ASU BULLETIN

ARIZONA STATE UNIVERSITY/1885-1985

EXCELLENCE FOR A NEW CENTURY

$4.00

Arizona State University

General Catalog 1983-84/1984-85

A l colleges and departments estab- l sh certa n academic requirements which must be met before a degree ıs granted. These requirements concern such things as curricula and courses, majors and minors, and campus residence. Advisors, directors, department chairs and deans are available to help the student understand and arrange to meet these requ rements, but the student is responsible for fulfilling them. At the end of a student's course of study, if requirements for graduation have not been satisfied, the degree will not be granted. For this reason it is important for all students to ac quaint themselves with all regu a t ons and to rema n currently n- formed throughout their college careers and to be responsible for completing requirements. Courses, programs, and requ rements described in the catalog may be sus pended, deleted, restricted, supplemented or changed in any other manner at any time at the sole discret on of the Un versity and the Arizona Board of Regents. The cata og does not establish a contractual re- ationship but it summarizes the total requirements which the student must presently meet before qualifying for a faculty recommendat on to the Arizona Board of Regents to award a degree.

Address requests for addit ona nformat on to
DIRECTOR OF ADM SS ONS
AR ZONA STATE UNIVERS TY
TEMPE, AR ZONA 85287

Ar zona State Univers ty reserves the r ght to change w th out not ce any of the mater a s nformat on requ rements regu at ons—pub shed n this cata og

Refer to Append x A page 437 for Ar zona State Un vers ty's Statement on Gr evances of D scr m nat on

No emp oyee, agent or nst tut on under the jur sd ct on of the Ar zona Board of Regents shall d scr m nate or re- ta ate aga nst any student, employee, or other nd v dua because of such nd v dua 's re g ous be el or pract ce or any absence thereof Furthermore, adm n strators and fac u ty members are respons b e to reasonab y accom modate ndiv dua re gious pract ces A refusa to acc m modate s just fied on y when undue hardsh p wou d resu t from each ava ab e a ternative of reasonab e accommoda tion Re 'g ous ho days are pub shed n the *University Bul let n* at the beg nn ng of each semester.

Ar zona State Un vers ty comp es w th the Family Edu cationa R ghts and Pr vacy Act of 1974 as amended (see page 15

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ARIZONA STATE UNIVERSITY/1885-1985

ASU

EXCELLENCE FOR A NEW CENTURY

On March 2, 1984, Arizona State University will begin a fourteen-month celebration of its Centennial with opening festivities that will join faculty, staff, students and the people of Arizona in a joyous occasion. During the months to follow, the theme of the Centennial, "ASU 1885-1985: Excellence for a New Century," will spearhead academic, cultural, athletic, and social activities on campus and throughout the state.

President J. Russell Nelson established the ASU Centennial Commission in 1982 to plan and implement the myriad events designed to highlight all segments of the University during its one hundredth year.

The four goals of the Centennial Commission are: (a) establish a stronger awareness and rapport within the University community by means of programs and personnel involvement; (b) integrate ASU into the greater Phoenix metropolitan community; (c) highlight the fact that the University is becoming a center for academic excellence; (d) build community support for the University, including increased financial endowments for academic programs, faculty, scholarships and fellowships, and physical facilities.

A Centennial Commission of leaders from the community and campus will sponsor events and offer recommendations to make the Centennial celebration a significant event.

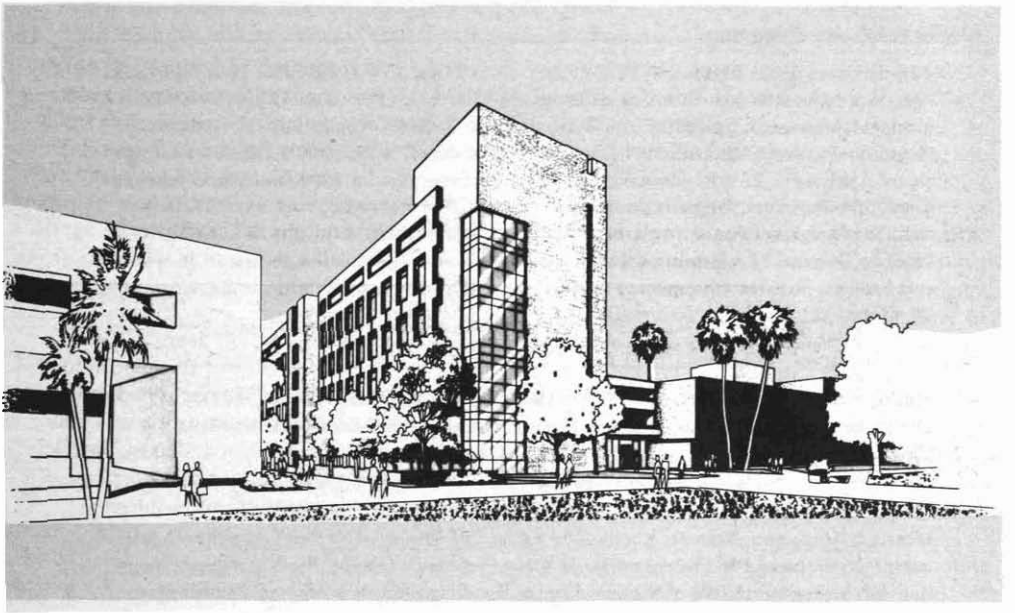
A major portion of the "Excellence for a New Century" plans are contained in the Mission and Scope Statement which was issued in 1980. These directives include the "development of nationally recognized programs in business administration, solid state sciences/electronics/computers, public emphasis programs, fine arts and law," plus providing "overall excellence in all other disciplines

The Territorial Normal School of Arizona opened its doors on February 8, 1886, with this original four-room building and an enrollment of 33 students. Photo courtesy of University Archives.

taught" and responding to "educational needs in the state's major urban area by offering programs with a special focus on the metropolitan area."

The headquarters of the ASU Centennial Commission is in the Solar Demonstration Facility, a cooperative effort of the College of Architecture and the College of Engineering and Applied Sciences.

The Engineering Research Center, a facility designed to stand the test of time in building now for tomorrow's technology, and the College of Business Administration Annex, a six-story edifice geared to the demands of producing leaders for industry and business, will be completed and in use during the Centennial year. The Daniel E. Noble Science Library will open in the summer of 1983. These three buildings complement the facilities available on campus and reflect the tremendous growth of ASU during the last quarter century.



The Engineering Research Center (above) is built to stand the test of time for tomorrow's technology. Shown below is the College of Business Administration's six-story addition on the east side.

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University Calendar

Fall Semester	1983	1984
Priority Date for Receipt of Undergraduate Admissions or Readmission Credentials	Aug. 1, M	July 30, M
First Freshman Assembly	Aug. 15, M	Aug. 13, M
Orientation and Advisement for New Students	Aug. 15 19, M F	Aug. 20 24, M F
Registration and Drop Add	Consult Schedule of Classes	
Instruction Begins	Aug. 22, M	Aug. 27, M
Labor Day Classes Excused	Sep. 5, M	Sep. 3, M
Last Day To Withdraw from a Course Without Academic Penalty	Sep. 30, F	Oct. 5, F
Mid-Semester Scholarship Reports Due in Office of Registrar	Oct. 14, F	Oct. 19, F
Candidates for Bachelor's Degree Must File Application for Graduation by	Oct. 14, F	Oct. 19, F
Veterans Day Classes Excused	Nov. 11, F	Nov. 12, M
Thanksgiving Recess Classes Excused	Nov. 24-27, Th Su	Nov. 22 25, Th-Su
Last Day To Withdraw from a Course	Dec. 1, Th	Dec. 6, Th
Instruct on Ends	Dec. 8, Th	Dec. 13, Th
Reading Day	Dec. 9, F	Dec. 14, F
Final Examinations	Dec. 12-16, M F	Dec. 17-21, M F
Commencement	Dec. 16, F	Dec. 21, F
Mid-Year Recess Begins	Dec. 17, Sa	Dec. 22, Sa

Spring Semester	1984	1985
Priority Date for Receipt of Undergraduate Admissions or Readmission Credentials	Dec. 16, F (1983)	Dec. 21, F (1984)
Orientation and Advisement for New Students	Jan. 11 13, W-F	Jan. 16 18, W-F
Registration and Drop Add	Consult Schedule of Classes	
Instruction Begins	Jan. 16, M	Jan. 21, M
Candidates for Bachelor's Degree Must File Application for Graduation by	Feb. 10, F	Feb. 15, F
Washington's Birthday Classes Excused	Feb. 20, M	Feb. 18, M

Spring Semester	1984	1985
Last Day To Withdraw from a Course Without Academic Penalty	Feb. 22, W	Feb. 27, W
ASU Centennial Kick Off	Mar. 2, 3, 4 F-Su	
Mid-Semester Scholarship Reports Due in Office of Registrar	Mar. 2, F	Mar. 8, F
Spring Recess Classes Excused	Mar. 10 18, Sa-Su	Mar. 9-17, Sa Su
Last Day To Withdraw from a Course	Apr. 26, Th	May 2, Th
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Final Examinations	May 4, 7 10, F,M-Th	May 10, 13-16 F,M Th
Commencement	May 11, F	May 17, F
Summer Sessions	**1984**	**1985**
Instruction Begins (First five week session)	June 4, M	June 3, M
First Five Week Session Ends	July 6, F	July 5, F
Candidates for Bachelor's Degree Must File Application for Graduation by	July 6, F	July 5, F
Instruction Begins (Second five week session)	July 9, M	July 8, M
Second Five-Week Session Ends	Aug 10, F	Aug. 9, F
Instruction Begins (Eight-week session)	June 4, M	June 3, M
Eight Week Session Ends	July 27, F	July 26, F
Commencement	Aug. 10, F	Aug 9, F
College of Education-Delayed Session	**1984**	**1985**
Instruction Begins (First Session)	June 11, M	June 10, M
First Session Ends	July 13, F	July 12, F
Instruction Begins (Second Session)	July 16, M	July 15, M
Second Session Ends	Aug. 17, F	Aug. 16, F

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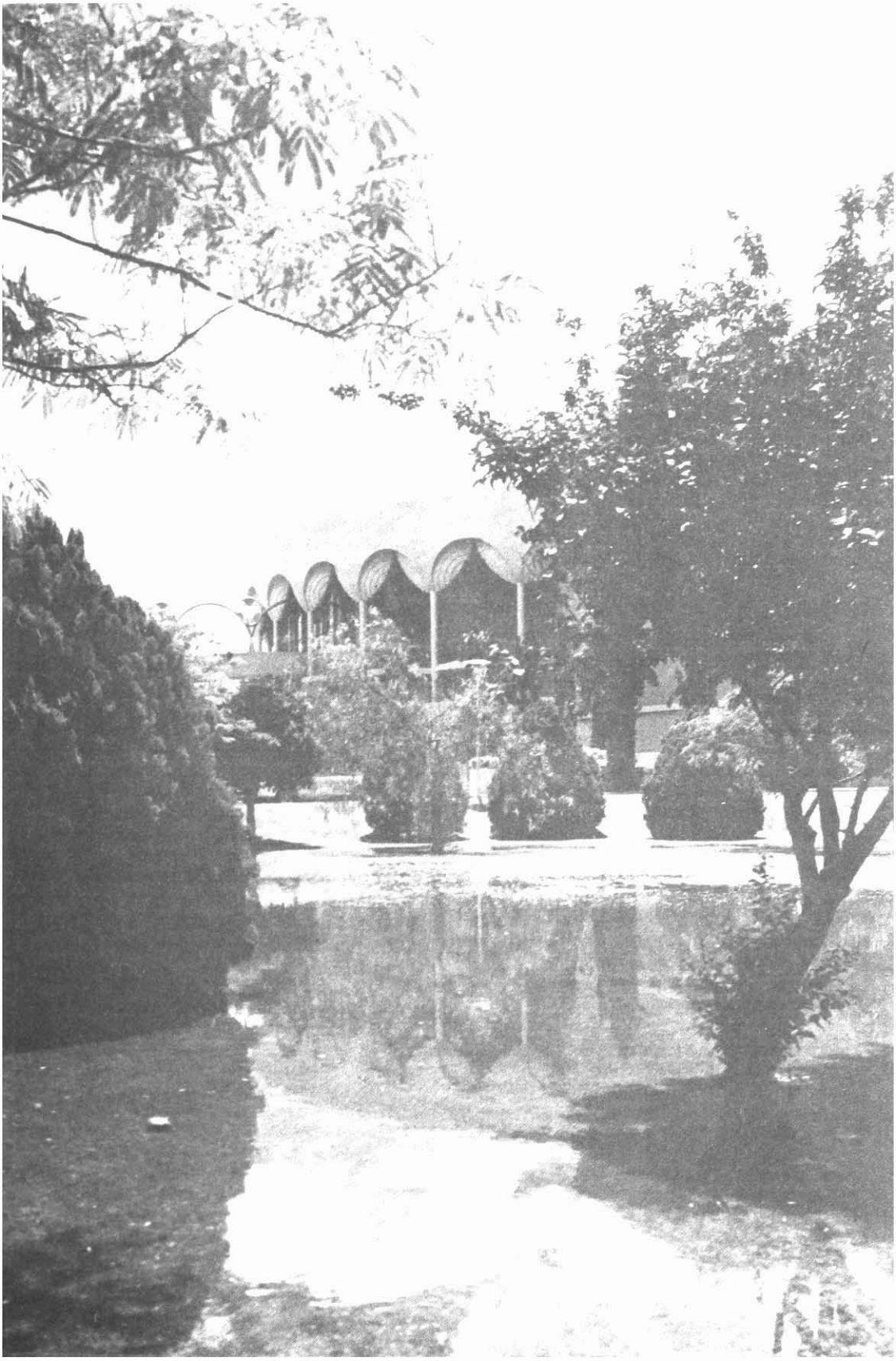


Organization, History, General Information

Objectives

Arizona State University provides an opportunity for students to pursue a full range of high-quality academic programs, from the baccalaureate through the doctoral degree. Active research programs contribute to and expand knowledge, thereby serving the instructional needs of students, contributing to the professional advancement of the faculty, and enhancing economic, social, cultural, and technological progress. The University's teaching and research programs help instill in students a spirit of critical inquiry and challenge them to seek answers to fundamental questions of human concern. The University seeks to expand cultural horizons, improve moral and ethical standards, and educate for responsible citizenship while preparing its graduates to accept and perform capably in rewarding careers.

Organization

Arizona State University is part of a three-university system governed by the Arizona Board of Regents, a body corporate and politic with perpetual succession under the Constitution and laws of Arizona. The Board consists of eight citizens appointed by the Governor of the State for terms of eight years, and one non-voting student regent serving for one year, with the elected Governor and State Superintendent of Public Instruction as members *ex officio*.

The Regents select and appoint the President of the University, the chief executive officer and the regular means of communication between the Board of Regents and the institution. The President is aided in the administrative work of the institution by the Vice Presidents, Deans, Directors, Departmental Chairs, Faculties, and other officers.

In the University's academic organization are the Graduate College; the Colleges of Liberal Arts, Architecture, Business Administration, Education, Engineering and Applied Sciences, Fine Arts, Law, Nursing, Public Programs; School of Social Work; University Continuing Education and Summer Sessions; and more than 50 units of instruction. These academic agencies develop and effectuate the teaching, research and service programs of the University, aided by the University libraries, museums, and other services.

The faculties and students of the University play an important role in educational policy, with a Faculty Senate, joint University committees and boards, and the Associated Students serving the needs of a large institution. A comprehensive system of joint faculty, student, alumni and staff committees provides an exchange of ideas and collaboration on the part of all members of the University.

History of Arizona State University

On February 26, 1885, House Bill 164, An Act to Establish a Normal School in the Territory of Arizona, was introduced in the Thirteenth Legislative Assembly of Arizona Territory by John Samuel Armstrong. The Bill, strongly supported by Charles Trumbull Hayden of Tempe, passed the House on March 6, the Council on March 11, and was signed by Governor F. A. Tritle on March 12, 1885—thereby founding the institution today known as Arizona State University. Instruction was instituted on February 8, 1886, when 33 students met in a single room under the supervision of Principal Hiram Bradford Farmer.

The institution began with the broad obligation to provide "instruction of persons . . . in the art of teaching and in all the various branches that pertain to good common school education; also, to give instruction in the me-

chanical arts and in husbandry and agricultural chemistry, the fundamental law of the United States, and in what regards the rights and duties of citizens."

With the growth of the state, especially the surrounding Phoenix metropolitan areas, the school has carried forward this charter, accompanied by successive changes in scope, name and governance. On March 9, 1945, the three state institutions of higher learning came under the authority of one Board of Regents By vote of the people, on November 4, 1958, the name Arizona State University replaced the previous name, Arizona State College.

Accreditation and Affiliation

Arizona State University is accredited by the North Central Association of Colleges and Secondary Schools. Professional programs in the various colleges, schools, divisions and departments are accredited by the following national bodies:

Architecture: National Architectural Accrediting Board, American Institute of Planners, Foundation of Interior Design Education and Research, Industrial Design Society of America, American Society of Landscape Architects; **Business Administration:** American Assembly of Collegiate Schools of Business, Accrediting Commission on Education for Health Services Administration; **Education:** American Psychological Association, National Council for the Accreditation of Teacher Education, State Board of Education (Arizona);

Engineering and Applied Sciences: American Council for Construction Engineers, North Central Association for Teacher Education (through Secondary Education Department), Accreditation Board for Engineering and Technology, Inc., National Association of Industrial Technology; **Fine Arts:** National Association of Schools of Music; **Law:** American Bar Association, Association of American Law Schools;

Liberal Arts: American Chemical Society, American Speech and Hearing Association, American Psychological Association, National Athletic Trainers Association; **Nursing:** The National League of Nursing, American Nurses Association, Arizona State Board of Nursing; **Public Programs:** American Council on Education in Journalism; **Social Work:** The Council on Social Work Education.

University Campus

Location. Arizona State University is located near the heart of metropolitan Phoenix, in the city of Tempe (population 120,000). Nearby are the municipalities comprising the fast growing Valley of the Sun Scottsdale, Mesa, Chandler, Glendale and other communities.

Main Campus-Tempe: The main campus comprises some 600 acres and offers outstanding physical facilities to support the University's educational programs. Buildings are modern, air-conditioned, and designed for function and attractiveness. Broad pedestrian malls laid out in an easy to-follow grid plan, bicycle lanes connecting all parts of the University, and spacious lawns and sub-tropical landscaping characterize a campus serving the physical, esthetic, and educational needs of students, faculty, and staff.

ASU/Metrocenter: Serving the needs of students in the northwest Phoenix and Glendale areas, the Metrocenter facility is located just off Interstate 17 between Peoria and Dunlap Avenues in the southwest area of the Metrocenter complex. It provides classrooms, computer terminals, and a lounge study area with an extensive schedule of upper-division and graduate courses.

ASU/Alhambra: The Alhambra complex includes a minicampus of classrooms, lounge, reference library, and offices located at 4510 North 37th Avenue in the north Phoenix area. Upper-division and graduate courses are offered for northern metropolitan area students.

Center for Executive Development Annex: The Center operates an 8000 square foot conference center with seminar rooms and offices at 2200 South Priest Road, Tempe.

Louise Lincoln Kerr Cultural Center: Located in Scottsdale, the Center offers cultural events, especially in the performing arts, for the community.

Camp Tontozona: Located in the famed Mogollon Rim country near Kohl's Ranch north east of Payson, this continuing education facility of the University serves the needs of academic departments conducting teaching and research in mountain terrain.

Conference Center at Castle Hot Springs: The Center, consisting of 165 acres northwest of Lake Pleasant, features lodging and meal accommodations for participants in University sponsored conferences. The facility was deeded to the Arizona State University Foundation and is scheduled and administered through the Office of University Continuing Education.

University Libraries and Collections

The collections of the University's libraries comprise more than 1.5 mil ion volumes, ap prox mately 1.4 million microform units and more than 19,000 periodical and serial sub scr ptions. Computer access to commercially produced bibliographic data bases and the ability to borrow research mater als from oth er libraries enhance local resources.

Charles Trumbull Hayden Library. The main library houses the largest multidis ciplinary collection. In addition to the open stack areas, separate collections and service areas include Curriculum, Government Documents, Interlibrary Loan, Microforms, Refer ence, Reserve, Rare Books and the Arizona Collection, including the papers of several major Arizona political figures.

Architecture Library. In addition to books and periodicals, th s library, located in the College of Architecture, contains the Paolo Soleri archives.

Arizona Historical Foundation Library. Un der a cooperative agreement with ASU, the Foundation's library of several thousand vol umes is housed in the Charles Trumbull Hayden Library.

