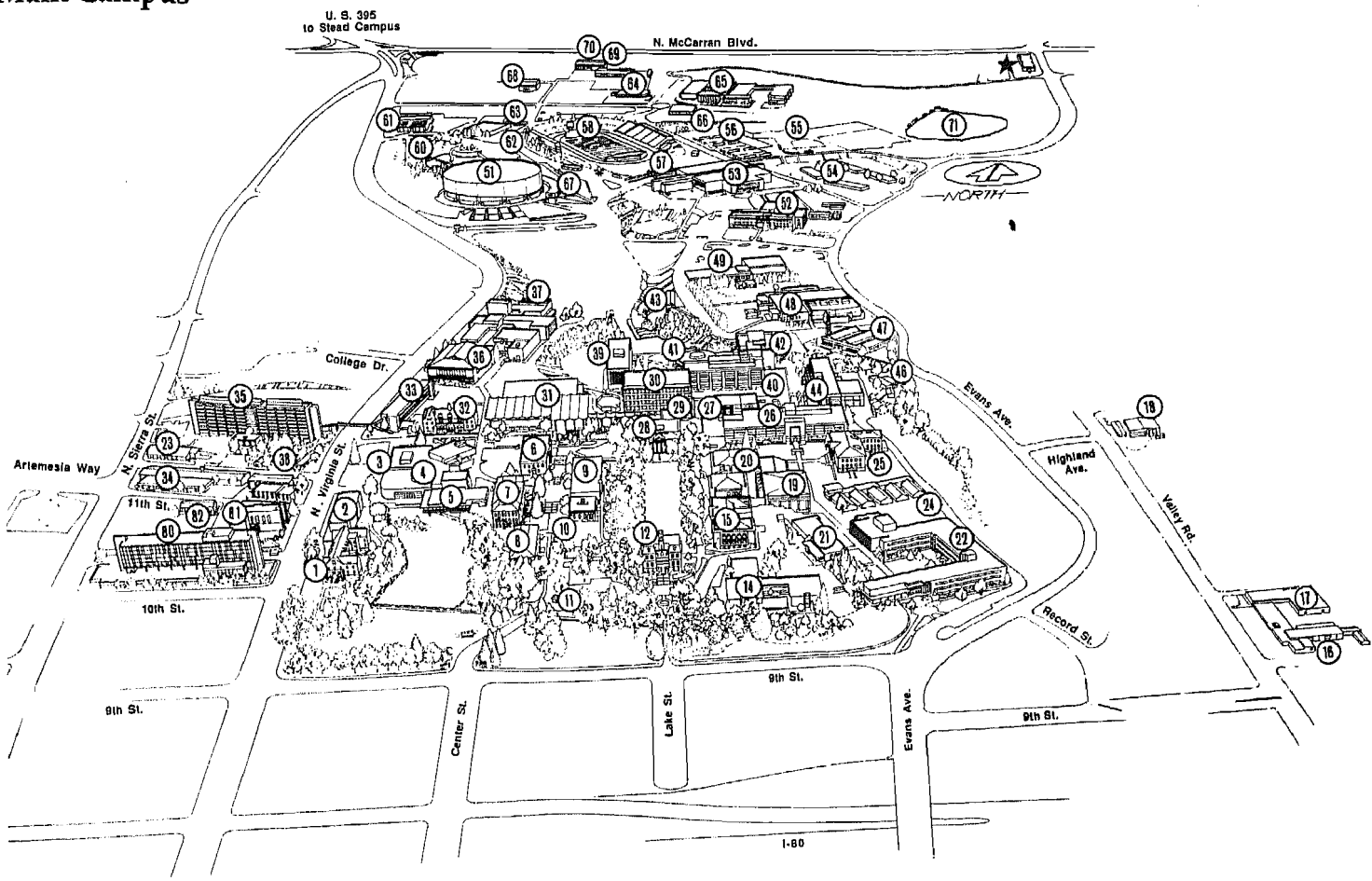
**Savitt Medical Sciences**
*Sol* (1898-1981) *and Ella Savitt*, former owners of Sierra News Co. in Reno; longtime university supporters with contributions to the School of Medicine, the medical library, UNR athletics, the journalism department, and various scholarship funds. They were named Distinguished Nevadans in 1977. The building was dedicated in 1977.