Bimson Library. Located in the College of Business Administration, Bimson Library houses a small collection of ready-reference materials and current periodicals. The bulk of the library's holdings in all areas of business and economics is found in Hayden Library.

Law Library. This comprehensive collection of legal materials is located in the John S. Armstrong Law Building.

Music Library. A large collection of music scores, recordings and music reference materials, plus istening fac l ties for 'ndividuals and groups, is located on the third floor of the Music Building. Specia collections include the Wayne King Collection, the Pablo Casals In ternationa Cello Library and the Interna tional Percussion Reference Library.

Daniel E. Noble Science Library. Scheduled to open in the summer of 1983, this major branch library will house books, journals, and microforms in the sciences and geography, the Solar Energy Collection, and the Map Collec t on.

U niversity Archives. The records of the Uni versity, its official publications and publications of its faculty, students and staff are pre served in this co lection.

Cultural Arts Resources

Gammage Center for the Performing Arts is housed in Grady Gammage Memorial Auditorium, designed by Frank Lloyd Wright and named for the late President Gammage. This versatile auditorium seats 3,000 and has won wide acclaim for its design and acoustics. In addition to the great hall and related facilities (including the Aeolian-Skinner organ contributed by Hugh W. and Barbara V. Long, largest pipe organ in the state), the building contains classrooms and workshops for the College of Fine Arts.

University Art Collections. On display in Matthews Center, the collections include paintings in oil, watercolor and tempera, nu merous works of sculpture and ceramics, and an extensive print collection. The Collection of American Art, founded by the late Oliver B. James, is permanently on display. Selections from the collections of Mr. and Mrs. Read Mullan, Mr. and Mrs. Orme Lewis, Lewis and Lenore Ruskin, Mrs. Henry Luce, Edward Ja cobson, and Mr. and Mrs. Joseph Thomas are shown periodically. Special showings of significant traveling exhibitions are scheduled throughout the year.

Harry Wood Gallery. Housed in the Art Building (Room 120), the Gallery provides year round, temporary exhibitions of the visu al arts.

Northlight Gallery. This facility is dedicated to qualitative exhibitions of the art of photography and is located in the Fine Arts annex (Room 116)

Laura Boulton Collection of World Music and Musical Instruments. Housed in the Music Building, the collection includes aboriginal and folk music and instruments.

Television Station KAET. KAET, Channel 8, Phoenix, is licensed and owned by the Arizona Board of Regents and operated by Arizona State University. Studios of the award-winning station are located in the Stauffer Communication Arts Building. The station is affiliated with Public Broadcasting Service (PBS), and broadcasts daily from 7 a.m. to midnight. Program information is available from the KAET program manager.

Undergraduate Program

Arizona State University shares with other colleges and universities a tradition that is hundreds of years old. Its purpose is the exchange of knowledge and the pursuit of wisdom. What makes a university special is that it provides a place where the teacher and student are encouraged to exchange ideas and information within an atmosphere of intellectual honesty.

All persons who can give evidence—usually by way of acceptable academic credentials—of suitable preparation are welcome at the University, without regard to race, skin color, religious creed, or national origin. Remaining in good standing in the University community, however, becomes a privilege and not a right, since the student by enrolling assumes certain obligations of conduct and performance. These have been set up by the University in order to enable it to function effectively.

Under the Constitution and the laws of the State of Arizona, jurisdiction and control over Arizona State University have been vested in the Arizona Board of Regents. The Regents in turn grant broad legal authority to the President, the administration, and the faculty to regulate student life, within reasonable limits.

The University has an educational interest in student conduct on the campus as well as at various events and functions off-campus which are sponsored by the University. As a voluntary community, the University prefers to develop responsible student citizenship by example and advice.

Students are expected, as part of their obligations, to be familiar with the *Code of Conduct*. Violations of this *Code of Conduct* are subject to University discipline, whether committed by individuals or groups. This is also true of violation of University regulations with regard to academic dishonesty.

Family Educational Rights and Privacy Act of 1974 (Buckley Amendment)

This Act sets forth the requirements governing the protection of the privacy of the educational records of students who are or have been in attendance at Arizona State University.

Definitions

Eligible Student. For the purpose of this Act, an *eligible student* is defined as any individual formally admitted to and enrolled at Arizona State University or the parents of a *dependent* eligible student. Dependency is defined by Section 152 of the Internal Revenue Code of 1954.

Record. Any information or data recorded in any medium, including, but not limited to: handwriting, print, tapes, film, microfilm, microfiche, and electronic means.

Types of Information

"Educational Record" refers to those records which are directly related to a student and are maintained by an educational institution. Two types of educational records are subject to the provisions of this Act, 1) Directory Information and 2) Personally Identifiable Information. The term does not include those records specifically excluded by Section 99.3 of the Privacy Act.

Directory Information includes the following student information: name, local and permanent address, telephone number, date and place of birth, citizenship, residency status, academic level, major field of study, college of enrollment, participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of atten-

dance, degrees and awards received, and the most recent previous educational agency or institution attended by the student.

Personally Identifiable Information includes the name of a student, the student's parent or other family member(s), the address of the student, a personal identifier such as the student's Social Security number or student identification (I.D.) number, a list of personal characteristics or, other information which would make the student's identity easily traceable.

Access to Records

Eligible students, or parents of a dependent eligible student, may inspect and review their educational records. Some form of photo identification must be displayed before access to educational records will be allowed.

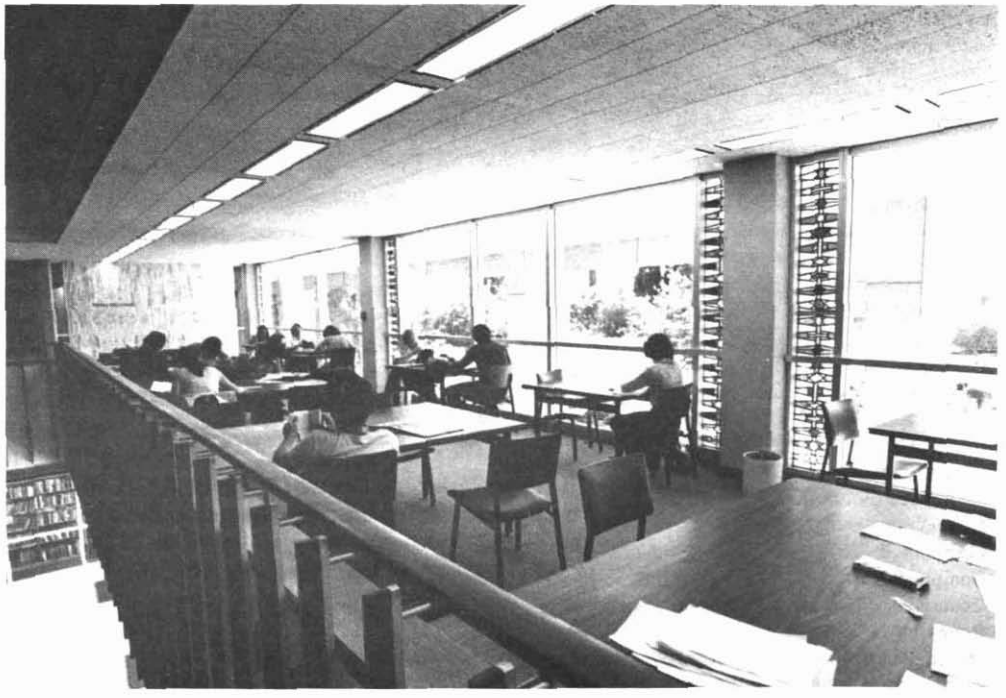
Directory information may be released to anyone without consent of the student, unless the student indicates otherwise. Students may request that this information not be released by completing a form in the Office of the Registrar. Request to withhold this information will exclude the student from being listed in the annual *Directory*.

All other educational records that contain Personally Identifiable Information may not be released without the written consent of the student. Parents of a dependent student may challenge denial of such access by producing the most current copy of Internal Revenue Form 1040. If that form lists the student in question as a dependent, the parents will be required to sign an affidavit which affirms that the student is their dependent. The affidavit will be retained by the Office of the Registrar. Upon receipt of the affidavit, the University will make student records available to parents as specified under the Privacy Act.

Students may grant access to parents or agencies by completing a form in the Office of the Registrar.

Location of Policy and Records

The following school officials maintain educational records pertaining to students: Registrar; Comptroller; Dean of the Graduate College; Directors of Admissions, Career Services, Student Financial Assistance, Housing, Special Services, and University Testing Service; Deans of the Colleges; Chairs of the Departments and Academic Advisors; Dean of Students; International Student Adviser; NCAA Faculty Representative; Coordinators of Intramurals and Orientation. The complete policy and list of the records on file and their location are available at the Reserve Book Desk, Level I, Hayden Library.



Degree Programs Currently Offered at ASU

Programs Leading to the Bachelor's Degree

Accounting
Administrative Services
Advertising
Aerospace Engineering
Agribusiness
Anthropology
Architectural Studies
Art
Asian Languages (Chinese Japanese)
Biology
Botany
Broadcasting
Chemical Engineering
Chemistry
Choral (Music) - General
Civil Engineering
Communication
Communication Arts
Computer Information Systems
Computer Science
Construction
Dance
Design Science
Economics
Electrical Engineering
Elementary Education
Engineering Science
Engineering Technology
English
Entomology
Environmental Resources in Agriculture
Finance
French
General Business Administration
General Science
Geography
Geology
German
Health Science
History
Home Economics
Housing and Urban Development
Humanities
Industrial Design
Industrial Engineering
Industrial Vocational Education
Industrial Technology
Instrumental Music
Insurance
Interdisciplinary Programs (Engineering)
Interior Architecture
Journalism
Justice Studies
Management
Marketing
Mathematics
Mechanical Engineering
Medical Technology
Microbiology
Music
Music Therapy
Nursing
Performance (Music)
Philosophy
Physical Education
Physics
Political Science
Psychology
Purchasing Materials Management
Quantitative Business Analysis
Radiology
Real Estate
Recreation
Religious Studies
Russian
Secondary Education
Selected Studies in Education
Social Work
Sociology
Spanish
Special Education
Special Programs (Engineering)
Speech and Hearing Sciences
Theatre
Theory and Composition (Music)
Transportation
Urban Planning
Wildlife Biology
Zoology

Programs Leading to the Master's Degree

Accountancy
Agribusiness
Anthropology
Architecture
Art
Biological Sciences
Botany
Business Administration
Chemical Engineering
Chemistry
Child Drama
Choral Music
Civil Engineering
Communication
Communication Disorders
Community Education
Computer Science
Counseling
Counselor Education
Dance
Economics
Educational Administration and Supervision
Educational Media
Educational Psychology
Educational Technology
Electrical Engineering
Elementary Education
Engineering Science
English
Environmental Resources in Agriculture
Environmental Planning
French
Geography
Geology
German
Health Services Administration
Higher and Adult Education
History
Home Economics
Humanities
Industrial Engineering
Instrumental Music
Justice Studies
Mass Communications
Mathematics
Mechanical Engineering
Microbiology
Music History and Literature
Natural Sciences
Nursing
Performance (Music)
Philosophy
Physical Education
Physics
Political Science
Psychology
Public Administration
Quantitative Systems
Recreation
Religious Studies

Programs Leading to the Master's Degree (Cont'd)

School Library Science
Secondary Education
Social and Philosophical Foundations (Education)
Social Work
Sociology
Spanish
Special Education
Technology
Theatre
Theory and Composition (Music)
Zoology

Programs Leading to the Education Specialist Degree

Counselor Education
Educational Administration and Supervision
Elementary Education
Higher and Adult Education
Secondary Education

Programs Leading to the Doctoral Degree

Anthropology
Botany
Business Administration
Chemical Engineering
Chemistry
Choral Music
Civil Engineering
Computer Science
Counselor Education
Economics
Educational Administration and Supervision
Educational Psychology
Educational Technology
Electrical Engineering
Elementary Education
Engineering Science
English
Exercise Science
Geography
Geology
Higher and Adult Education
History
Industrial Engineering
Instrumental Music
Law
Mathematics
Mechanical Engineering
Microbiology
Physics
Political Science
Psychology
Public Administration
Secondary Education
Social and Philosophical Foundations (Education)
Social Work
Sociology
Solo Performance (Music)
Spanish
Special Education
Zoology

Undergraduate Admission

Arizona State University welcomes application for admission from all persons who feel they can qualify for admission and can benefit from the University's broad spectrum of educational programs and services.

Prospective students may call (602/965-7788) or write to the Admissions Office (136 Moeur Building) for information including application materials. With reasonable advance notice, the Admissions Office will arrange for a tour of the campus and, if desired, a meeting with an academic advisor in the applicant's field of interest. (These are listed on page 17 of this catalog.)

Requests for specific information relating to academic programs or student services should be addressed to the appropriate department, division or college.

Orientation

University orientation programs for new students and their parents are provided at numerous times during the year including the beginning of each semester. Each orientation program includes advisement, placement testing, campus tours, tuberculin skin tests (if applicable), special events, and an introduction to University resources and procedures. Newly admitted students will be sent information preceding each available orientation program. Students are strongly encouraged to attend orientation activities.

Admissions Procedures for New Freshman and Transfer Applicants

Persons interested in admission to an undergraduate program at Arizona State University will need to have the following items on file in the Admissions Office: 1) Application for Admission (including Domicile Affidavit); 2) official transcript(s); 3) American College Test (ACT) or Scholastic Aptitude Test (SAT) scores (as needed); and 4) the $10 application fee (for applicants residing out of the State of Arizona only). Applicants are urged to send their materials as soon as possible. This will enable the University officials to make an early decision concerning the applicant's admission and permit the student to take part in early registration and orientation.

Priority deadlines are listed in the University Calendar (page 8). Applications received after those dates may not be honored for the semester desired. A completed application for admission is valid only for the semester for which admission is requested.

Application. Prospective students must submit a completed and signed application on the official application form to the Admissions Office. All applicants for undergraduate admission residing out of the State of Arizona pay a nonrefundable application fee of $10 at the time application for admission is made.

Domicile Affidavit. Like other state-supported colleges and universities, Arizona State University distinguishes between in-state and out-of state students with regard to tuition. Bona fide residents of Arizona are required to file a Domicile Affidavit with the Admissions Office. Students who neglect to do so will be assessed out of-state tuition and fees. If there is any question or doubt, the student should consult the Residency Classification Officer, 1 Moeur Building, or call 602/965 7712.

Transcripts. Official transcripts of academic records from high school as well as any other institution of higher education the student has previously attended must be *mailed directly* to the Admissions Office by the records office of the issuing institutions. Transcripts sent in or hand-carried by the applicants themselves will not be accepted. High school transcripts must show grade point average, rank in class, and date of graduation. The applicant is responsible for requesting that transcripts be sent. Applicants with 24 hours or less of transferable credit must also have official high school records submitted.

Entrance Examinations. All new freshman applicants must take either the American College Test (ACT) or Scholastic Aptitude Test (SAT) on a national test date in their junior or senior year of high school. Applicants for transfer who have not completed at least 9 semester hours of acceptable work with a grade point average of 2.00 or better on a 4.00 A scale must submit either ACT or SAT scores.

A report of the test scores must be sent to the Admissions Office directly from the American College Testing Program, P. O. Box 168, Iowa City, Iowa 52240, or The College Board Admissions Testing Program, Box 592-R, Princeton, NJ 08540.

Health History Questionnaire. Every newly admitted student must complete the Arizona State University Health History Questionnaire for the Student Health Service. A free tuberculin skin test is recommended for students who come from a high risk environment for exposure to tuberculosis. Admission may be denied or cancelled for any applicant who has been shown by the University to have either an uncompensated psychiatric illness or a physical illness which can be hazardous to the safety of other persons.

Undergraduate Admission Standards

The Arizona Board of Regents establishes undergraduate admission standards for the University in general. *Particular colleges, schools, or departments within the University may establish stricter standards. These are given in the respective sections of the Catalog and should be noted by students planning to enroll in any of these programs.*

Admission Requirements for Entering Freshmen: Academic

Graduation from Secondary School. In order to be eligible for admission to Arizona State University, an applicant must have graduated from a recognized high school with a satisfactory scholarship defined as follows.

1. Rank in the upper 50% of the high school graduating class, OR,
2. Achieve a minimum composite ACT score of 21 (in state applicants) or 23 (out-of-state applicants), OR,
3. Achieve a minimum composite SAT score of 930 (in-state applicants) or 1010 (out-of state applicants).

Engineering applicants must rank in the upper 25% of their graduating class or score a minimum on the ACT of 23 or SAT of 1050. Computer Science applicants must rank in the upper 20% of their graduating class or score a minimum on the ACT of 24 or SAT of 1100. Applicants to Speech and Hearing Science must rank in the upper one-third of their graduating class.

If the applicant is unable to meet these specific admission requirements, it is possible to file a letter of appeal with the Special Admissions Committee, 136 Moeur Bldg., Arizona State University, Tempe, AZ 85287. The decision of the Committee is final. The applicant must be able to meet at least one of the following criteria:

1. A high school grade point average of 2.50 or higher on a 4.00 A scale.
2. An upward grade trend during the high school career, or an upward grade trend during the senior year.

3. Positive recommendations from secondary school administrators, faculty, or counselors based on considerations such as academic potential, work experience, leadership ability, or extracurricular activities.
4. An average score on the General Education Development (GED) test of 50 or greater.
5. Demonstration of the ability to complete college freshman level academic studies with a grade point average of 2.00 or higher on a 4.00 A scale in courses in English, social science, mathematics, physical or natural science, foreign languages, fine arts, or the humanities. The applicant must have earned at least 9 credit hours at a community college or summer or evening sessions at a university, or both.

Classification of Secondary School Subjects

Group I	English. Courses with major emphasis upon grammar, composition, and literary analysis.
Group II	Foreign Languages. Classical or modern foreign language. Two units or more are recommended.
Group III	Mathematics. One unit of algebra and one unit of mathematics other than arithmetic, business mathematics, or general mathematics.
Group IV	Social Studies. History, civics, communication, economics, sociology, geography, and government (including United States and Arizona Constitution).
Group V	Laboratory Sciences. Courses in biology, chemistry, and physics, in which at least one regular laboratory period is scheduled each week.
Group VI	Fine Arts. Historical, theoretical and performance courses in art, music, communication and drama, and humanities.
Group VII	Agriculture, bookkeeping, general science, home economics, arithmetic, general mathematics, journalism, industrial arts, secretarial training, physical education, military science, and other subjects commonly offered for credit by secondary schools.

Recommended Secondary School Subject Units. The following recommended pattern of subjects is that which, on the basis of experience, can be reasonably expected to provide satisfactory preparation for college when these subjects have been completed with better than average grades. *Academically talented students are strongly urged to take additional courses* from Groups I through V beyond those recommended. The definition of a unit is that used by the North Central Association of Colleges and Secondary Schools.

English (from Group I)	4
or English 3 and one Foreign Language 2 (from Groups I and II)	or 5
Mathematics (from Group III)	2
American History and Social Studies (from Group IV)	2
Laboratory Science (from Group V)	2
Electives (from Groups I through VII)	6
depending upon English option	or 5
	16 or more

The School of Engineering recommends 3½ units in mathematics, including advanced algebra, geometry and trigonometry. Calculus is recommended. The laboratory sciences chosen should include at least one unit in physics and one unit in chemistry. One unit of biology is strongly recommended.

The College of Nursing recommends 2½ units of mathematics, including algebra, advanced algebra and one additional unit of mathematics. Laboratory sciences should include one unit of biology and one unit of chemistry or their equivalents. An additional unit of physics is recommended.

Conditional Admission Prior to Graduation from High School. Conditional admission may be granted to high school seniors who submit a six-semester or seven semester transcript which shows academic quality and rank in class in keeping with admission standards, and who complete the steps in the undergraduate admission procedures. Regular admission will be confirmed when a verification of the high school graduation showing final grade point average, rank in class and date of graduation has been received in the mail by the Admissions Office directly from the high school. The conditional admission may be cancelled if the final verification shows that the applicant has not met the University requirements for admission.

Admission with Distinction. Admission with Distinction certificates recognizing outstanding scholarship are awarded to entering freshmen who rank in the top 10% of their high school

graduating classes. This designation is honorary in nature and does not include a financial award.

Able and Ambitious Program. The high school senior with only a limited amount of work remaining for completion of high school graduation, who ranks in the top 10% of the class, may be granted *special enrollment* as an unclassified student to enroll for *a maximum of six hours per semester* at the University. To qualify, the following conditions must be met:

1. An application for the Able and Ambitious Program must be submitted to the Admissions Office. Applicants sign an agreement that they will continue in high school while enrolled at Arizona State University and that they will graduate with their high school class.
2. An official transcript of the high school record showing senior standing and rank (top 10%) in class must be sent directly to the Admissions Office by the high school.
3. The principal or counselor of the high school must send a written recommendation to the Admissions Office authorizing the enrollment of the high school senior at Arizona State University at the same time the student is completing the high school program.

Admission of Unclassified Applicants —Undergraduate. Any person 19 years of age or older or who has graduated from high school and meets the regular admissions standards may enroll for six semester hours or less per semester of undergraduate course work as an unclassified student. Such a student is not required to file a transcript or domicile affidavit. It will be necessary, however, to file an Unclassified Student Admission application. An unclassified student cannot be a candidate for any University degree. Persons disqualified or otherwise not eligible for regular admission will not be permitted to attend as unclassified students.

An unclassified student who decides to work toward a bachelor's degree will have to *apply for admission to a degree program* with the Admissions Office, and meet all the admission requirements that apply to degree-seeking students at the time of application. No more than 15 hours of completed unclassified work may be applied to a degree program, if the completed courses meet specific requirements within a degree program.

Once registered in a regular degree program, a student will not be permitted to register again in unclassified status.

Transfer Applicants

An applicant for transfer admission must have a grade point average of 2.00 or higher (see specific college requirements) on a 4.00 = A scale in all work undertaken at previous institutions of higher learning, and at the same time must be in good standing and eligible to return to such institutions.

Transfer applicants to the following areas must have the respective minimum grade point average shown: Computer Science—2.75; Engineering—2.50; Construction—2.25; Speech and Hearing Science—2.50; Elementary Education—2.50. (International applicants should see requirements on page 22.) Applicants with less than 12 semester hours of completed transferable work will follow the procedures for entering freshmen, as outlined on page 18. Applicants with 24 hours or less of transferable work must submit official high school records.

Transfer Credit

Credit will be awarded for traditional course work successfully completed at institutions of higher learning as indicated by Arizona State University and the Board of Regents. Whether the specific credits can be applied toward a degree depends on the requirements of the department, division, or college in which the student is enrolled. There are several qualifications: (1) Transfer credit is not given for courses in which the lowest passing grade (D) or in which a failing grade was received. (2) While courses successfully completed but evaluated on nontraditional grading systems (e.g. pass-fail) are acceptable for transfer, some colleges in the University may not accept such credits to fulfill graduation requirements. (3) Credit granted for "life experience" by the institution previously attended cannot ordinarily be transferred. (4) Grades and honor points earned at other colleges and universities are considered for admission, but are not included in computing the student's cumulative grade point average at Arizona State University.

Veterans Exception. By Arizona statute, in determining the admissibility to the University of a veteran, honorably discharged, who has served in the Armed Forces of the United States for a minimum of two years, who has previously enrolled at a university or community college in Arizona, no failing grades received by such veteran at an Arizona university or community college prior to military service may be considered. Military service records must be submitted, including form DD 214.

Community Colleges. A maximum of 64 semester hours of credits will be accepted as lower division credit when transferred from community, junior, or two year colleges.

Community college students who plan to transfer to Arizona State University at the end of their first or second year are strongly advised to plan their commun ty college courses to meet the requirements of the curriculum they select.

Students Attending Other Arizona Colleges and Universities.

To determine the equivalency of courses between Arizona institutions and those offered at Arizona State University, students should consult, with their academic advisor, the "Arizona Higher Education Course Equivalency Guide." Provided their college attendance has been continuous, students will be permitted to follow the degree requirements specified in the Arizona State University catalog in effect at the time they began their community college work. (See page 40.)

Conditional Admission Prior to Receipt of Final Transcript. Students enrolled in other colleges and universities will be considered for conditional admission on the basis of meeting all admission requirements, except for a final transcript of work in progress. This final transcript must be sent to the Admissions Office from the issuing institution immediately after the work in progress has been completed. Hand-carried transcripts will not be accepted. *Regular admission will be confirmed only after the final transcript has been received, showing that the applicant has met the University admission requirements.* In the event the applicant does not qualify or has falsified application documents, admission and registration will be cancelled, and any registration fees paid will be returned.

Appeal Procedure. Transfer students who feel they have been unjustly denied credit for courses they have taken may appeal to the standards committee of the college in which they have enrolled. (This does not apply to community college transfer of credit over the 64-hour maximum, see above.) The decision of this committee is final.

Applicants for transfer admission whose academic record fails to meet Arizona State University scholarship admission standards or who have been disqualified because of deficient scholarship, conduct, or other reasons by the college or university previously attended, will be denied admission. Such applicants, however, may write a letter of appeal accompanied by letters of recommendation, to the University Undergraduate Admissions Board, 136 Moeur Bldg., Arizona State University, Tempe, AZ 85287, for reconsideration of their applications. The decision of this Board is final.

Admission of Disabled Applicants. Academically qualified disabled persons are encouraged to apply for admission to Arizona State University.

A pre-admission inquiry may be made by the Office for Disabled Student Services, in order to better assist the incoming student with the appropriate support services. The inquiry will be made on a confidential basis, in an effort to take remedial action, in meeting the individual applicant's needs. This is a voluntary action by the University. Refusal to provide such information will have no bearing on the applicant's admission or treatment at Arizona State University.

Before the beginning of the academic term the student must arrange for attendant care and other personal assistance, if so advised by a physician. The student has the sole responsibility of arranging for personal care assistance.

Auxiliary aids related to educational programs and activities may be provided by the Office for Disabled Student Services. For additional information about available resources see page 43.

To ensure a smoother transition into the University community, all prospective disabled students are urged to contact the Office for Disabled Student Services at: Student Health Services Building, Room 177, Arizona State University, Tempe, Arizona 85287. Telephone: 602 965-1234 (Voice TTY).

Undergraduate Admission of International Applicants

For admission purposes, international applicants are defined as all persons who are not citizens of the United States of America.

All international applicants seeking admission to Arizona State University, in addition to meeting the standards for undergraduate admission, either as freshman or transfer applicants, must fulfill the following requirements:

1) Meet admissions requirements.

Freshmen: Must have a 3.00 minimum cumulative grade point average on a 4.00 A scale in secondary school work.

Transfer (12 credit hours or more): Must have a cumulative grade point average of 2.50 or higher on a 4.00 A scale in all work undertaken at the previous in

stitution of higher learning and at the same time be in good standing and eligible to return to such institution(s).

2) Demonstrate proficiency in the English language. The University requires all international applicants whose native language is not English to take the Test of English as a Foreign Language (TOEFL). A minimum passing score of 500 is required for admission. Applicants to the School of Engineering, the Department of Computer Science, and the Division of Construction, must score a minimum of 550 on the TOEFL.

   The scores must be submitted directly to the Admissions Office from TOEFL, Box 899, Princeton, New Jersey 08540.

3) Provide a personal data sheet certifying that they possess adequate financial resources to support themselves while in residence at the University. International applicants on scholarship must provide a letter of financial responsibility from the sponsoring agent or organization.
4) Meet all appropriate immigration standards and requirements.
5) Have all required admissions materials and credentials reach the Admissions Office at least two months prior to the beginning of the semester for which application is being made.

International Student Information

1) Upon admission to the University, international students are issued a Certificate of Eligibility (Form I-20 or IAP-66) which enables them to apply for the appropriate visa.
2) All international students are required to have insurance coverage against illness and accident before being permitted to register. Insurance must be maintained throughout the student's enrollment in the University and may be obtained at the time of registration.
3) Upon arrival on campus, international students must report to the International Student Adviser.

English Skills Program. Arizona State University offers an intensive English training program for non-native speakers of English. Inquiries about the curriculum, fee schedule, etc., should be addressed to Dr. Denis J. Kigin, University Continuing Education, Arizona State University, Tempe, AZ 85287. Acceptance into the English Skills Program is separate from admission to the University.

Admission to Summer Sessions

Admission to the University is a requirement for enrollment in summer sessions. However, transient students—those already admitted to other colleges and universities—are allowed to be admitted as unclassified undergraduates or non-degree graduates. The submission of transcripts or test scores are not required for this status. Conditional admission prior to graduation from high school may be granted under the conditions as stipulated on page 20 of this catalog. Summer session courses are equivalent to the regular semester courses in content, credit awarded and expected standard of performance. As a general rule, summer session courses are taught by regular members of the Arizona State University faculty. A summer session schedule of courses is published well in advance of the start of classes and may be obtained by writing or calling the Office of Summer Sessions.

Readmission to the University

Undergraduate students who have previously attended Arizona State University but have not been enrolled at this institution for one semester or more, will be required to apply for readmission for the semester that he or she intends to re-enroll. If meanwhile the student has attended an accredited college or university other than Arizona State University, it will be necessary for the student to have on file an official transcript of all academic work taken. Failure to report such attendance is considered misrepresentation and falsification of university records. In addition, it is considered cause for "Records Hold" action and withholding of further registration privileges.

An applicant for readmission to a classified program must meet the requirements for good standing (page 36) and the requirements of the college to which the application is being made. An applicant who has been denied readmission may appeal to the University Undergraduate Admissions Board.

Former students who have not attended the University for two years or more must take a chest X-ray or tuberculin skin test and complete the Health History Questionnaire. Both are available at the Student Health Service.

Conditional Readmission. A student completing academic work in progress at another institution may be granted conditional readmission. This conditional status will remain effective until an official transcript is received. The student will be subject to "Records Hold" action and additional registration privileges will be withheld if this condition for readmission is not cleared by mid-semester.

Special Programs for Advanced Placement and Credit

(Maximum of 30 hours of credit awarded for any or all programs including ASU comprehensive and proficiency examinations.)

1) Advanced Placement. Students who have taken an advanced placement course of the College Entrance Examination Board (CEEB) in their secondary school, *and* who have taken an Advanced Placement Examination of CEEB may receive credit with a score of 5, 4 or 3. No credit will be given for any examination with a score of 2 or 1. Sophomore standing in a discipline or area will be awarded with a score of 5.

When the scores are received by the University directly from CEEB, credit will be awarded as follows:

Exam	Score	Credit Hours
Art-History	5 or 4	6 (ARH 101 and 102)
	3	3 (ARH 101 or 102)
Art-Studio-General Art-Studio-Drawing	5,4 or 3	Department will evaluate all portfolios for determination of advanced placement or credit.
Biology	5 or 4	8 (BIO 101 and 102)
	3	4 (BIO 101)
Chemistry	5 or 4	9 (CHM 113 and 115)
	3	4 (CHM 113)
English	5 or 4	6 (ENG 101 and 102; exempt from ENG 104)
	3	Department will evaluate examination and recommend
Classics (Vergil, Lyric, Prose)	To be evaluated upon receipt	
French, German or Spanish—Language	5,4,3	8-14 (FRE, GER or SPA 201 and 202; additional credit to be recommended by the department)
French, German or Spanish—Literature	5,4 or 3	8-14 (FRE, GER or SPA 201 and 202; additional credit to be recommended by the department
History-American or European	5 or 4	6 (HIS 103 and 104 or 101 and 102)
	3	Department will evaluate examination and recommend
Mathematics-Calculus AB	5 or 4	4 (MAT 270)
	3	4 (MAT 270)
Mathematics-Calculus BC	Same as for Calculus AB; upon Departmental approval, credit may be granted for MAT 271 as well with a 5 or 4.	
Physics B	5 or 4	6 (PHY 111 and 112)
	3	3 (PHY 111)
Physics C	Same as for Physics B; or upon Departmental approval, credit may be granted for PHY 115 and 116 instead with a 5 or 4 score, or PHY 115 with a score of 3	

2) College-Level Examination Program (CLEP). Students who have taken a College-Level Examination of the College Entrance Examination Board may receive University credit. The following table of credit applies to all students enrolling in the University for the first time in August 1975 and any student enrolling thereafter. CLEP examination credit will *not* be given where (a) it duplicates credit previously earned by the student at the University or accepted by the University for work done elsewhere, or (b) it is more elementary than a course in which the student has already received credit. All examinations are given monthly by the University Testing Service.

General Examinations: To obtain credit or placement, students must receive a standard score of 500 or higher for the General Examinations, except for English Composition which requires a standard score of 610. *Students who have completed 60 semester hours of credit are not eligible to receive any credit for the CLEP General Examinations.*

Subject Examinations: A standard score of 50 or higher must be received to obtain credit for any subject examination. The 60 semester-hours of-credit limitation does not apply to subject ex aminations.

General Examinations	Credit Hours	Equivalency
English Composition	None	With essay exempts ENG 101 and 102 to enter ENG 104 but without essay see English Composition subject exam or English Placement Examination
Humanities	6	General Studies Credit
Mathemat'cs	3	MAT 106
Natural Sciences	8	General Studies or Ma or Credit
Social Science	6	Elective Cred t

Subject Examinations	Credit Hours	Equivalency
Accounting	6	ACC 101 and 102
American Government	3	POS 300*
American History (6)		
Early Colonization to 1877	3	HIS 103
1865 to the Present	3	HIS 104
American Literature (6)		
I, Colonial Period to 1870	3	ENG 341
II, 1870 to the Present	3	ENG 342
Analysis and Interpretation of Literature	3	General Studies (no credit if English major)
Bio ogy	4	General Stud es or major elective
Clinical Chemistry	None**	Petition Botany Microbiology Dept. if transfer from an Arizona community college
College Algebra	3	MAT 117
College Algebra and Trigonometry	4	MAT 115
Computers and Data Processing	3	Elective Only
Intro. Macroeconomics	3	ECN 201 (Dept. will accept credit
Intro. Microeconomics	3	ECN 202 for 201 or 202 not both) No credit or advanced placement if major is Economics or any major in College of Business Administration

Educational Psychology	3	EDP 310*
English Composition	None	With essay exempts ENG 101 and 102 to enter ENG 104
English Literature	3	General Studies (Seniors may use ENG 221 or 222)
Freshman English	None	Recommend English Composition Subject Exam
Foreign Languages (Col ege French, College Spanish)	0	P acement at Foreign Language level
Fortran IV	2	ECE 122 *or* ASE 226 *or* ASE 321
General Chemistry	7	CHM 113 and 115
General Psychology	3	PGS 100
Hematology	None**	Petition Botany/Microbiology Department if transferring from Arizona community college
History of American Education	3	SPF 411*
Human Growth and Development	3	CDE 232
Immunology and Blood Banking	4	MIC 420*
Introduction to Business Management	None	No Credit
Introduction to Calculus	4	MAT 270
Introduction to Marketing	3	Elective (no credit if major is in College of Business Administration)
Introduction to Sociology	3	SOC 101
Introduction to Bus'ness Law	3	Elective
Microbiology	4	MIC 201 and 202
Money and Banking	3	Elective (no credit or advanced placement if major is Economics or any major in College of Business Administration.)
Nursing (Anatomy, Physiology, Microbiology; Behavioral Sciences for Nurses; Fundamentals of Nursing; Medical Surgical Nurs'ng)	0	Not acceptable toward BS in Nursing.
Statistics	3	MAT 226 *or* EDP 454*
Tests and Measurements	3	EDP 454*
Trigonometry	2	MAT 118
Western Civilization (9)		
Ancient Near East to 1648	6	HIS 100 and 101
1648 to the Present	3	HIS 102

*Lower division credit. **See note, petition needed.

All equivalency is subject to future review and possible catalog change.

For further information regarding CLEP, contact the University Testing Service at Payne Education Hall 302, or call 602/965-3104.

3) Comprehensive Examinations. A comprehensive examination is intended to permit a student to establish academic credit in a field in which the student has gained experience or competence equivalent to an established University course. Applications are given only for courses listed in the current University catalog, and only for courses in which a comprehensive examination can serve as a satisfactory measure of accomplishment.

A number of restrictions apply. The student must be presently enrolled at Arizona State University with no more than 100 semester hours of credit earned. The examinations must be taken during the first two semesters in residence at the University. No more than 30 semester hours of credit may be established by comprehensive examinations (including AP and CLEP credit) and/or correspondence courses.

Comprehensive examinations may not be taken in any course in which the student has been given admission credit or transfer credit from any educational institution. If there is a question, the student should consult the Admissions Office. Credit may not be received for an examination in an elementary level of a field in which the student has earned more advanced credit, nor for a prerequisite for a course already completed.

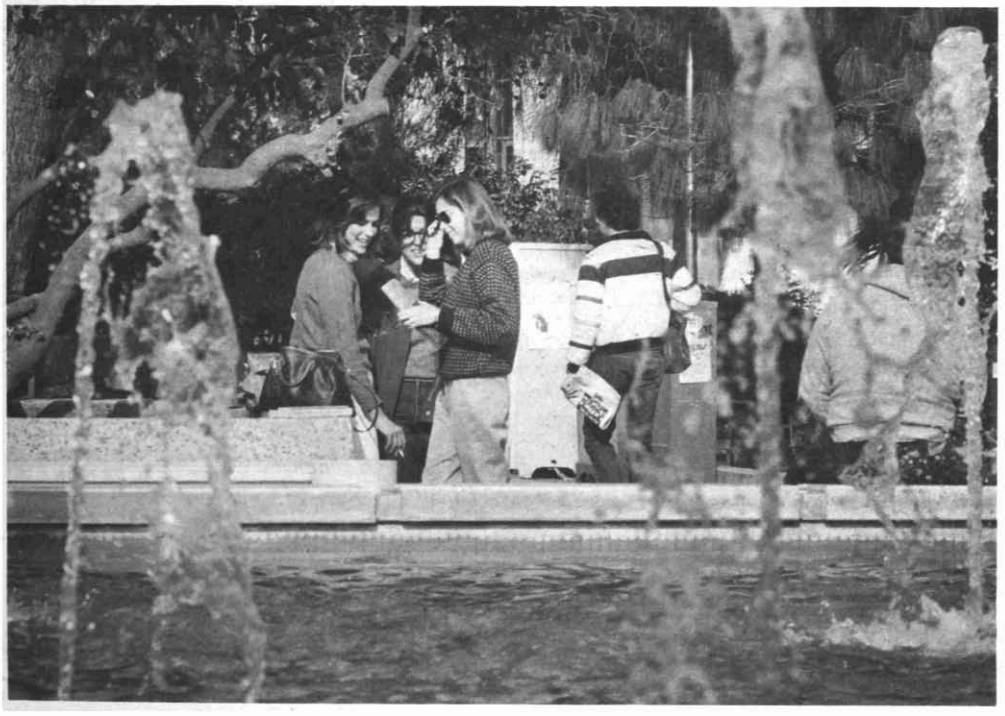
The comprehensive examination is strictly a departmental function. An application is for one course only. The student completes an application form with the number, title, and number of semester hours of credit for the course. When completed, the application must be approved by the student's advisor and the departmental chair.

The student must then pay the stated fee for such examinations at the Cashier's Office. The receipt must be taken to the departmental office.

The examination will be prepared by the instructor who normally conducts the course, and is comprehensive in nature and scope. The instructor and other experts designated by the chair grade the examination, using letter grades: A, B, C, D, or E. If the grade is C or better, a mark of Y is entered on the student's permanent record; otherwise no entry is made. Credit by examination will be indicated as such on the record. The student will be notified by mail of the result of the examination. In case of failure (D or E), the student will *not* be given an opportunity to repeat the examination.

A student pursuing a second baccalaureate degree may not receive credit by comprehensive examination, but with prior approval of the college the student may use the examination to waive a course requirement, if a grade of C or better is earned.

4) Proficiency Examinations. Proficiency examinations are given to: a) waive a course requirement; b) validate certain transfer credits in professional programs; and c) determine a student's ability in a field where competence is an important consideration. Detailed information may be obtained from the dean's office of the college in which the student is registered.



Placement Examinations for Proficiency

English. An entering freshman with an ACT English standard score of 25 or better or SAT verbal score of 600 or better is automatically eligible to enroll in ENG 105 in place of ENG 101 and 102. Students scoring 23 or 24 on ACT or 540-590 on SAT are eligible to take the English Exemption Examination for possible placement in ENG 105. The examination is given during the orientation period before the beginning of each semester and during the summer terms. Further information is available from the Director of Freshman English.

Foreign Language. For information regarding foreign language placement, see page 77 (Foreign Languages), and page 24 (Advanced Placement).

Mathematics. All students registering for introductory mathematics courses are required by the Department of Mathematics to take the Mathematics Placement Examination or, if appropriate, the Calculus Entrance Examination. The examinations are given several times each semester and during the summer. They are designed to determine the course level which will be of most benefit to the student. For further information, contact the Director of Mathematics Placement, Physical Science Center, A Wing.

Physics. All students wishing to register for PHY 111, 112 or 115, 116 are required by the department to take a Physics/Mathematics Placement Examination. The successful level of completion of the examination will determine the level of Physics of most benefit to the student. The examinations are given periodically each semester and during the summer. For further information contact the Physics Department.