**Scrugham Engineering-Mines**
*James G., Scrugham* (1880-1945), professor of mechanical engineering, 1903-1914; first dean, College of Engineering, 1914-1916; state engineer; governor of Nevada, 1923-1925; U.S. representative in Congress, 1933-1942; U.S. senator, 1942-1945; newspaper editor; historian.

**Thompson Student Services Center** (formerly Education Building)
*Reuben C. Thompson* (1878-1951), professor of ancient languages, literature, and philosophy, 1908-1939; founded department of philosophy; dean of men, 1932-1939.

# University of Nevada, Reno

## Main Campus




## Map Legend

| | | |
|---|---|---|
| 1. | MAH | Manzanita Hall |
| 2. | JH | Juniper Hall |
| 2. | HS | Health Service |
| 3. | B | Bookstore |
| 4. | JTU | Jot Travis Student Union |
| 5. | DC | Dining Commons |
| 6. | TSS | Thompson Student Services |
| 7. | FH | Frandsen Humanities |
| 8. | CA | Clark Administration |
| 9. | RH | Ross Hall |
| 10. | JVC | Jones Visitor Center |
| 11. | IK | Information Kiosk |
| 12. | MH | Morrill Hall |
| 14. | SFB | Sarah Hamilton Fleischmann Building |
| 15. | MS | Mackay Science |
| 16. | AE | Agricultural Education and 4-H |
| 17. | KRC | Knudtsen Resource Center |
| 18. | EC | Equestrian Center |
| 19. | LMR | Paul Laxalt Mineral Research Center |
| 20. | LME | Paul Laxalt Mineral Engineering Center |
| 21. | OSN | Orvis School of Nursing |
| 22. | FA | Fleischmann Agriculture |
| 23. | PO | Post Office |
| 24. | FG | Fleischmann Greenhouse |
| 25. | PE | Palmer Engineering |
| 26. | SEM | Scrugham Engineering-Mines |
| 27. | CHP | Central Heating Plant |
| 28. | MM | Mackay Mines |
| 29. | PP | Physical Plant |
| 30. | BB | Business Building |
| 31. | GL | Getchell Library |
| 32. | LH | Lincoln Hall |
| 33. | WPH | White Pine Hall |
| 34. | AB | Artemesia Building |
| 35. | NH | Nye Hall |
| 36. | G | Gymnasium |
| 37. | CFA | Church Fine Arts Complex |
| 38. | WC | Women's Center |
| 39. | MSS | Mack Social Science |
| 40. | CB | Chemistry Building |
| 41. | LB | Lecture Building |
| 42. | LP | Leifson Physics |
| 43. | HH | Hartman Hall |
| 44. | — | Engineering Laboratory |
| 46. | PS | Public Safety |
| 47. | BG | Buildings and Grounds Office and Shops |
| 48. | EB | Education Building |
| 49. | JC | Judicial College |
| 51. | LEC | Lawlor Events Center |
| 52. | — | U.S. Bureau of Mines |
| 53. | LR | Lombardi Recreation |
| 54. | UV | University Village |
| 55. | — | Football Practice Field |
| 56. | — | Tennis Courts |
| 57. | — | Rob ert Cashell Field House |
| 58. | S | Mackay Stadium |
| 60. | FP | Fleischmann Planetarium |
| 61. | — | Nevada Historical Society |
| 62. | CC | Computing Center |
| 63. | ERF | Environmental Research Facility |
| 64. | — | Health Laboratory, State of Nevada |
| 65. | M | School of Medicine<br>Anderson Health<br>Howard Medical Sciences<br>Manville Health<br>Savitt Medical Sciences<br>Phase IV Addition |
| 66. | FMC | Family Medicine Center (Brigham Building) |
| 67. | LA | Lawlor Annex (Intercollegiate Athletics) |
| 68. | USC | Central Services |
| ★ | UNS | Claude Howard System Administration |
| 69. | MP | Motor Pool |
| 70. | ST | Storage |
| 71. | WPF | William Peccole Field |
| 80. | CI | College Inn |
| 81. | MB | Midby Byron (Judicial Education Center) |
| 82. | CCC | Child Care Center |

# Index

For general information concerning degrees, requirements, and programs within specific colleges and schools, please refer to the Table of Contents. You should read carefully the rules and regulations which may affect you, as listed in various sections of this catalog. All courses offered at the University of Nevada, Reno are listed in the Course Offerings section, beginning on page 157.

## A



## B



## C

## D



## E



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## V



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