Military Training—Officers

U.S. Air Force and U.S. Army. R.O.T.C. units are active on the ASU campus. See Aerospace Studies and Military Science in the College of Liberal Arts for additional information.

U.S. Marine Corps. Platoon leaders classes are conducted by the Marine Corps for students who have enlisted in Officers Training while at ASU. Students attend for six weeks in two different summers or 10 weeks in one summer, dependent upon their enlistment date. Credit in Marine Leadership Training (MLT) 302 (3) and MLT 402 (3) is granted for the platoon leaders classes upon the recommendation and certification of the U.S. Marine Corps to the Registrar in the absence of a U.S. Navy R.O.T.C. unit in Arizona.

Defense Activity for Non-Traditional Education Support (DANTES)

Arizona State University is a participating institution with DANTES and is listed in the DANTES Directory of Independent study. DANTES is an executive agency of the Department of Defense which provides educational support for the voluntary education programs of all Services. The primary missions of DANTES are: (1) to provide nationally recognized examination and certification programs as part of the voluntary education programs of military services; (2) to facilitate the availability of high-quality independent institutions for service men and women.

U.S. Armed Forces Institute Correspondence Courses. Arizona State University no longer grants military science credit for active service or courses that were taken through the military.

Fees, Deposits and Other Charges

Registration and Tuition Fees

Full-time Students

Students registered for 7 or more hours are considered full-time for fee purposes. Amounts listed are per academic semester. For further information on classification for fee status, see page 31 (Residency Classification, Procedures and Policies).

The following is a schedule of the total registration and tuition and is subject to change:

In-State Fee Status

Registration $377.50

Out-of-State Fee Status

Undergraduate students registered for 12 hours and over pay a registration fee of $377.50 plus tuition of $1,710. Students registered for 7-11 hours pay the registration fee and a prorated tuition fee as follows:

12 hours and over	$1,710
11 hours	1,599
10 hours	1,488
9 hours	1,377
8 hours	1,266
7 hours	1,155

Part-Time Students

Students registered for
6 hours or less ..... $42/hr.

Audit Registration not for credit

Fees for auditing classes are the same as fees paid for credit.

Summer, Continuing Education and Corre spondence

Further information is included in this catalog's section, University Continuing Education and Summer Sessions.

Summer Sessions/
Continuing Education .....$42.00 hour
Correspondence ..... 20.00 hour

Additional Fees

Fees listed are per academic semester and are in addition to the general University regis tration and tuition fees.

Private Mus c Instruction

½ hour of instruction per week..... $40.00
1 hour of instruction per week 60 00
1 or more hours of instruct on per week music majors only..... 60.00

Musical instrument rental charge
Charge for use of University owned musical instruments 10 00

Consult Music Department for spec fic information

Special Class Fees

Various University classes require payment of fees for special materials and rentals. These fees are listed in the schedule of classes for each semester.

Late Registration
Regular Semester.....$10.00

A late registration fee is assessed when a student registers after the regular start of classes.

Housing

For information on Housing, refer to cata log section on Student Services Housing

Other Fees and Charges

Admission Application.....$10.00

All out-of-state undergraduate applicants must pay a non refundable fee when applica tion for admission is made.

Transcripts.....$ 1.00

Request for transcripts should be made two weeks in advance of time desired

Copies for educational records other than transcripts

Number of Pages	Charge
1 - 5	Free
6 10	$2

Additional pages will be made at an increase of $1 per 5 copies.

Graduation:
Undergraduate.....$ 7.00
Graduate..... 10.00

Late Graduation.
Undergraduate.....$12.00
Graduate..... 15.00

If the graduation charge is not paid on or before the date specified in the section of the catalog headed Graduation Requirements, a late fee of $5.00 is added to the charge.

Graduation Reapplication:
Undergraduate.....$ 7.00
Graduate.....$10.00

Charge for reapplication when requirements were not met on original application are the same amount as the original application

I.D. Replacement $5 00

Charge for replacement of a lost or mutilated activity card $10.00

Replacement because of wear or deteriora tion will be free of charge.

Returned Check Service.....$ 15.00

Students who have checks returned to the University by the bank for any reason will be assessed a $10 00 service charge.

Comprehensive Examination .$ 7.50/Sem Hr.

Paid by all students seeking to establish credit by examination (per semester hour).

Lost Receipt and Registration Material.$ 1.00

Parking Decals.....$15.00

A parking decal must be purchased for each motor vehicle used by a student or employee on the University campus. For further in formation refer to catalog subsection General Information Parking.

Deposits (refundable):
Housing..... $50.00
Science breakage, depend ng on course .....$5.00 to $25 00

Refunds

Registration and Tuition Fees

Students withdrawing from school or indi vidual classes will receive a refund based on a percentage of the total semester fee paid in ac cordance with the following schedule.

Before first day of semester..... Deduct $10 00
1 thru 14 calendar days..... 80% refund
15 thru 21 calendar days..... 60% refund
22 thru 28 calendar days..... 40% refund
29 thru 35 calendar days..... 20% refund
After the 35th calendar day..... No refund

Per cent of refund will be determined by the date the official withdrawal form is presented to the Business Office. In certain instances consideration is given when students must withdraw because of illness For complete de tails contact the Registration and Fees section of the Business Office.

Summer Session Refunds

Students withdrawing from any Summer Session or individual classes in a given session will receive a refund based on a percentage of fees paid and in accordance with the following schedule:

Before first day of session	Deduct $10 00
1st and 2nd days of session	80% refund
3rd day of session	60% refund
4th day of session	40% refund
5th day of session	20% refund
After 5th day of session	No refund

Refunds will be based on the first five class days beginning with the first day of the Sum mer Session, not on the first five meetings of any given students' classes.

Additional Fee Refunds

Private Music Instruction. If a student must drop a music course because of illness or other emergency beyond the control of the student, not more than half of the instruction charge may be refunded.

Special Class Fees. Refunds, if any, will be de termined by the department offering the course. Determination will be based on prog ress in the course and type of activity.

Late Registration. Not refundable.

Additional University Charges

Refund of these payments will be deter-mined on the individual circumstances. Under ordinary conditions they are not refundable.

Housing Charges

Refunds to students departing from resi dence halls prior to end of the academic year are computed on the following basis:

Deposits. Housing deposits are refunded as pre scribed by the housing contract that students sign when they apply for residence hall accommodations Students should refer to th's document for specific information on refunds When checkout occurs prior to the last two weeks of the Spr ng semester, stu dents forfeit their $50 room deposit.

Rent. Students will be charged 10% of the total semester rate for each week or partial week of regis tered occupancy

Board. Students will be charged for meals through the last day of the week in which formal check out occurs. Students departing during the last two weeks of the semester shall be charged the full semester rate for meals No refund will be made for meals missed.

Check out is based on the date the Housing De partment is notified on a check out form, not the last day of occupancy

Payment of Refunds

All refunds will be made net of any amounts due the University If the last day of the refund period fal s on a weekend or holiday, the refund must be picked up during the regular office hours on the preceding day. For further information, see General Information Forfeiture of Refunds, below.

General Information

Change in Fees

The Board of Regents reserves the right to change fees and charges without notice.

Payment of Fees

Students pre-registering may apply monies made available through the Financial Aids Office to their registration fees if the money has been authorized for release by the Finan cial Aids Office.

Registration and related fees are payable in full on the day of registration. (See Veteran's Deferred Payments).

Method of Payment

Payments to the University should be made by traveler's check, bank money order, cashier's check or certified check. Personal or company checks in the exact amount of the charges will generally be accepted.

If any payment tendered is unauthorized, incomplete, or received after the due date, registration fees will be considered *not paid.*

The University reserves the right to refuse any type of payment.

Veteran's Deferred Payment

As provided by the Veteran's Readjustment Assistance Act, veterans may apply for deferred payment of registration fees. A "Certifi cate of Eligibility" must be presented. Contact the Business Office in advance to be assured of meeting the necessary requirements. The Uni versity reserves the right to deny this privilege to anyone.

Forfeiture of Refunds

All refunds and deposits due students for any reason are subject to forfeiture unless ob tained on or before June 30 of the year in which they were originally paid. Refunds will not be made without student identification. Should June 30 fall on a day when the Business Office is closed, the refund must be picked up during the regular office hours be fore June 30

Checks Returned by the Bank

Checks returned by the bank for any reason will be assessed a $10.00 service charge. Restitution of funds *must* transpire within 10 business days after the check is returned to the University. Personal checks or requested re submittal of returned checks will not be honored as acceptable methods of restitution. Currency, money orders, cashier's checks, certified checks, traveler's checks or acceptable credit cards (VISA and Master Card) are the only acceptable means of restitution. All students are subject to involuntary withdrawal from the University for nonrestitution of funds within the maximum 10 day restitution period. All students will be charged tuition (if appli cable) and fees based upon the percentage of time in attendance during the semester (see Refunds). In all cases, upon receipt of the returned item, University services will be imme diately suspended for the subject student.

Delinquent Financial Accounts

Students with outstanding financial obligations will be refused all University services un til such obligations are paid. They will be denied subsequent enrollment, transcripts, grades, transfer of credit, and graduation. Failure to respond to notifications of outstanding financial accounts will result in a Records Hold, and potential withdrawal from the University.

Parking

Anyone who parks or expects to park (whether owned, leased, or borrowed) a vehicle on the University Campus must register each vehicle and secure and display a current parking decal. Violations of the parking regulations are subject to citation and fines. Appeals to parking citations may be filed with the Parking Administrator, and after payment may be further appealed through the Parking Appeals Board. Unpaid parking citations will become part of delinquent accounts and are subject to the above paragraph.

Residency Classification Procedures and Policies

The Arizona Board of Regents is required by law to establish for the universities under its jurisdiction and control uniform guidelines and criteria for the classification of students for payment of registration and tuition. All questions and discussions relating to residency classification for tuition purposes should be directed to the Residency Office, Arizona State University, Moeur 1, Tempe, AZ 85287 or call (602) 965-7112.

Financial Aid

Financing your college education is the responsibility of you and your family. The Student Financial Assistance Office will assist you in meeting this responsibility by evaluating all aid applications through the use of a standard financial needs anaylsis system to determine the cost of education and how much you and your family can afford to contribute toward that cost of education. It is your responsibility to provide the necessary applications and information.

Student financial aid is assistance in the form of scholarships, grants, loans, and employment. This aid has been made available collectively by the university, alumni, private foundations, civic groups, individuals, state and federal governments.

Financial aid is an individual process from admission and requires a separate application annually.

You will be notified by mail about your eli gibility for student assistance. When student aid funds are disbursed, you may use them to pay for university charges and other related education expenses.

Types of Financial Aid

Please refer to publications of the Student Financial Assistance Office for detailed in formation.

Pell Grant
Supplemental Educational Opportunity Grant (SEOG)
College Work-Study Employment (CWS)
National Direct Student Loan (NDSL)
Guaranteed Student Loan (GSL)
Nursing Student Loan
Bureau of Indian Affairs Grant (BIA)
State Student Incentive Grant (SSIG)
Veterans Educational Loan
Migrant Opportunity Program (MOP)
Scholarship
Emergency Loan

STUDENT BUDGETS FOR 1983-84

(12-month living costs; fall and spring semester full-time enrollment)

Cost/Allowances	Single living with parents	Single, on or off campus	Married, no children
University fees	$ 755	$ 755	$ 755
Books and supplies	300	300	300
Room (rent)	0	1,600	3,200
Board (food)	1,200	1,600	3,200
Personal expenses	1,800	1,800	3,600
Total—Arizona resident	$4,055	$6,055	$11,055
Tuition—non-state resident	2,665	2,665	2,665
Total—Non-state resident	$6,720	$8,720	$13,720

Note:

1. Living expenses (room, board, personal expenses) are stated for a 12-month period. Nine-month academic year living expenses are equal to 75% of the standard allowances. Financial assistance is not normally provided for summer.
2. Students with dependents may add $1,200 per dependent.
3. Tuition and fees are subject to change without notice.
4. The above allowances are the average amounts spent by students for their educational costs. These allowances are used to calculate eligibility for University "need based" financial aid awards. Unless a student is typical in all respects, actual costs may vary according to life style. Financial aid awards will partially assist a student to satisfy this budget.

Classification of Courses

Information about courses appears in two places, the *General Catalog,* published once every two years, and the *Schedule of Classes,* published before the beginning of every semes ter.

The course numbering system is as follows:

100-299 ("Lower Division" Courses) are freshman and sophomore level courses, de signed primarily for these students. Certain classes are closed to freshmen who lack the designated prerequisites or are majoring in other departments. This information is available in the *Catalog,* the *Schedule of Classes,* or from the student's curriculum advisor.

300-499 ("Upper Division" Courses) are de signed primarily for juniors and seniors and other advanced students. Prerequisites and other restrictions should be noted before regis tration. Courses at the 400-level apply to grad uate degree requirements for an individual program of graduate study when approved by the Graduate College.

500-799 ("Graduate Level" Courses) are de signed for graduate students. However, upper-division undergraduate students may enroll in graduate courses with the approval of their advisor, the course instructor, the department chair, and the dean of the college in which the course is offered. If the course does not meet an undergraduate graduation requirement, it may be eligible for use in a future graduate program on the same basis as work taken by an unclassified graduate student. (See *Graduate College Catalog* or page 357.)

Special Topics 294, 494. The numbers 294 and 494 have been reserved for courses covering topics of immediate or special interest of a faculty member and students. Credit, 1-4 hours.

Pro-Seminar 498. Small group study and research for advanced students within their major area. Prerequisite: Major in the department or approval of instructor. Credit, 1-7 hours.

Independent Study 499. The course number 499 has been reserved for Independent Study courses in each of the instructiona departments or divisions of the colleges at the under graduate level. Independent Study courses are honor courses and may be taken only by outstanding senior students who have completed at least one semester in residence. To be eligible for an Independent Study course a student must have a cumulative grade point average of 3.00 or better in his major or field of specialization.

An Independent Study course is designed to provide an opportunity for the superior senior student or for the graduate student to do an original study or investigation in the major or field of speicalization on an individual basis with a minimum of supervision or direction.

An Independent Study course 's not a substitute for a catalog course, nor a means of taking a catalog course on an individual basis. Courses listed in the catalog may not be taken as Independent Study.

Application for Independent Study must be made well in advance of the regular registration period with the student's advisor. The application must be signed by the advisor, and approved by the instructor under whom the student will work and by the chair of the department in which the course is taken. A special class fee may be required. Credit 1-3 hours.

Special Liberal Arts Courses. Liberal Arts 100, 101, 150, 401, 402 are interdisciplinary courses offered by the College of Liberal Arts. LIA 100 (University Adjustment and Survival) and LIA 101 (Use of Research Libraries) are open to all students; LIA 150 (Introduction to Asia) is open to students who have not had any exposure to the Asian studies; LIA 401 (The Meaning of the 20th Century) follows a lecture structure and is open to all upper division students and to others by approval of the instructor; LIA 402 (Movements and Meaning in Latin America) offers lectures by a variety of specialists.

Honors Courses. The courses listed in the schedule as 298 and 492 (Honors Individua Study), 493 (Honors Thesis) and 497 (Honors Colloquium) are reserved for students in Honors Programs.

An omnibus course is one at a certain level available to academic units who may use their own prefixes before the number. The omnibus number (initially approved by the Vice President for Academic Affairs) is to be used for courses offered on an experimental basis The title and course content varies with the subject matter.

Special Courses. Undergraduate Internship (484), Special Courses for Research Methods (500), Practicum (580), Field Work (583), Internship (584), Reading and Conference (590), Seminar (591), Research (592), Applied Project (593), Conference and Workshop (594), Special Topics (598), Thesis (599), Research Methods (600), Practicum (680),

Field Work (683), Internship (684), Reading and Conference (690), Seminar (691), Research (692), Applied Project (693), Research Methods (700), Practicum (780), Field Work (783), Internship (784), Reading and Conference (790), Seminar (791), Research (792), Dissertation (799), are set forth in announcements of the Graduate College and are also listed in the respective departments, where offered.

Prerequisites. A student registering for a course must meet the previous course requirement (prerequisites) listed for it or otherwise satisfy the instructor that equivalent preparation has been completed.

Courses Offered. The University does not offer all of the courses listed in the catalog annually or each semester. The *Schedule of Classes* should be consulted for those courses offered each semester.

Key to Course Listing Abbreviations

GLG ..... Departmental prefix designation
410 ..... Course number
(3) ..... 3 units credit
F ..... Course offered fall only
S ..... Course offered spring only
SS ..... Course offered summer session only
F,S ..... Course offered both semesters
A ..... Course offered once a year
F'83,S'84 . Course offered every other year on semester indicated
N ..... Course not regularly offered
†Dagger indicates further prerequisites

Grading System

Scholarship Grades and Marks. All grades and marks will appear on the grade report and the permanent record.
They are indicated by the following letters:

A—Excellent	NR—No Report
B—Good	P—Pass
C—Average	W—Withdrawal
D—Passing	X—Audit
E—Failure	Y—Satisfactory
I—Incomplete	

Grading Options. Ordinarily a grade of A, B, C, D, or E is given upon completion of a course, unless a grading option of "Audit" or "Pass-Fail" is indicated at the time of registration. *Grading options cannot be changed after the close of the drop/add period.*

Audit Enrollment. A student may choose to audit a course, in which case he or she attends regularly scheduled class sessions but no credit is earned. The student must first obtain the instructor's approval, be properly registered, and pay the fees for the course.

The mark of X will be recorded for completion of an audited course, unless the instructor determines that the student's participation or attendance has been inadequate, in which case, the mark of W may be recorded.

Incomplete. A mark of "I" (Incomplete) is given by the instructor only when a student who is otherwise doing acceptable work is unable to complete a course because of illness or other conditions beyond the student's control. The mark of "I" is granted only when the student can complete the unfinished work with the same instructor (e.g. final exam or term paper). However, an incomplete may be completed with an instructor designated by the department chair if the original instructor later becomes incapacitated or is otherwise not on campus. The student will be required to arrange with the instructor for the completion of the course requirements and for a change from the mark of "I" to whatever grade is earned within the maximum of one calendar year from the date the mark of "I" is recorded. Marks of "I" received in the Fall 1983 semester or thereafter that have been on a student's record for more than one calendar year will be automatically changed to a grade of "E", and will be treated as a grade of "E" for the purposes of evaluating graduation requirements.

Pass/Fail. A mark of "P" (Pass) or "E" (Fail) may be assigned for this grading option. This grading method may be used at the option of individual colleges and schools within the University. Consult college dean's office for detailed information and restrictions prior to registration.

Satisfactory. A mark of "Y" (Satisfactory) may be used at the option of individual colleges and schools within the University, and is appropriate for seminars, internships, projects, workshops, readings and conference, theses, and research. The "Y" is included in earned hours, but is not computed in the grade point average.

Withdrawal. During the first four weeks of a semester a student may withdraw from any course with a mark of "W". Between the fourth week and up to the end of the tenth week of a semester students may withdraw with the mark of "W" only from courses in which the instructor certifies that they are passing at the

time of withdrawal However, the number of withdrawals with the mark of "W" is limited During freshman standing - 3; during sophomore standing 2; during junior and sen or standing a total of 2 The preceding lim ts do not prevent students from withdrawing from the University (all courses) with marks of "W" and or 'E". Withdrawal from the University counts as one withdrawa for purposes of applying the above limits to subsequent withdrawals from individual courses. The pre ceding does not apply to audit enrollment.

An instructor may withdraw a student from the class with a mark of "W' or a grade of "E" for disruptive classroom behavior. A student may appeal an instructor-initiated with drawal to the standards committee of the college in which the course s offered The decision of the committee is final. The limits above do not apply to withdrawa s initiated by an instructor in accordance with this policy.

Unit of Credit. The semester hour is the unit on which credit is computed. It represents one 50 minute class exercise per week per semester.

Grade Points. For the purpose of computing the grade point index, grade po nts are assigned to each of the grades for each semester hour as follows: A, 4 points; B, 3 points; C, 2 points; D, 1 po'nt, and E, 0 points Grade point averages are rounded to the nearest hundredth of a grade point.

Grade Point Average. The grade point average (GPA) is obtained by dividing the tota number of grade points earned by the number of semester hours graded A, B, C, D, or E (net hours). Other grades do not carry grade points. *Semester* GPA s based on *semester* net hours. *Cumulative* GPA is based on *total* net hours.

Change of Grade. The instructor of a course has the sole and final responsibility for any grade reported.

Once a grade has been reported to the Office of the Registrar, it may be changed (1) upon the signed authorization of the faculty member who issued the original grade, or (2) by the academic grievance committee of the college 'n which the course was offered, if the instructor is no longer at ASU (Consult department chair of specific course.) In either case, approval is also required by the department chair and dean of the college concerned. This applies also to the grade of In complete (I). (See *University Policy for Student Appeal Procedures on Grades* Appendix B, page 438.)

Repeating Courses. An undergraduate course taken at ASU may be repeated for cred't only if a grade of "D" or "E" or a mark of "W" is received This policy does not apply to seminar and independent study courses with different content each semester. When an undergraduate student repeats 100 and 200-level courses, the student's transcript will show both grades, but the student's cumulative grade point index wil reflect only the higher grade. When an undergraduate student repeats 300- or 400 level courses, the student's cumulative grade-point index will reflect both grades. Undergraduate courses n which grades of "D" or "E" are received may be repeated only once

Mid-Term Deficiency Report. Instructors are required to eva uate students at m d-term for scholarship deficiencies A student who has been evaluated for a "D" or "E" at mid semester will receive a deficient scho arship report The mid term "D" and "E" grades are not recorded on the student's permanent record. M d term reports are mailed to the student's local address of record

Final Grade Report. A grade report will be sent to each student at the end of each semester to the permanent address of record.

It is the responsibility of the student to keep the Office of the Registrar informed of address changes.

Records Hold. The Office of the Registrar will place a "Records Hold" on the records of a student when an outstanding financial obligation or disciplinary act on has been reported.

When a hold 's placed on a record, the following resu ts may occur: (1) Student does not receive a grade report; (2 An official or unofficial transcript will not be issued, (3) Registration privileges will be suspended: 4) Other student services may be revoked.

The "Hold" will remain effective until removed by the initiating office. It is the student's responsibility to clear the conditions causing the "Hold "

Transcripts. The Office of the Registrar will release official transcripts *only upon written request of the student.* The request must include: name or former name(s), the student ID number, date of birth, and date of last attendance No transcript will be issued in case of a "Records Hold." If the transcript is to be mailed, the student must also supply a specific address. The fee for an official transcript is $1.00 per copy

Unofficial transcripts may be requested in-person at the Office of the Registrar, or by mail if a signed release and self addressed stamped envelope is enclosed. There is no charge for an unofficial transcript.

All in person transcript requests require presentation of photo identification. Requests will not be accepted from third parties without a written release from the student.

Retention and Academic Standards

Class Standing of Students.

1 - Freshman, 24 or less hours earned
2 - Sophomore, 25 - 55 hours earned
3 - Junior, 56 - 86 hours earned
4 - Senior, 87 or more hours earned
5 - Graduate, Bachelor's degree from accredited institution

Good Standing. Good standing for the purpose of retention is defined as follows:

Total Earned Hours	Minimum Cumulative GPA
24 or less	1.60
25 55	1.75
56 or more	2.00

In order to transfer from one college to another within the University, a student must have a 2.00 GPA or better. The GPA determining good standing is computed on courses taken only at Arizona State University.

For purposes of retention or transfer, an individual college may set higher GPA standards.

Dean's List. Undergraduate students who earn 12 or more graded credit hours (A, B, C, D, or E) during a semester in residence at Arizona State University with a grade point average of 3.50 or better are eligible for the Dean's List. A notation regarding Dean's List achievement will appear on the final grade report for the semester

Probation. A student's college assumes responsibility for enforcing academic standards, and may place any student on probation who has failed to maintain good standing as defined above. A student on academic probation is required to observe any rules or limitations the college may impose as a condition for retention.

Disqualification. A student who is placed on probation at the end of a semester is subject to disqualification by the college at the end of the following semester if the conditions imposed for retention are not met.

Disqualification is exercised at the discretion of the college and becomes effective on the first day of the semester following college action. *A disqualified student is notified by the dean of the college and/or the Office of the Registrar, and is not allowed to register at the University until reinstated.* A student who has been disqualified may appeal to the college standards committee. A student disqualified or otherwise not eligible for regular admission may not attend as an unclassified student.

Reinstatement. In order to be reinstated, the student must submit an application for reinstatement to the disqualifying college. If the student chooses to transfer to another college within the University while disqualified, application for reinstatement must be made to the University Undergraduate Admissions Board.

In addition to applying for reinstatement, a disqualified student who has not registered for one or more semesters must apply for readmission to the University.

Reinstatement Appeals. A student wishing to appeal the decision of the standards committee of a college may apply for a hearing before the University Undergraduate Admissions Board. The decision of the Board is final.

Academic Renewal

An undergraduate who has been readmitted to the University after an absence of at least five years, and who has satisfactorily completed at least one additional semester in residence at ASU, may, upon petition to the dean of the college, have his or her former record treated in the same manner as transfer credits. That is, credit will be granted for up to 64 hours in courses in which a grade of C or better was earned, and the original cumulative index will be listed separately rather than included as part of the ASU index. Such academic renewal may be effected only once during a student's academic career. Students must be aware that the former record remains intact and that, although eligibility for graduation is based on the ASU index, most graduate and professional schools may average the two records together.

General Studies

Arizona State University students are required to demonstrate a satisfactory level of basic knowledge in the humanities, fine arts, social and behavioral sciences, and sciences and mathematics. Specific patterns of General Studies requirements are established by the colleges within the overall program. Since re-

quirements under this program vary somewhat from one curriculum to another, students should refer to the catalog description of the recommended General Studies program within the college in which they are enrolled. Specific disciplines listed within the three overall cate gories are *not necessarily applicable* to the General Studies program and graduation requirements of each college.

Students transferring from approved institu tions of higher education ordinarily will be given General Studies credit, hour for hour, for work done in those institutions insofar as it is equivalent in content to General Studies courses at this University.

All students who are candidates for a bachelor's degree are required to complete 36 to 57 semester hours in upper and lower divi sion General Studies courses, depending upon the college and curriculum in which they are enrolled. The total number of semester hours required in each of the fields listed below is specified by the individual colleges:

Humanities and Fine Arts

Architecture, Art, Communication (see approved list), Dance, English, Foreign Languages, Interdisciplinary Humanities, Music, Philosophy, Religious Studies, Theatre.

Students select with the advisor's approval, two or more courses within a pattern designed to enhance their ability to develop a discriminating appreciation and understanding of the humanities, fine arts and philosophical ideas. This pattern is intended to develop standards of critical judgment, ability to assess and evaluate humanistic ideas and values, and competence in the basic arts of communication and self-expression.

Social and Behavioral Sciences

Aerospace Studies, Agribusiness, Anthropology-ASB, Business Administration, Communication, Criminal Justice, Cultural Geography, Design Sciences, Economics, Educational Foundations, Engineering, Health Education, History, Home Economics, Journalism and Telecommunication, Leisure Studies, Military Science, Planning, Political Science, Psychology-PGS, Public Affairs, Recreation REC, Sociology.

Students select with the advisor's approval two or more courses within the social and behavioral sciences. This pattern is designed to expand knowledge and appreciation of American and other cultures: to estimate the impact of science, technology, and changing business and economic conditions on human societies; and to increase awareness of the major social issues of the time.

Science and Mathematics

Anthropology-ASM, Botany, Chemistry, Computer Science, Engineering, Geology, Mathematics, Physical Geography, Physics, Psychology-PSY, Zoology.

Students select with the advisor's approval two or more courses, one or more of which must have a laboratory. These selections comprise a coherent pattern designed to explore the fundamental concepts of science and mathematics; to reveal the role of observation and experiment, inductive and deductive reasoning, and the quantitative approach in mod ern physical, biological and engineering science; and to bring into sharp focus the scientific forces that influence their destiny.

To complete the total credit hours requirement in General Studies, students with the advisor's approval shall select appropriate elec tives from the above fields or from other fields approved within the framework established by each college. Requirements in the three fields of General Studies may be met by advanced standing credit or may be waived by virtue of acceptable performance on a proficiency examination. In such cases, the prescribed requirements are correspondingly reduced by approval of the college. See College General Studies requirement for graduation.

Interdisciplinary Studies

Adult Development and Aging Program. Course work related to aging is currently offered in ten departments. An interdis ciplinary Certificate in Gerontology may be earned by students who wish to study the psychological, sociological, and biological aspects of aging and the economic, political, legal, so cial, and health related concerns of the older person. This interdisciplinary activity provides training for students who wish to work in a variety of gerontological occupations. It also gives students an opportunity to explore topics related to adult development and aging. A stu dent in the Certificate Program majors in one of the currently existing university disciplines but takes individual course work in various departments which offer gerontology-related courses. For further information, contact Di rector, Adult Development and Aging Program.

City and Regional Planning. The city and regional planning focus provides undergraduate students of various disciplines a familiarity with this area's concerns, theories, and tech

niques. These draw from course offerings related to planning in various departments of the University (Planning, Geography, Geology, Civil Engineering, Public Affairs, Business Administration, History, Sociology, Home Economics).

Energy Studies. An expanding instructional and research involvement in energy matters exists through three curricular paths: (1) General Studies, which emphasize energy as an elective beyond the scope of a chosen major (for more information contact Chair, Department of Geography); (2) Specific studies in the Department of Planning (College of Architecture, usually for those pursuing the Master of Environmental Planning degree); (3) Specific studies in the College of Engineering and Applied Sciences, usually for those seeking a degree in a branch of Engineering.

Environmental Studies. The Center for Environmental Studies was established to initiate, coordinate and encourage research, community service, and academic programs. The Center does not formally offer courses or a degree program. It sponsors special courses, conferences and workshops on environmental topics. Drawing from faculty and students throughout the University, the Center participates in research and community programs relating to environmental problem areas.

Film Studies. The film studies program exists not only to provide information and experience but also to serve as a means of creative expression for the student and as a useful subject and tool in teaching. The program is not designed to produce professional filmmakers. However, it may provide practical preparation for students desiring further film study in other institutions.

Inquiries about this program should be directed to the Chair of the Interdisciplinary Film Committee or the Film Studies Advisor in participating colleges

International Programs and Studies. International matters and an understanding of other nations are reflected in course offerings throughout the University Special area emphases are coordinated through the Center for Asian Studies (page 53) and the Center for Latin American Studies (page 55). These two centers also publish quarterly journals, research reports, and scholarly monographs. The Hayden Library has extensive collections on international subjects in selected areas.

University academic year student exchange programs exist with universities located at Guadalajara, Hermosillo and Monterey in Mexico and at La Paz in Bolivia. Summer school programs in Guatemala and Europe are also available. Foreign students are also attracted annually to the intensive English Skills Program for International Students (page 23).

Islamic Studies. The art, history, geography and religion of the Islamic world are the subjects of several courses offered by departments in the Fine Arts and Liberal Arts Colleges.

Linguistics Studies. Interdisciplinary linguistics concentrations are offered in the Departments of Anthropology, English and Foreign Languages. There are numerous interdisciplinary linguistics courses in these and other departments. For information, contact Don Nilsen, Chair of the Ad Hoc University Linguistics Coordinating Comittee.

Medieval and Renaissance Studies. Significant opportunities for the study of medieval and renaissance culture exist at Arizona State University. Hayden Library has an extensive microfilm collection and many rare books in medieval and renaissance studies. The Collegium Musicum, composed of graduate and undergraduate students, regularly presents public performances of medieval and renaissance music.

In addition, the Arizona Center for Medieval and Renaissance Studies (ACMRS) is housed in the College of Liberal Arts. The Center is a research unit composed of scholars from Arizona State University, Northern Arizona University and the University of Arizona. ACMRS enriches departmental offerings in medieval ad renaissance studies by sponsoring one visiting professor for one semester each year. Graduate research assistantships are available through the Center. For information, contact Director, ACMRS, Social Science 224C, Arizona State University (965-5900). Scholars in ACMRS represent a variety of disciplines including history, literature, philosophy, religion, languages, music, art and science. For a list of advisors, see Interdisciplinary Studies in the College of Liberal Arts.

Women's Studies. An interdisciplinary perspective on women serves as the vehicle for a critical exploration of the role and status of past and present women, assumptions about women accepted in American culture, the validity of research on women, the effect on women of political, economic, and social systems, and the contributions of women to world culture. The student has the opportunity to consider alternative ways of looking at the as-

sumptions that affect the image of women and to make a research contribution to the field. Inquiries about this program should be di rected to the Director of Women's Studies, College of Liberal Arts, and the fall and spring Women's Studies brochure.

Registration

A student is considered to be registered when all registration fees have been paid in full.

Eligibility. Only eligible students may register for courses at Arizona State University. An eligible student is either continuing from the previous semester or one who has been ad mitted or readmitted to the University (see Admissions, pages 18 and 23).

Advisement. Each college provides advisors who assist the student in planning a program of study and selecting courses for each semes ter. The student has the responsibility to seek advisement and to meet all the degree require ments.

Times of Registration. The dates, times and procedures for registration are published in the *Schedule of Classes.*

Proof of Identification. In order to receive University services, photo identification must be presented. Each admitted student who com pletes the registration process for a regular semester will be issued a student identification card. This photo identification card is valid for the duration of the student's enrollment at Arizona State University.

Photo IDs are issued throughout the semester in the Moeur Building. (Refer to page 29 for replacement fee.)

Activity Cards. Issued Fall and Spring semesters to students registered for 7 or more semester hours. A validated fee receipt must be presented at the time of acquisition.

Activity Cards are issued throughout the semester in the Moeur Building. (Refer to page 29 for replacement fee.)

Registration Fees. Registration fees are due and must be paid in full at the time specified each semester in the *Schedule of Classes.* If any payment tendered is unauthorized, incomplete, or received after the due date, registration fees will be considered not paid.

Schedule of Classes. The *Schedule of Classes* is the official publication each semester and distributed without charge. The *Schedule* lists the semester's course offerings, dates, times, places, and procedures for regis tration, along with other important informa tion relating to the semester.

Course Loads. A minimum full time course load for an undergraduate student is 12 semes ter hours. The maximum course load for which a student may register is 18 semester hours (with the exception of a 19 hour maximum for students enrolled in the Colleges of Engineering and Applied Sciences or Ar chitecture). A student wishing to register for more than the maximum must petition the standards committee of the college in which he or she is enrolled and must have an approved overload petition on file with that college before registering.

Concurrent Enrollment. Provided that the other university regulations concerning enroll ment, graduation requirements or transfer of credits are not violated, a student may be en-

Enrollment Verification Guidelines. Arizona State University is frequently required to certify a student's enrollment as to full time, part time, etc. The following general guidelines are used primarily to verify enrollment for the purpose of loan deferments and eligibility. The Registrar is responsible for such verifications.

Regular Semester	Full-Time	Half-Time	Less Than Half-Time
Undergraduate	12 or more hours	6 11 hours	5 or less hours
Graduate	9 or more hours	5 8 hours	4 or less hours
Graduate Assistant	6 or more hours	- -	---
Five Week Summer Session			
Undergraduate	4 or more hours	2-3 hours	1 hour
Graduate	3 or more hours	2 hours	1 hour
Graduate Assistant	2 or more hours	1 hour	---
Eight Week Summer Session			
Undergraduate	6 or more hours	3-5 hours	2 or less hours
Graduate	5 or more hours	3 4 hours	2 or less hours

rol ed at other inst'tutions and or in corre spondence courses, and or extension classes while enrolled at Arizona State University. However, the student is urged to seek advise ment pr or to concurrent enrollment to assure orderly progress toward a degree. If total credits exceed the maximum course load, prior permission must be granted by the college standards committee. (See Course Loads, page 39).

Traveling Scholar Program. The Traveling Scholar Program is a cooperative program be tween the three State universities designed to enab e students to take advantage of programs or specia resources that are not available at their own institution. Any undergraduate stu dent with a 2.50 GPA or graduate student with a 3.00 GPA enrolled *full time* at Arizona State Univers'ty, Northern Arizona University or University of Arizona may be designated a Traveling Scholar by prior mutual agreement of the appropriate academic authorities at both the sponsoring and hosting institution. Contact the University Registrar for addi tional information and the application form.

Attendance. The instructor has full authority to make decisions regarding attendance.

Withdrawal from the University. There is only one procedure by which a student may officially withdraw from *all* classes after hav'ng paid registration fees. The student must initiate an official withdrawal from the University by appearing in person or by ad dressing a signed request to the Office of the Reg'strar, Arizona State University. The date of the officia withdrawal is always the date the withdrawal form or letter is received.

If a student withdraws before the end of the guaranteed W period, (the first six weeks of the semester), the W will be automatically re corded for al classes for which the student has registered. The student s eligible for a refund of fees pa d in accordance with the refund schedule at the time of withdrawal.

If a student withdraws after the guaranteed W period, the instructor of each course for which the student has registered will receive a notice of the date of withdrawal and a W or E will appear on the final class list for each class The instructor's assignment of a W or E depends upon the student's status in each course at the time of official withdrawal.

For additional nformation regarding spe cific dates locations, refer to the *Schedule of Classes*

No one will be permitted to officially with draw from the University or conduct any reg istration transaction in the last two 2 weeks of the semester.

University Degree Requirements

Students must apply for graduation within the semester they earn their 87th hour. If a student has not met the above requirement, that student will be prevented from further registration until it is completed. Prior to obtaining an applicat'on and procedural information from the Graduation Office (Moeur Building 134) payment of graduation filing fees must be rendered at the University Cashier. (See page 29 for detailed fee information.)

Credit Requirements. A minimum of 126 semester hours is required for graduation with a baccalaureate degree. A minimum of fifty (50) semester hours in upper division courses are required for graduation.

Not more than 30 hours of credit in correspondence courses and/or by comprehensive examination will be accepted for credit toward the baccalaureate degree.

English Proficiency Requirement. ENG 101 and 102 or ENG 105 are required for graduation from Arizona State University in any baccalaureate program. (See page 28.)

Transfer students from other Arizona colleges or universities can determine the acceptability of their English composition courses by referring to the most recent *Ari zona Higher Education Course Equivalency Guide*. Transfer students from out-of-state should file a petition with supporting documentation with the Director or Assistant Director of Freshman English. These petitions should be filed early enough for the student to be able to enroll in an additional composition course, if required to do so.

Grade Point Requirements. The minimum cumulative grade point average must be 2.00 for all courses taken at Arizona State Univer sity for a baccalaureate degree.

Resident Credit Requirements. Resident credit refers to a course which is offered in a regular semester or summer session. A minimum of 30 semester hours earned in resident credit courses at Arizona State University is required of every candidate for the baccalaureate degree. The final 12 semester hours immediately preceding graduation must be of resident credit.

Determination of Catalog Requirements. The *General Catalog* is published once every two years. Requirements for a department, or college, or the University as a whole may change and are often upgraded.

In determining graduation requirements, a student may use only one catalog.

A student whose attendance at the University has not been interrupted will graduate under the curriculum, course requirements, and regulations for graduation in effect at the time of admission to the University. A student may choose to graduate under any subsequent Catalog issued while the student is in continuous attendance.

A student who has been readmitted (page 23) will graduate under the curriculum, course requirements, and regulations for graduation as stated in the *Catalog* at the time of readmission or thereafter while in continuous attendance.

Petition for Waiver of Degree Requirements.

Any student wishing to have a college or university degree requirement waived must petition the standards committee of the college in which the student is enrolled. In addition, waivers of university degree requirements must be approved by the University Standards Committee.

University Standards Committee. This committee advises the Office of the Vice President for Academic Affairs regarding undergraduate student petitions which concern universitywide academic requirements. These include but are not limited to requirements on the amount of transfer credit, graduation requirements, limits on credit by examination and requirements for a second baccalaureate degree. In order to petition for a waiver of such university requirements, the normal department and college forms and procedures will be used, prior to being forwarded to the Office of the Vice President for Academic Affairs.

General Graduation Information

Graduation with Academic Recognition. An undergraduate student must have completed at least 60 semester hours of resident courses at Arizona State University to qualify for graduation with academic recognition for each baccalaureate degree. A student with a cumulative grade point average of: 3.40 - 3.59 will graduate *cum laude*, 3.60 - 3.79 will graduate *magna cum laude*, and 3.80 - 4.00 will graduate *summa cum laude*. The cumulative grade point average for these designations will only include all course work taken at Arizona State University. All designations of graduation with academic recognition will be indicated on the diploma and the student's permanent record. Graduation with academic recognition applies only to undergraduate degrees.

Second Baccalaureate Degree. The student seeking a second baccalaureate degree must meet admission criteria for that degree. To obtain a second baccalaureate degree, a student must successfully complete a minimum of 30 additional hours of resident credit and must meet all degree and University requirements of the second degree.

More than one baccalaureate degree may be pursued concurrently, if prior approval is given by the standards committee(s) of the college(s) involved. In any case, a minimum of 30 additional hours is required.

Graduate Degrees. See section of this *Catalog* headed "Graduate College" and "College of Law" for graduate degrees offered and statements of requirements for graduate degrees. A separate *Catalog* may be obtained from the Graduate College.

Applications for Teaching Certificates. Applications for teaching certificates should be obtained from the office of the Director of Student Services in the College of Education.

Western Interstate Commission for Higher Education (WICHE)

For Arizona residents who wish to attend professional schools of dentistry, veterinary medicine, occupational therapy, optometry, and osteopathy in one of the other western states, Arizona has joined with the other western states to create the Western Interstate Commission for Higher Education through whose effort and agency qualified Arizona residents may attend schools in these other states at essentially the same expense to the students as to residents of the state in which the school is located. Students must have maintained at least average grades in their pre-professional work and must have been legal residents of Arizona for at least the last five years. Recipients are required to return to Arizona to practice or to repay a portion of the funds expended in their behalf.

For further information and applications, interested students should contact Dr. Odus Elliot, Certification Officer, Arizona Board of Regents, 1535 West Jefferson, Phoenix, Arizona 85007, (602) 255-4082, or Dr. Brice W. Corder, Assistant Dean, College of Liberal Arts, Pre-Health Professions Office, SS 107, (602) 965-2365.

Student Services

The University provides a variety of services available to enrolled students which are designed to meet their needs. While some relate to the academic concerns of students, others are designed to help the student in personal, emotional, economic, and health areas. Most of these services are free. A full program of student activities contributes to student learning experiences outside of the classroom.

Housing

The residence hall system includes 14 residence halls housing approximately 5,100 students. Residence halls contain a variety of facilities such as study areas, TV lounges, conversation lounges, and coin-operated laundry areas. Professional and trained student staff provide residents with assistance in all aspects of residence hall living. Representative student government provides opportunities for residents to become involved in a wide range of hall activities through the Residence Hall Association.

Application. Residence hall application information may be obtained from the Housing Office, 110 Memorial Union. Students desiring residence hall accommodations should apply *at least six months in advance.* Demand for on-campus housing exceeds supply. Early application is imperative. Only students admitted to the University may live in a residence hall; however, applications are accepted prior to official admission.

Residence hall assignments are made based upon the date of receipt in the Housing Office of the completed application, contract, and $50 deposit. Room reservations must be claimed by dates outlined in the contract or they will be automatically cancelled. Room occupancy is contingent upon formal University admission and continued enrollment.

Application information contains a description of residence hall meal services. A variety of meal options is available.

Disabled students may reside in residence halls if they are able, through their own efforts or with assistance provided by an attendant, to carry on routine tasks of daily living. A limited number of specially modified rooms is available to students whose disability requires such assignment. Requests for such assignment should be noted on the application.

Student Health Service

This service is staffed by physicians, nurse practitioners and registered nurses. Support services include laboratory, X-ray, pharmacy and clerical personnel.

Health Service Center. Services are available to students during posted hours. Extended gynecological services are available during regular clinic hours with significant emphasis on education. General medical, mental health and medical specialty consultant services are part of the Student Health Service out-patient clinic. Appointments are encouraged for the use of these services. Students identified as having either an uncompensated psychiatric illness or an illness which can be hazardous to the safety of other persons may be withdrawn temporarily or permanently from the University.

Financial Responsibilities. All students registered for 7 hours or more are entitled to Health Service care according to established policies. Students carrying less than 7 hours are charged an additional fee for each clinic use. Students may be referred to consultant specialists when the University physicians consider it advisable, but such expense must be borne by the student. When hospitalization is considered necessary, the University assumes no financial responsibility.

Student Insurance. Insurance policies available through the Health Service help defray the cost of accidents or any necessary hospitalization. Insurance coverage is mandatory for international students. All students

enrolled at the University are eligible for student health insurance coverage which can be purchased during registration or through the Student Insurance Office located in the Student Health Service building. Dependents are not eligible for treatment at the Student Health Service but are eligible for student health insurance coverage. Some form of health insurance is strongly recommended for all students.

Counseling Service

A staff of psychologists is available for confidential interviews. Appointments may be made to discuss personal, vocational, academic and social concerns, understanding of self and evaluation of long-term goals. Increased self understanding often offers students the opportunity to make more effective use of their intellectual and personal resources. Call or stop by the lower level of the Agriculture Building.

Counseling does not involve telling the student what to do; the student makes the decisions. Thus, emphasis is placed on the ultimate responsibility of individuals conducting their own lives and making the most of their opportunities.

Group counseling is also available. This allows students the opportunity to explore and share their problems with other students.

The Counseling Service does not offer academic course or program advisement. This is a service offered by faculty advisors.

Dean of Students Office

The Dean of Students Office is concerned with the total development of the student through programs and activities which will enhance the ASU educational experience. The office provides student assistance, student leadership and organizational development. Program and service areas include: Student Leadership and Paraprofessional Program; ASU Student Foundation; Advisement of Interfraternity Council, Panhellenic Council, Minority Student Organizations and Academic Honoraries; Registration and Facility Scheduling for Student Organizations; Student Conduct; Exit Interviews and Graduate Student Personnel Internships.

The Dean of Students Office works closely with the academic and student support service areas of the University to make sure each student is aware of and uses available resources. Staff members act as advisors, ombudsmen, and as liaisons with other departments. This office is one of the major information and referral points on campus and is located in Matthews Center 138.

Career Services

The office of Career Services assists students and alumni in career planning, development and employment. Candidates seeking assistance are encouraged to register in the appropriate division both for contacts with employers and the process of self directed placement.

The Business, Industrial and Governmental Division serves graduating students and alumni who are seeking professional positions in these areas. Credentials are maintained five years from date of latest use.

The Educational Division assists graduating students and alumni in obtaining teaching and administrative positions in elementary schools, secondary schools and institutions of higher education. Credentials are maintained ten years from date of latest use.

The Career Resource Division communicates up-to date information helpful to the faculty and staff who work with students still making career decisions.

In addition to these divisions, other services available include off campus student part-time and summer jobs, advisement for the disabled student, career coordinated and employment development.

Special Services Program

Special Services provides a major educational thrust for low income and ethnic minority students through its programs.

Disabled Student Program. Educational support available includes academic, career and personal counseling, campus orientation, assistance with library research and adaptation of classroom materials, nter preters notetakers, readers, testing, adapted recreation and physical education, as well as an intra-campus cart system and van transportation for educational needs.

Educational Opportunity Center. A community service of ASU which focuses on low income and ethnic minority c ients Clients receive career vocational testing and guidance and are assisted in the procurement of admission and financial aid at an appropriate post secondary institution. Services are free. E.O.C. has a main office in central Phoenix and satellite offices around Maricopa County.

Educational Opportunities Program. The Educational Opportunities Program provides direct academic tutorial support to any

student experiencing academic difficulties. Services include a learning skills center which houses diagnostic testing, course advisement, orientation and a remedial math laboratory. Mini courses are available in specific problem areas requiring individual concentration and self-instruction under the guidance of a tutor. EOP strives to develop within each of its participants a sense of academic discipline while reinforcing academic proficiency and pride in personal achievement.

Upward Bound. Upward Bound provides eligible high school participants an innovative and stimulating curriculum during his/her high school years. A specially-designed program for high school graduates which emphasizes practical university survival is included in the curriculum. The primary goal of Upward Bound is to provide the academic foundation for the successful transition to the college campus upon high school graduation.

Veterans Affairs Office

This office is a complete educational service center for U.S. Veterans and their eligible dependents. Counseling is available regarding admissions, registration, veterans benefits, and academic plus other advisement. Veterans Affairs programs serve the State of Arizona by advising all interested veterans and dependents regarding educational benefits and their optimum use. The program also assists veteran students to obtain suitable paid tutors, when needed, using their federal benefits. This office also has a College Preparation and a GED Program for eligible veterans.

Veterans must make adequate grade-point average and semester hour progress towards their academic program for continued funding by the Veterans Administration. The University must report this progress each semester.

Veterans programs are maintained by a cooperative arrangement between Arizona State University, the State of Arizona and the United States Government.

Associated Students

The Associated Students of Arizona State University is the student government for the University. Associated Students has a strong presence at the University in a variety of ways. It is the official representative of the student body in matters of University governance and budgeting. Programs and services include: the Concert Series; Special Events Board; Film Series; Graduate Student Association; Faculty/Course Evaluation Program; Minority Affairs Board; Women Services Board; Lecture Series; Tenants Association; Graphics and Advertising; Bike Co-op; Campus Services Committee; College Councils and the Student Senate; Executive Committee; Intramurals/Club Sports/Recreation, including 60 intramural sports for men and women; and Legal Services.

Student Organizations

Student organizations offer the opportunity to participate in leadership experiences and to explore areas of specific interest. Students are encouraged to consider the values of membership in an organized group. Each of the approximately 300 existing student organizations has its own membership requirements and University advisor. More detailed information regarding these organizations may be obtained from the Dean of Students Office.

Student Life and Activities

Listed below are some of the areas which provide programs and activities for students as participants or spectators.

Fraternities and Sororities. Sixteen sororities and 21 fraternities offer a range of opportunities for interested students. Programs are coordinated by the Interfraternity Council and Panhallenic Council to foster communication between houses, reward scholastic achievement, and promote university and community service projects

Music. Performing organizations with the School of Music provide opportunities for involvement and credit, including symphony orchestra, bands, university choral organizations and Lyric Opera Theatre.

Dance. Programs and concerts are presented by members of the University Dance Theatre. Interested students should arrange to audition.

Forensics. A Sun Devil Forensic squad, associated with Pi Kappa Delta, national forensic honorary, travels to trophy tournaments across the country. Permission of the Director of Forensics required.

Interpreters Theatre. Participants write, compile, and perform scripts for presentation in diverse on and off campus settings through the Department of Communication.

Theatre. The University Theatre presents six to ten faculty-directed productions and the Student Experimental Theatre produces six student directed productions each year.

Religious Activities. Various religious centers representing most major religious denominations are available in Tempe and provide students with the opportunity to participate in programs of religious worship and to meet other students through social activities.

Intercollegiate Athletics. The University is a member of the National Collegiate Athletic Association, the Pacific Athletic Conference (PAC 10) and Western Collegiate Athletic Association. Under the regulations of the Board of Regents, the respective association or conference listed above, and the University, intercollegiate athletics at Arizona State University is governed by a board of faculty, students, and staff. Policies are administered by the Department of Intercollegiate Athletics. All athletic grants-in-aid and scholarships are administered by the faculty committee on scholarships and student aid.

Memorial Union

The Memorial Union is a community center for all members of the University—students, faculty, administration, staff, alumni, and their guests. The Union offers a variety of services and facilities as well as a diverse program of cultural, educational, social and recreational activities. The building houses comfortable lounges, two ballrooms, a TV room, a movie house, an art gallery, and bowling lanes and other facilities in the Recreation Center. Diversified dining and meeting rooms are available for use by officially registered University organizations, departments and colleges. Reservations for the use of these facilities are made in the MU Reservation Office. The MU Information Desk provides numerous services to the university community and general public.

Alumni Association

Founded in 1894, the Alumni Association involves graduates and former students throughout Arizona and around the world. It communicates with all alumni and provides services to dues-paying members. The Alumni Center (601 E. Apache Blvd.) maintains more than 110,000 files of graduates. The Alumni Association strives to promote effective interest in and loyalty to Arizona State University on the part of alumni and the general public.

College of Liberal Arts

Guido G. Weigend, Ph.D.
Dean

The College of Liberal Arts provides the student with an opportunity to obtain a broad, ba anced, liberal education. In order to guide his her life intelligently in a highly complex and rapidly changing world, a person must have an understanding of modern science, of the roots of civilizations, of the nature of our present world, and of the expression of this world in literature, philosophy and the arts. The L'beral Arts College attempts to develop the qualities of mind and impart the types of knowledge that will enable the student to understand the world in all its complexity and variety. As a consequence, the College does not, for the most part, offer train ng designed merely to prepare the student to take on a par ticular ob; rather, it offers breadth and depth of education which will make the student at tractive to employers in a great variety of pri vate and public enterprises as well as prepare h m or her for a culturally enriched life.

Within the framework of the curriculum, students, with the assistance of faculty ad visors, determine their own progress to fit their particular aims. Vocational interests are taken into consideration within this context, and stu dents may prepare for professional schools, graduate work, or particular careers. Final re sponsibility for meeting the requirements for graduat on in a chosen field rests with the student.

Degrees

At the undergraduate level, instruction in the College of Liberal Arts offers programs leading to the degrees of Bachelor of Arts and Bachelor of Science.

The curr'cula for these degrees are designed to give the student a broad, general back ground n the principal fields of human knowledge and at the same time provide for a rea sonable amount of specialized training in a selected area. The curriculum for the Bachelor of Arts degree emphasizes breadth of studies, while the curriculum for the Bachelor of Science degree permits a somewhat greater extent of specialization in a selected area of scientific endeavor

Admission to the College of Liberal Arts

Any student who has met the minimum requirements for admission to the University (see pages 18-22) and who wishes to major in a subject offered within the College of Liberal Arts, or who wishes to register in Pre-Secondary Education will be admitted to the College of Liberal Arts.

Any student with a cumulative grade point average of at least 2.0 who is currently registered in another college at Arizona State Uni versity and who wishes to major in a subject offered within the College of Liberal Arts or to register in the pre professional curriculum listed above may transfer into the College by making application in the Dean's Office, Social Sciences Building, Room 111.

Transfer Credits

Students from accredited four year institutions of higher education ordinar ly will be given credit, hour for hour, for work successfully completed in such institutions insofar as it ap plies to the requirements for the curriculum pursued at Arizona State University. Such credit will be accepted at the level indicated on the transcript of the transferring institution.

Courses transferred from two year (commu nity) colleges will not be accepted as upper-division credit Students are urged to choose their community college courses carefully, in view of the fact that a minimum of 50 semester hours of work taken at the University must be upper division credit (see page 40).

Majors. Programs leading to the Bachelor of Arts and Bachelor of Science degrees are offered by the College of Liberal Arts, with majors in the following subjects. Each major is administered by the academic department indicated.

MAJOR FIELD	DEGREE	DEPARTMENT
Anthropology	(B.A.)	Anthropology
Asian Languages (Chinese/Japanese)	(B.A.)	Foreign Languages
Biology	(B.S.)	Botany and Microbiology; Zoology
Botany	(B.S.)	Botany and Microbiology
Chemistry	(B.A.,B.S.)	Chemistry
Computer Science†	(B.S.)	Computer Science
Economics*	(B.A.,B.S.)	Economics
English	(B.A.)	English
Entomology	(B.S.)	Zoology
French	(B.A.)	Foreign Languages
Geography	(B.A.,B.S.)	Geography
Geology	(B.A.,B.S.)	Geology
German	(B.A.)	Foreign Languages
Health Science	(B.S.)	Health and Physical Education
History	(B.A.,B.S.)	History
Home Economics	(B.A.,B.S.)	Home Economics
Mathematics	(B.A.,B.S.)	Mathematics
Medical Technology	(B.S.)	Botany and Microbiology
Microbiology	(B.S.)	Botany and Microbiology
Philosophy	(B.A.)	Philosophy
Physical Education	(B.S.)	Health and Physical Education
Physics	(B.S.)	Physics
Political Science	(B.A.,B.S.)	Political Science
Psychology	(B.A.,B.S.)	Psychology
Radiology	(B.S.)	Botany and Microbiology
Religious Studies	(B.A.)	Religious Studies
Russian	(B.A.)	Foreign Languages
Sociology	(B.A.,B.S.)	Sociology
Spanish	(B.A.)	Foreign Languages
Speech and Hearing Science	(B.S.)	Speech and Hearing Science
Wildlife Biology	(B.S.)	Zoology
Zoology	(B.S.)	Zoology

†The Department of Computer Science is located administratively in the College of Engineering and Applied Sciences. The Bachelor of Science degree with a major in Computer Science is offered by both the College of Liberal Arts and the College of Engineering and Applied Sciences. Requirements differ according to college (see page 71 and page 219).

*The Department of Economics is located administratively in the College of Business Administration. The baccalaureate degree with a major in Economics is offered by both the College of Liberal Arts and the College of Business Administration. Requirements differ according to college (see page 71 and page 165).

Pre-Education Programs

The College of Liberal Arts offers pre-professional programs in cooperation with the College of Education. A student planning to pursue the degree of Bachelor of Arts in Education, Pre-Secondary, shall register in the appropriate department in the College of Liberal Arts until he has qualified for admission to his planned professional course of study. Pre-Secondary Education advisement is described on page 185. See the appropriate section of this catalog for detailed requirements of the program in Education.

Teacher Certification for Liberal Arts Majors-Secondary Education. A Liberal Arts student may obtain a Bachelor of Arts or a Bachelor of Science Degree in Liberal Arts and meet the State of Arizona requirements for teaching certification in Secondary Education. The student must meet all requirements established by the Arizona Department of Education, including professional education courses and directed teaching, and all the college and departmental requirements for the major degree program in the College of Liberal Arts. For further information regarding the curriculum or certification the student may consult the Department of Secondary Education, Office of Student Services, in Payne Hall (Ed B 2). The curriculum leading to the Bachelor of Arts in Education is described in this catalog on pages 187-192.

Advisement

Regular Advisement. A prospective student who already has selected a major field of specialization will ordinarily be assigned to an advisor selected from the faculty of the department offering that field. Questions relating to the assignment of an advisor should be taken either to the departmental office or to the Coordinator of Advisement, College of Liberal Arts, Social Sciences Building 111.

"Undecided" or "undeclared" majors. Students in the College of Liberal Arts are not required to select a major upon entering

Advisement for Other Pre-Professional Programs

A student who plans to enter one of the baccalaureate degree programs in the College of Liberal Arts, and who also plans to pursue post graduate training in a professional field, will ordinarily be assigned an advisor from the faculty of the department of his/her major field of study. Special advisement is available for students planning to enter the following fields:

Professional Field	Office Where Advisor Is Located
Bilingual Secretarial	Department of Foreign Languages
Dentistry*	Pre-Health Professions, SS 107
Foreign Service	Department of chosen major
Law†	Student Academic Affairs Office, SS 111
Medicine*	Pre Health Professions, SS 107
Ministry	Department of Philosophy
Occupational Therapy*	Pre-Health Professions, SS 107
Optometry*	Pre Health Professions, SS 107
Osteopathy*	Pre-Health Professions, SS 107
Pharmacy*	Pre Health Professions, SS 107
Physical Therapy*	Pre Health Professions, SS 107
Podiatry*	Pre Health Professions, SS 107

These professional programs are not majors in themselves; that is, there are no majors called 'pre medical' "pre law,' etc In each program the student must eventually select an established major in the College of Liberal Arts or in one of the other colleges

*Students preparing for a career in these areas should register with the Secretary in the Office of Pre Health Professions. No school in the State of Arizona offers a program in Dentistry, Occupational Therapy, Optometry, Osteopathy, or Podiatry Students interested in pursuing these professions should confer with the pre health professions advisor concerning out-of state schools where they may complete their training.

†Students preparing for a career in law should register in SS 111

the college as freshmen or at any time there after until the semester in which 60 semester hours are earned. Until such students have chosen a major they will be assigned advisors through the Student Academic Affairs Office of the College of Liberal Arts, located in the Social Sciences Building, Room 111. During the semester in which they earn 60 credit hours, or before, students in consultation with their advisors select their majors and transfer into the appropriate department. Thereafter, they receive advisement from a faculty advisor in that department. NOTE: Students who wish to enter a program of study which has a rigidly structured curriculum should be aware that delay in choosing a major initially could result in added time and cost in completion of requirements.

Pre-Secondary Education Advisement. A student who is entering the Pre-Secondary Education program and has selected a proposed major teaching field (see page 189) from those subjects offered by the College of Liberal Arts, will be assigned an advisor within the department offering the major subject. Questions relating to the assignment of an advisor may be taken to the Student Academic Affairs Office, Social Sciences Building, Room 111.

Program of Studies

Students construct their own programs of studies in accordance with the degree requirements set forth below.

Advisement and academic counseling are freely available both in academic departments and in the Student Academic Affairs Office of the College of Liberal Arts; however, it is the student's responsibility to be aware of the requirements for a degree program and to plan course selections accordingly, giving due regard to prerequisite courses.

Chains of Prerequisites. Prerequisite course numbers marked with a dagger (†) have further prerequisites. Each student is cautioned to be aware of the existence of such chains of prerequisites and to plan course selections accordingly. Failure to heed this warning may result in extra time and expense to complete degree requirements.

Degree Requirements

Course Load. The normal course load is 15-16 semester hours of credit. First-semester freshmen and entering transfer students are not permitted to register for more than 18 hours of credit in their initial semester. Other students who wish to register for more than 18 hours must have an average of at least 3.0 and must file a petition in the Student Academic Affairs Office, Social Sciences 111. Any petition for an overload in excess of 21 hours must be presented to the Standards Committee of the College. Unauthorized excess hours will be removed at random from the student's class list by administrative action.

Credit Requirement. All candidates for graduation in the Bachelor of Arts and Bachelor of Science degree curricula are required to present at least 126 semester hours of credit, of which at least 50 hours must consist of upper division courses. A cumulative grade point index of 2.00 is required for graduation.

English Proficiency Requirement. All students must demonstrate reasonable proficiency in written English. A student who receives a grade of "C" or better in both ENG 101 and ENG 102, or in ENG 105 or its equivalent, will be presumed to have demonstrated the necessary degree of writing proficiency. Students who receive a "D" in either course must successfully complete a written English Proficiency Examination. The examination will be given at least twice a year, and a student must take it during the semester immediately following the completion of ENG 102 or ENG 105 or the equivalent. A student who does not complete the examination successfully on the first try must enroll in an English course prescribed by the Director of Freshman English. A student who receives a grade of "C" or better in such a course will be considered to have satisfied the proficiency requirement. Otherwise, students must repeat the above procedure until they have demonstrated the necessary degree of writing proficiency. Any questions concerning the English Proficiency Requirement should be addressed to the Director of Freshman English. Foreign students whose native language is not English may substitute ENG 107, ENG 108 for ENG 101, ENG 102.

Foreign Language Requirement. For the degree of Bachelor of Arts, the College of Liberal Arts requires knowledge of one foreign language equivalent to the completion of two years' study at the college level. A student who desires to fulfill the requirement in whole or in part through foreign language study in secondary schools may do so in accordance with the equivalency principles explained under Foreign Languages, Placement, page 77. Students who transfer from other colleges with less than two years of credit in a foreign language will be placed in a course at the next level above the work completed.

Languages not taught at ASU may satisfy the foreign language requirement only if the student has passed a proficiency examination, or has transferred adequate credit from an approved college or university.

Students who have received their secondary education from a school where the language of instruction was other than English will be considered to have satisfied the foreign language requirement. Certification of this status will be made at the time of admission to Arizona State University. Questions should be addressed to the Foreign Credentials Evaluator in the Admissions Office.

The College of Liberal Arts does not require knowledge of a foreign language for the degree of Bachelor of Science. Some departmental curricula leading to the Bachelor of Science degree do, however, include knowledge of a foreign language among their degree requirements. Foreign languages taken to fulfill a departmental requirement for the Bachelor of Science degree may be used to satisfy the minimum General Studies requirement in Humanities and Fine Arts.

General Studies Requirement

In order to obtain a baccalaureate degree through the College of Liberal Arts, the student must take a minimum of 54 semester hours of credit in the subjects and areas listed below. Courses in the subject field of the major may not be used toward this requirement, but courses in related fields may be used even if they are considered to be part of the major requirement. Pass-Fail credit cannot be used for these courses.

The General Studies requirement for the College of Liberal Arts is more extensive than the minimum requirement for graduation from the University (see page 40). The latter requirement will automatically be fulfilled by any student who completes the requirement for Liberal Arts.

To assure breadth and encourage depth within the degree requirements, all Liberal Arts students must meet the following minimum distribution patterns in the following three areas:

1) Humanities and Fine Arts 12 semester hours,
2) Social and Behavioral Sciences 12 semester hours,
3) Science and Mathematics 12 semester hours,

and additional courses selected from the lists below for the total of 54 credits. Courses offered by any single department ASB/ASM, GCU/GPH and PGS/PSY may be used to fulfill the minimum respective requirement in *either* Social and Behavioral Sciences *or* Science and Mathematics, but not both.

Humanities and Fine Arts. Only courses offered by the following departments may be used toward fulfilling the minimum 12-hour requirement.

- Architecture (APH 100, 101, 313 and 314 and DES 100, 101, 200, 201, 313, 314 courses *only*)
- Art (ARH courses *only*)
- Communication (COM 241 *only*)
- Dance (DAH courses *only*)
- English (any course except ENG 101, 102, 105, 107, 108)
- Foreign Languages (any course except those below 300 used to satisfy the language requirement for the Bachelor of Arts degree)
- Humanities (HUP courses *only*)
- Music (MHL, MTC, and MUS courses *only*)
- Philosophy
- Religious Studies
- Theatre (THE courses *only*)

Social and Behavioral Sciences. Only courses offered by the following departments may be used toward fulfilling the minimum 12 hour requirement.

- Anthropology (ASB courses *only*)
- Economics
- Geography, Cultural (GCU courses *only*)
- History
- Political Science
- Psychology (PGS courses *only*)
- Sociology

Science and Mathematics. Only courses offered by the following departments may be used toward fulfilling the minimum 12-hour requirement. At least one course must include a scheduled laboratory of at least 30 class hours per semester in natural science. At least six hours must be taken in one department.

- Anthropology (ASM courses *only*)
- Botany and Microbiology (all BIO, BOT, and MIC courses)
- Chemistry
- Computer Science (CSC 100, 101, 181, 200, 210. May not be used to satisfy laboratory requirements)
- Geography, Physical (GPH courses *only*)
- Geology
- Mathematics (all MAT and STP courses; may not be used to satisfy laboratory requirement)
- Physics (PHY, AST, and PHS courses *only*)
- Psychology (PSY courses *only*)
- Zoology (all BIO, ENT, and ZOL courses)

Additional Courses. To complete the 54 hour requirement, additional courses may be taken from the lists above, and from the following optional group:

Aerospace Studies (maximum of 6 hours of ROTC credit)

Art (except ARE)

Communication

Dance (DAN 130, 230, 330 *only*; a max mum of 4 hours in DAN and PED activities courses)

Health and Physical Education (HES 100, 382; PED 105, 205, 305 [a maximum of 4 hours in PED and DAN activities courses ; PED 450 *only*)

Home Economics (CDE 232; DEH 171, 271, 272, 472, 474, FON 141; FAS 330, 331, 354, 357, 435; TXC 122, 424 *only*)

Interdisciplinary (LIA courses in Liberal Arts, see page 105)

Journa ism and Telecommunication

Justice Studies (maximum of 6 hours)

Leisure Studies (REC 160 only)

Military Science (maximum of 6 hours ROTC credit)

Music (except MUE)

Social Work (SWU 474 *only*)

Speech and Hearing Science

Theatre

Women's Stud es

Major. Each candidate for the degree of Bachelor of Arts or Bachelor of Science must complete requirements for a major, as estab lished by the department concerned. The spe cific course content of the major is selected by the student in consultation with the advisor under the rules and regulations of the department.

For the degree of Bachelor of Arts, the major and related fields requirement consists of a total of 45 semester hours of credit. A maxi mum of up to 36 semester hours may be re quired in the subject field of the major. Stu dents should consult departmental listings for specific requirements in major and related fields.

For the degree of Bachelor of Science, the major may require a maximum of 45 semester hours of credit in the subject field of the ma jor, plus additional related studies.

No credit will be granted toward fulfilling major requirements in any upper division course in the subject field of the major unless the grade in that course is at least a "C"

Special Credit Options

Pass/Fail Grade Option

I. The Pass/Fail option is intended to broaden the education of Liberal Arts undergraduates by encouraging them to take advanced courses outside their specialization. A mark of "P" contributes to the student's earned hours but does not affect the grade point average. A failing grade is computed into the GPA.

II. Only Liberal Arts students with 60 hours of credit may take courses under the Pass/Fail option.

III. The option may be used under the fol lowing conditions:

1. Enrollment for Pass/Fail must be indi cated during registration and may *not* be changed after the late registration period.

2. Students may *not* enroll for Pass/Fail in courses which are:
   a) Taken to satisfy the Foreign Language or English Proficiency requirements.
   b) In the student's major.
   c) Counted toward or required to supplement the major.
   d) Counted as Independent Study 499.
   e) Taken for Honors credit.
   f) Counted toward satisfying the 54 hours of General Studies.

3. A maximum of 12 hours taken for Pass/Fail may be counted toward graduation.

IV. Above option is not available to Liberal Arts students for courses offered by other colleges except for courses in economics offered by the College of Business Ad ministration.

Academic Standards and Retention

Standards. The College of Liberal Arts standards for grade point average (GPA) and the terms of probation, disqualification, rein statement, and appeal are identical with those of the University as set forth on page 36 of this catalog, except that the disqualified student is suspended for at least *two* regular se mesters at the University.

Academic discipline is one of the functions of the Student Academic Affairs Office, Social Sciences Building, Room 111. All students who are having academic difficulties of any kind should maintain close contact with this office.

Probation and Disqualification. Appeals with respect to academic probation or disqualification may be addressed to the Academic Standards Committee of the College of Liberal Arts. Petitions should be sub-

mitted to the Student Academic Affairs Office, Social Sciences Building, Room 111.

Special Programs

Honors Program. The College of Liberal Arts provides a full four-year Honors Program which affords the superior undergraduate with opportunities for an enhanced liberal arts education and in-depth experiences in his or her major field. Characteristic of the program is the personal attention given to each student by members of the Honors Faculty, who are selected from among the leading scholars and teachers in the College. In instructing specially-designed Honors courses, and in supervising individual study and Honors Theses, the faculty share an enthusiasm for working with talented and motivated students.

Admission to the Honors Program:

Entering Freshmen. Entering freshmen who are in the top 5% of their high school graduating class, or who have an ACT composite score of 27 or better, or who can demonstrate similar indications of academic aptitude, are invited to apply for admission to the program upon entrance.

Continuing and Transfer Students. A continuing or transfer student who has completed at least 15 credit hours of study with a 3.25 cumulative grade average or better may, with the recommendation of his or her academic advisor, apply for admission to the program

Retention in the Honors Program. An Honors student must maintain exceptionally high standards of performance while in the program, demonstrating evidence of progress toward satisfying the requirements for graduation from the program (see below). It is expected that an Honors student will register for at least one Honors course each semester in order to obtain full benefit from the program. An Honors student may leave the program at any time. All courses taken while in the program will count toward graduation from the University.

Graduation With Honors. To graduate with Honors, a student must:

Attain a cumulative grade average of at least 3.40;

Satisfy departmental major requirements, including major honors requirements where they exist, and College General Studies requirements;

Complete a minimum of 18 hours of Honors credit, of which at most 6 can be XXX-493 (Honors Thesis), and of which at least 6 must be upper-division credit in non-major areas;

Write a senior thesis and pass an oral thesis defense.

For additional information, the interested student should contact the Director, Honors Program, College of Liberal Arts, Social Sciences Building, Room 103.

Interdisciplinary Studies

Within the framework of a regular major chosen from those listed on page 47, students may, in consultation with their advisors, use courses outside the major subject field to put together a program of interdisciplinary studies. Recommended programs in American Studies, Asian Studies, Islamic Studies, Latin American Area Studies, and Women's Studies are described below. Students may contact the Dean's Office for further information.

American Studies. The development of insight into the complexities and inner workings of modern American society is a unique interdisciplinary task for which universities are especially suited. The Arizona State University program fosters and coordinates activities with this objective. The program emphasizes courses in the study of history, cultures and problems of specific groups in America.

In addition, the program includes seminars, public lectures, and related extracurricular activities. Inquiries about the program should be directed to the Coordinator of the American Studies Program, Social Sciences Building, Room 109.

Asian Studies. The Center for Asian Studies is designed to encourage and coordinate student, faculty and community study of the area through the support of public lectures, symposia, research and curricular development. Interdisciplinary programs have been developed, both undergraduate and graduate, to prepare students for governmental or private employment or for admission to graduate programs at other institutions.

At the undergraduate level, programs can be devised leading to an emphasis within a major. Example: History Asian Studies, Anthropology Asian Studies. Any department in the University may, at its discretion, accept an Asian Studies component. The goal is to offer programs which, while insuring a rigorous training for students in their chosen field of study, will enable them to relate their discipline to Asian conditions and problems.

The requirements for Asian Studies in such an emphasis are 30 semester hours of wholly

Asian content courses, and knowledge of an Asian language. The 30 semester hours of Asian courses shall be selected from the list of Asian courses drawn up by the Center. These courses may be used where appropriate to fulfill General Studies requirements. Knowledge of an Asian language shall comprise the equiv alent of 20 semester hours of credit in Chinese, Japanese, or any other Asian language approved by the Center for a particular individual program. Fulfillment of these requirements will be recognized on the tran script by a bachelor's degree with a major in "(Discipline)-Asian Studies."

At the graduate level, the Center for Asian Studies cooperates with a number of departments in master's and doctoral programs. At the M.A. and Ph.D. levels the cooperating departments are Political Science, History, An thropology, Geography and Sociology. At the M.A. level only, the departments include Philosophy and Religious Studies. In cooperation with the College of Education, the Center offers two graduate programs to prepare teachers of Asian Studies for the high schools and community colleges. One program is the Master in Education—Secondary Education with a major field in Asian Studies consisting of 30 credit hours: 15 each in Asian Studies and Education. The other is Teaching Specialist in Asian Studies (within the Education Specialist degree program), which requires 36 hours beyond the M.A. degree: 18 each in Asian Studies and Education. Consult the Chair of the Secondary Education Department or the Director of the Center.

The Center cooperates and coordinates with other university centers in the summer or in one-year study programs in several Asian countries.

The Center also publishes occasional papers or reports and symposium proceedings, all of which are distributed throughout the world.

For further information consult the Director of the Center for Asian Studies.

Asian Studies Courses. *For course descriptions refer to the course offerings by depart ments.*

ARH	201	Non-Western Art
ARH	294	Special Topics, where appropriate
ARH	470	Art of India
ARH	471	Art of China
	472	Art of Japan
ARH	474	Chinese Painting
ARH	494	Special Topics, where appropriate
ARH	498	Pro-Seminar, Chinese Art/Islamic Art
ARH	591	Seminar, Chinese Art/Islamic Art
ARH	598	Special Topics
ASB	323	Peoples of Asia
ASB	325	Peoples of Southeast Asia
CHI	101	Elementary Chinese
	102	
CHI	201	Intermediate Chinese
	202	
CHI	205	Chinese Calligraphy
CHI	294	Special Classes
CHI	309	Chinese Conversation
	310	
	311	
	312	
CHI	313	Advanced Chinese
	314	
CHI	321	Chinese Literature
	322	
CHI	413	Introduction to Class cal Chinese
	414	
CHI	492	Special Courses
	493	
FLA	420	Fore gn L'terature in Translation: One Chinese Section
FLA	150	East Asian Cultures
FLA	420	Foreign Literature in Translation One Japanese Section One Chinese Section
GCU	326	Geography of Asia
GCU	428	Geography of the Middle East
GCU	531	Geography of the Far East
HIS	105	China: Literature and Revolution
HIS	106	The People's Republic of China
HIS	305	Asian Civilization
	306	
HIS	470	Chinese Cultural History
HIS	471	Diplomatic History of East Asia
	472	
HIS	473	China
	474	
HIS	475	Modern India
HIS	476	Modern Southeast Asia
HIS	477	Japan
	478	
HIS	479	The Chinese Communist Movement
HIS	494	Special Topics: Asian History
HIS	498	Pro-Seminars on Modern China and Japan
HIS	590	Reading and Conference: China
HIS	591	Seminar: China

HUP	150	Introduction to East Asian Cultures
HUP	313	Comparative Arts of the East China
HUP	314	Comparative Arts of the East India or Japan
HUP	505	Esthetic Principles in Eastern
	506	Human ities
HUP	507	Comparative Esthetics: East West
JPN	101	Elementary Japanese
	102	
JPN	201	Intermediate Japanese
	202	
JPN	206	Calligraphy
JPN	294	Special Courses
JPN	309	Intermediate Japanese Conversation
	310	
JPN	311	Japanese Conversation
	312	
JPN	313	Advanced Japanese
	314	
JPN	321	Japanese Literature
	322	
JPN	414	Introduction to Classical Japanese
JPN	492	Special Courses
	493	
	494	
	499	
	590	
MHL	545	World Music II
PHI	319	Indian Philosophy
PHI	321	Buddhist Philosophy
POS	445	Asian Political Thought
POS	448	Comparative Politics of China and Japan
POS	452	Government and Politics of China
POS	458	Government and Politics of South and Southeast Asia
POS	468	Comparative Asian Foreign Policies
POS	250	Special Courses
	492	
	493	
	498	
	499	
	590	
	591	
	598	
REL	121	Religions of the World
REL	351	Hinduism and Buddhism
REL	352	Confucianism and Taoism
REL	451	Religions of India
REL	453	Zen
REL	454	Hindu Religious Thought
REL	455	The Religion in Japan
REL	598	Special Topics
SOC	498	Pro Seminar: Topics to be selected
SOC	590	Pro-Seminar: Topics to be selected
SOC	592	Pro-Seminar Topics to be selected
THE	425	History of the Oriental Theatre

Health Physics. Health physics is a profession devoted to the protection of humans from potential radiation hazards. Health physicists are concerned with areas of activity in research, industry, education, and enforcement of governmental regulations. Some health physicists choose to specialize in only one of these areas, but most health physicists are engaged in all four.

The curriculum of Health Physics involves course work in the Colleges of Liberal Arts and of Engineering and Applied Sciences. The purpose of the concentration is to serve under graduate students who wish to prepare themselves for a career in Health Physics. To qualify for professional status, a health physicist needs a Bachelor of Science degree in one of the physical or life sciences and a group of specialized courses in physics, mathematics, chemistry, engineering, and biology or zoology.

A Certificate of Concentration in Health Physics is awarded for the successful completion of a Bachelor of Science degree in a physical or life science which includes the following course work: MAT 270†, 271, 272 (or 290†, 291), 420, 274; PHY 115†, 117, 116, 118, 361; ECE 122†, BIO 101, 102; ZOL 360†; MEE 411†, 412, 417.

The following courses are recommended but not required: CHM 447†, 448; MEE 413; BIO 340†, ZOL 241. Any of the required or recommended courses may be used, where appropriate, to fulfill major field requirements, related field requirements, and General Studies requirements.

Inquiries about the program should be addressed to the Pre-Health Professions Office, Social Science Building 107, where academic advisement is available.

Islamic Studies. Although the Muslims of the Middle East and Africa are frequently in the news, the West has much to learn about their history and cultures. Arizona State University faculty members with special expertise in Islam offer courses in several departments, as well as an interdisciplinary course on Islamic Civilization. Numerous programs, guest speakers and art exhibitions on the Islamic world are brought to the campus. For further

information, contact the Department of Religious Studies, LL B-605.

Islamic Studies Courses. *For course descriptions refer to the course offerings by departments.*

ARH	105	Introduction to Islamic Art
ARH	476	Islamic Architecture
ARH	477	Islamic Painting
ARH	478	Persian Art
ARH	598h	Pro-Seminar: Islamic Art
ARH	591h	Seminar: Islamic Art
GCU	428	Geography of Middle East
HIS	437	Eastern Europe and the Balkans
HIS	439	The Modern Middle East
HIS	456	Iberian Empires
REL	312	Western Religious Traditions
REL	460	Religious Traditions of Islam
REL	464	The Sufi Way

ARA, HUP, or REL 365 Islamic Civilization Team-taught interdisciplinary course.

For special topics courses (494) and independent studies (499) on Islamic and Middle Eastern subjects, consult departments indicated above.

Jewish Studies. The Jewish Studies program is designed to 1) examine the history and culture of the Jews; 2) provide a model for interdisciplinary teaching and research; 3) generate and facilitate research on Judaica; 4) provide the community with programs, courses, and research furthering the understanding of Judaica; 5) stand as an example of the University's commitment to a program of meaningful ethnic studies on a firm academic base; and 6) provide a Certificate of Concentration in Jewish Studies.

The Certificate of Concentration in Jewish Studies may be combined with a major in any college. It consists of 21 hours, including REL 211 and six additional courses from the approved list, of which no more than two may be in the field of the major. The course of study must be approved by a member of the Jewish Studies Faculty Advisory Board. For a list of available courses and assignment of an advisor, refer to the Department of History or the Department of Religious Studies.

Latin American Area Studies. Arizona maintains an ever-growing interest in Latin America that draws upon an extensive experience of historical and geographical ties. The Center for Latin American Studies is the focal point for these interests at Arizona State University, and through its program endeavors to serve the University community and maintain strong ties with various Latin American organizations in the state and the nation. Principal activities are coordinating Latin American Studies at the undergraduate and graduate levels; sponsoring student exchange programs, numerous seminars and conferences; publishing a wide range of professional materials; and facilitating research about the region.

The Latin American Area Studies program is designed to give students an understanding of public affairs, culture, and national trends in Latin American nations and is offered as a combined degree program in cooperation with the departments of Anthropology, Economics, Geography, History, Political Science, and Foreign Languages (Spanish), as well as the College of Business Administration. In this program the student majors in one of the cooperating departments, completing the degree requirements of that particular discipline. At least 30 upper division semester hours of the total program must be in Latin American content courses, 15 hours in the major and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required. The 15 hours required in other disciplines shall be selected from the list of Latin American content courses established by the Center (a list of courses follows). The program must be approved by the Center for Latin American Studies. Fulfillment of the requirements of this program of study is recognized on the transcript as a bachelor's degree with a major in "(Discipline) — Latin American Studies."

Master's degree students in the departments of Geography, History, Political Science, or Spanish may elect an emphasis in the field of Latin America. Two departments, History and Foreign Languages, offer Latin American areas of focus at the Ph.D. level. A cognate minor in Latin American studies is also available in various disciplines.

The Center administers student exchange programs with the Catholic University of Bolivia and three Mexican universities—the Autonomous University of Guadalajara, the Autonomous University of Nuevo Leon, and the University of Sonora. Each semester several ASU students are selected to receive credit for course work taken on the Latin American campuses while Bolivian and Mexican students study here.

Each year the Center typically sponsors several major conferences as well as a number of seminars, often featuring presentations by scholars from Latin America. The Center annually publishes several scholarly books as

well as shorter monographs in its Special Studies Series.

The Center is a member of the Arizona-Mexico Commission, the Border States University Consortium for Latin America, the Consortium for Latin American Studies Programs, the Latin American Studies Association, the Rocky Mountain Council on Latin American Studies, and the Pacific Coast Council on Latin American Studies. It also serves as the unofficial home of the ASU Association of Latin American Students.

The Center directly encourages research, not only through its publications program, but also through the maintenance of a Latin American newspaper reading room.

For further information consult the office of the Center for Latin American Studies, Room 213, Social Sciences Building.

Latin American Content Courses. *For course descriptions refer to the course offerings by departments.*

ARH	110	Introduction to American Art
ARH	403†	Pre-Columbian Art
ARH	406†	Mexican Art
ASB	321†	Southwestern Ethnology
ASB	335	Southwestern Anthropology
ASB	337	Archaeology of Mesoamerica
ASB	419†	Social Inequality
ASB	423†	Archaeology of South America
ASB	424†	Indians of Mesoamerica
ASB	479†	The Anthropology of Peasant Peoples
ECN	311†	Economic Development
ECN	331†	Comparative Economic Systems
ECN	336†	International Economics
ECN	371†	Latin American Economics
ECN	488†	International Monetary Economics
ECN	503	Theory of International Trade
ECN	570	Economics of Developing Nations
ECN	588	International Monetary Economics
GCU	323	Geography of Latin America
GCU	423†	Geography of South America
GCU	424†	Geography of Middle America
HIS	200	Latin American Civilization (not open to history majors)
HIS	380	History of the Mexican American
HIS	383, 384	Latin America
HIS	424	The Hispanic Southwest
HIS	430	20th Century Chicano History
HIS	456, 457	History of Spain
HIS	458	Age of Conquest: Latin America
HIS	459	Changes and Reform: Colonial Latin America
HIS	460, 461	Spanish South America
HIS	463	Intellectual and Cultural History of Latin America
HIS	464	The United States and Latin America
HIS	466, 467	Mexico
HIS	468	Brazil
HIS	514	Latin American Historiography
HIS	591	Seminar (Latin American History)
LIS	465	Library Materials for Minority Students
MCE	448	The Mexican-American Child
MCE	498	Minority Women
MCO	430	International Communications
MGT	459†	International Management
MGT	559	International Comparative Management
MHL	544	World Music I
MKT	331†	International Business
MKT	435†	International Marketing
MKT	591	Seminar (International Business)
POR	321†	Luso-Brazilian Literature
POR	472†	Luso-Brazilian Civilization
POS	438	Revolution and the Social System
POS	453	Government and Politics of South America
POS	454	Government and Politics of Mexico
POS	455	Government and Politics of Central America and the Caribbean
POS	460	World Politics
POS	463	Inter-American Relations
POS	465	International and Regional Organizations
POS	467	Comparative Defense Policy
POS	550	Comparative Governments
POS	591	Seminar (Comparative Government; International Relations)
SOC	401	Comparative Sociology
SPA	325†	Introduction to Hispanic Literature
SPA	421†	Spanish in the Southwest
SPA	424†	Masterpieces of Hispanic Literature
SPA	427†, 428†	Spanish-American Literature
SPA	429	Mexican Literature
SPA	454†	19th Century Spanish-American Narrative
SPA	455†	Spanish-American Modernism

SPA	456†	20th Century Spanish-American Fiction
SPA	457†	Contemporary Spanish-American Poetry
SPA	464†	Mexican-American Literature
SPA	471†	Civilization of the Spanish Southwest
SPA	472†	Spanish-American Civilization
SPA	485	Mexican American Short Story
SPA	486	Mexican American Novel
SPA	487	Mexican American Theatre
SPA	541	Spanish Language in America
SPA	570	Indigenous Literature of Spanish America
SPA	571	Colonial Spanish American Literature
SPA	572	Spanish-American Drama
SPA	573	Spanish-American Essay
SPA	574	Spanish-American Vanguard Poetry
SPA	575	Contemporary Spanish-American Novel
SPA	576	Contemporary Spanish-American Short Story
SPA	577	Regional Spanish-American Literature
SPA	578	Novel of the Mexican Revolution
SPA	579	18th Century Hispanic Literature
SPA	581	Latin American Popular Culture
SPA	591	Seminar
SPF	534	Education and Change in Developing Nations
TRA	463†	International Transportation

†Denotes prerequisites

Several departments offer additional Latin American content courses under the following designations: special topics 494, honors colloquium 497, pro-seminar 498, reading and conference 590, seminar 591, and special topics 598. Students should consult a schedule of classes for the availability of these courses. In addition, the University offers Latin American content courses for law students and doctoral students in several departments.

Medieval and Renaissance Studies. The Arizona Center for Medieval and Renaissance Studies (ACMRS) sponsors a visiting lecturer, graduate research assistantships, and conferences and symposia concerned with the Middle Ages and the Renaissance. This statewide Center, involving faculty at all three state universities, is an organized research unit, housed by the College of Liberal Arts in Social Science 224C. For further information contact the Director, ACMRS, SS 224B, Arizona State University, Tempe, AZ 85287; phone, 965-5900.

The *Journal of the Rocky Mountain Medieval and Renaissance Association (JRMMRA)* is sponsored jointly by the Colleges of Liberal Arts at both Northern Arizona University and Arizona State University.

In recognition of the need for period as well as subject area specialization, faculty members with research interests in Medieval and/or Renaissance Studies offer a number of courses from which students may develop an interdisciplinary course of study in Medieval and/or Renaissance topics. Through individual university departments, courses are offered in history, philosophy, humanities, religious studies, music, art, and literature (English, French, German, Italian, Scandinavian, and Spanish). For specific course information and advisement, see the following Medieval and Renaissance advisors:

Art	A. Gully
English	J. Brink
French	W. Hendrickson
German and Scandinavian	W. Senner
History	K. Dannenfeldt
History of Science	J. Maienschein
Humanities	B. Doebler
Italian	P. Baldini
Music	R. Reynolds
Philosophy	M. White
Religious Studies	R. Rader
Spanish	E. Friedman
Theatre	W. Akins

Women's Studies. The curriculum of Women's Studies involves courses from colleges throughout the University. The Women's Studies program is designed to:

1. Examine the central issue of the quality and shape of woman's experience;
2. Provide a model for interdisciplinary teaching and research;
3. Generate and facilitate research on woman's experience;
4. Provide the University and the community with programs, courses and research which acknowledge and expand the potential of women; and
5. Stand as a visible example of the University's commitment to change in the status of women—students, faculty and staff—within the University and the larger society.

A Certificate of Concentration in Women's Studies may be awarded for the successful completion of the introductory course, Women

and Society, plus 18 additional credits from the list of approved Women's Studies courses, only six of which may also be applied toward the student's major. Credit for additional related courses may be accepted upon petition to the Women's Studies Advisory Committee.

For some students in the College of Liberal Arts, the courses in this concentration may be accepted as fulfilling the related field require ments. Students who wish to take advantage of this option should consult the Director.

Inquiries about the program should be addressed to the Women's Studies Resource Center, Social Sciences 103, where the current list of approved courses is available. See page 104.

Solid State Science. As a separate academic unit within the College of Liberal Arts, the Center for Solid State Science is engaged in research in many aspects of the physics and chemistry of solids as well as solid state de vices. The Center operates modern research facilities, sponsors a colloquium series, maintains a library of research publications and works cooperatively with local industry While the Center itself does not grant degrees, it does provide opportunities for both graduate and undergraduate students to do research in this cross disciplinary area. Students would include this research activity as part of a program of study within one of the departments, normally Chemistry and/or Phys'cs, under the supervision of one of the faculty members of the department or of the Center.

Aerospace Studies

(Air Force ROTC)

PROFESSOR:
KECK (MAIN 340)
ASSISTANT PROFESSORS:
FLEIG, BONGARTS, ROGERS

Purpose. The Department of Aerospace Studies curriculum consists of the General Military Course for freshmen and sophomores (GMC-AES 101, 102, 201, 202) and the Pro fessional Officer Course for juniors and seniors (POC AES 301†, 302†, 401†, 402†). The goal of this professional education is to provide the foundation of military knowledge and skills needed by Air Force junior officers. Upon graduation, each student who satisfactorily completes the Professional Officer Course and degree requirements will receive a commission as a Second Lieutenant in the Air Force Reserve.

General Qualifications. Men or women entering AFROTC must: (1) be a citizen of the United States (noncitizens may enroll, but must obtain citizenship prior to commis sioning); (2) be of sound physical condition; (3) be at least 17 years of age for scholarship appointment or admittance to the POC. Additionally, scholarship recipients must be able to fulfill commissioning requirements by age 25. If designated for flying training, the student must be able to complete all commissioning requirements prior to age 26½; other categories must be able to complete all commissioning requirements prior to age 30.

Four-Year Program (GMC and POC). A formal application is not required for students entering the Four-Year Program. A student may enter the program by simply registering for one of the General Military Course (GMC) classes at the same time and in the same manner as other courses. GMC students receive 2.0 semester hours of credit for each AES 100 and 200 class completed; a total of 8.0 semester hours. GMC students not on AFROTC scholarship incur no military obligation. Each candidate for commissioning must pass an Air Force aptitude test and a physical examination and be selected by an in terview board of Air Force officers. If selected, the student then enrolls in the Professional Officer Course (POC) the last two years of the Air Force ROTC curriculum. Students normally attend a four week field training course at an Air Force base between the sophomore and junior year. Upon successful completion of the POC and the college requirements for a degree, the student is commissioned in the U.S. Air Force as a Second Lieutenant. The new officer then enters active duty or may be granted an educational delay to pursue gradu ate work.

Two-Year Program (POC). The basic re quirement for entry into the two year program is that the student have two academic years of college work remaining, either at the undergraduate or graduate level. Applicants seeking enrollment in the two-year program must pass an Air Force aptitude and medical examination, and be selected by an interview board of Air Force officers. After successfully completing a six week field training course at an Air Force base, the applicant may enroll in the Professional Officer Course in the Air Force ROTC program. Upon completion of the POC and the college requirements for a degree, the student is commissioned.

Qualifications for Admittance to the Professional Officer Course (POC). (1) For

the four-year student, successfully complete the General Military Course. (2) For the two-year applicant, complete a six-week field training course. (3) Pass the Air Force Officer Qualification Test (AFOQT). (4) Pass the Air Force physical examination. (5) Maintain the minimum grade point average required by the college.

Deposit. All non-contract students registering for Air Force ROTC are required to make a deposit of $20 with the military property custodian as the basis for issue of the prescribed uniform, textbooks, and other authorized materials. This deposit will be refunded at the end of each semester by the military property custodian.

Pay and Allowances. POC members in their junior and senior years receive $100 per month for a maximum of 20 months of Professional Officer Course attendance. Students are also paid to attend field training. In addition, uniforms, housing and meals are provided during field training at no cost to the student. Students are reimbursed for travel to and from field training.

Scholarships. Air Force ROTC offers scholarships annually to outstanding young men and women on a nationwide competitive basis. Scholarships cover full college tuition for resident and nonresident students as well as books, fees, supplies and equipment, plus a monthly tax-free allowance of $100. Scholarships are available on a 4-, 3½-, 3-, 2½-, and 2 year basis. To qualify for the four-year scholarship, students must be U.S. citizens and submit an application prior to December 15 of their senior year in high school. Interested students should consult their high school counselors or call AFROTC at ASU for application forms to be submitted to HQ. AFROTC, Maxwell AFB, AL., 36112. Male and female students enrolled in AFROTC at Arizona State University are eligible for 3½-, 3-, 2½, and 2 year scholarships. Those interested must apply through the Department of Aerospace Studies. Consideration is given to academic grades, score achieved on the Air Force Officer Qualifying Test and physical fitness. A board of officers considers an applicant's personality, character and leadership potential.

Flight Instruction Program. Senior cadets designated to enter U.S. Air Force Undergraduate Pilot Training after graduation participate in the Flight Instruction Program (FIP) during their last year in college unless they already have a private pilot's license. Each cadet receives 12 hours of instruction at

an FAA approved flying school at no expense to the student. This training also includes ground school instruction.

AEROSPACE STUDIES

AES 101 Aerospace Studies. (2) F
Introduction to U.S. Air Force organization, mission, doctrine, offensive and defensive forces. One lecture, 1 hour Leadership Practical Application (101L).

102 Aerospace Studies. (2) S
Background on strategic missile defense forces, general purpose and aerospace support forces in national defense. One lecture, 1 hour Leadership Practical Application (102L).

201 Aerospace Studies. (2) F
Historical survey of events, trends, and policies leading to the emergence of air power through WW II. One lecture, 1 hour Leadership Practical Application (201L).

202 Aerospace Studies. (2) S
Development of aerospace power from WW II to the present emphasizing the impact of limited war and technology on roles and missions. One lecture, 1 hour Leadership Practical Application (202L).

301 Aerospace Studies. (3) F
An integrated management course emphasizing the individual as a manager in an Air Force milieu. Individual motivational and behavioral processes, leadership, communication and group dynamics are covered. Two lectures, 1 hour Leadership Practical Application (301L).

302 Aerospace Studies. (3) S
Organizational and personal values, management of forces in change, organizational power, politics, managerial strategy and tactics. Two lectures, 1 hour Leadership Practical Application (302L).

401 Aerospace Studies. (3) F
Armed Forces as a technical element of society, with emphasis on the broad range of American civil-military relations; principles and techniques of communicative skills; the political, economic and social constraints on the national defense structure. Two lectures, 1 hour Leadership Practical Application (401L).

402 Aerospace Studies. (3) S
Formulation and implementation of U.S. defense policies; impact of technological and international developments on strategic preparedness in the overall defense policymaking processes. Two lectures, 1 hour Leadership Practical Application (402L).

403 Flight Instruction. (0) F,S
F ight instruction (12 total hours of dual and solo in struct on), 8 hours ground school. Prerequ site. Enrol ment in POC.

Anthropology

PROFESSORS:
BAHR, CLARK, DITTERT, MERBS, MORRIS, RUPPÉ, SCHOENWETTER, TURNER
ASSOCIATE PROFESSORS:
FOSTER (ANTH A 124), BRANDT, EDER, FIRESTONE, GAINES, MARTIN, NASH, STARK
ASSISTANT PROFESSORS:
AGUILAR, MARZKE, STEADMAN, WILLIAMS

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Anthropology—Consists of 45 semester hours of credit of which 30 must be in anthropology and 15 in related fields to be approved by the advisor in consultation with the student. Courses ASM 101, ASB 102, 311, 331, and one area course incorporating ethnography are required. Students may elect ASM 341, 342†, or 343 to fulfill the required course in physical anthropology. An additional 12 hours in an thropology will be approved by the advisor in consultation with the student. At least 18 semester hours must be in upper division courses. (See Foreign Language Requirement, page 77.)

Latin American Studies Combined Degree Program. (See Interdisciplinary Studies, page 54) Consists of the Bachelor of Arts degree requirements in Anthropology. At least 30 upper division semester hours of the total program must be in Latin American content courses including 15 hours in Anthropology and 15 in other disciplines. A reading knowl edge of Spanish or Portuguese is required and a reading knowledge of the other language is suggested. The program must be approved by the Center for Latin American Studies. Ful fillment of requirements is recognized on the transcript as a Bachelor of Arts degree with a major in Anthropology Latin American Studies.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Social Studies: Anthropology Consists of 63 semester hours of credit, of which 30 hours must be in the anthropology courses required for the Bachelor of Arts degree in Liberal Arts. Of the remaining hours, two groups of 15 hours are to be taken in related social sciences. Psychology or a single natural science may be used as one of the 15 hour fields. SED 480 is taken to provide the remaining 3 hours.

	Semester Hours
Anthropology	30
Social sciences	15
Social sciences or natural sciences or psychology	15
SED 480 (Special Methods of Teaching Social Studies)	3
	63

Departmental Minor Teaching Field Requirements

(Secondary Education)

Anthropology—Consists of 24 semester hours of credit in anthropology. Courses ASM 101, ASB 102, and two upper division courses in each subdisciplinary field (archaeology, physical anthropology, social-cultural anthropology) are required.

Departmental Graduate Program

The Department of Anthropology offers pro grams leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

ANTHROPOLOGY (ASM)

Courses which may be applied toward the General Studies requirement in sciences and mathematics.

ASM 101 Human Origins and the Development of Culture. (3) F, S
Phys cal anthropology and archaeology. Evidence and processes of human evolut on and of cu ture change. Pr mates. Fossil hom n ds and their tools. Race, variation and heredity Env ronment and human biology. Prehistoric culture and soc ety

241 Biology of Race. (3) F, S
Human var ation and its interpretation in an evolut onary context

338 Anthropological Field Session. (2-8) SS
Anthropologica field techniques, analysis of data and preparat on of f eld reports Prerequis te: approval of instructor May be repeated for credit.

341 Human Osteology. (4) F
Osteo ogy, human paleontology, osteometry. Description and analysis of archaeologica and contemporary human populations. Prerequ site: ASM 101 or approval of instructor Three lectures, 3 hours laboratory.

342 Human Biological Variation. (4) S
Evo utionary nterpretations of biological variat on in iv ng human popu at ons with emphasis on an thropological genetics and adaptation Nutrit on and disease, and their relation to genetics and behavior. Prerequis tes· ASM 101 MAT 106 or equivalent, or approva of instructor. Three lectures, 3 hours laboratory.

343 Primatology. (3) F
Evolution and adaptations of nonhuman primates emphasizing social behavior. Includes material from fossil evidence and field and laboratory studies in behavior and biology. Prerequisite: ASM 101 or approval of instructor.

344 Fossil Hominids. (3) N
Ancient African, Asian, and European human and primate skeletal, dental, and cultural remains. Human biological, behavioral, and cultural evolution. Prerequisite: ASM 101 or approval of instructor.

345 Disease and Human Evolution. (3) F
Interaction of people and pathogens from prehistoric times to the present with emphasis on disease as an agent of genetic selection. Prerequisite: ASM 101 or approval of instructor.

346 Human Origins. (3) S
Humanity's place in nature, fossils, historic and recent concepts of human races, influence of culture on human evolution.

348 Social Issues in Human Genetics. (3) S
Moral and social implications of developments in genetic science, particularly as they affect reproduction, medicine and evolution.

365 Laboratory Methods in Archaeology. (4) N
Techniques of artifact analysis. Basic archaeological research techniques, methods of report writing. Prerequisite: ASM 101 or approval of instructor. May be repeated for credit for total of 8 hours.

366 Chronological and Ecological Techniques in Archaeology. (3) N
Procedures for dating archaeological remains and reconstructing ecological conditions of cultural pertinence at archaeological sites. Radiocarbon dating, dendrochronology, stratigraphy, pollen analysis, geomorphology, zooarchaeology. Prerequisite: ASB 330 or approval of instructor.

435 Archaeological Pollen Analysis. (3) F; Schoenwetter
Theory, methodology, and practice of pollen analytic techniques. Compares uses in botany, geology, and archaeology. Field trips and laboratory. Prerequisite: approval of instructor. Two lectures, 3 hours laboratory.

452 Dental Anthropology. (4) F; Turner
Human and primate dental morphology, growth, evolution, and genetics. Within- and between-group variation. Dental pathology and behavioral-cultural-dietary factors. Prerequisite: approval of instructor. Three lectures, 3 hours laboratory.

455 Primate Behavior Laboratory. (3) N; Nash
Instruction and practice in methods of observation and analysis of primate behavior. Discussion of the relationship between class work on captive animals and field techniques for studying free-ranging groups. Prerequisites: ASM 343† and approval of instructor. Directed readings and 6 hours laboratory.

465 Quantitative Methods. (3) N; Clark
Statistical techniques available as descriptive and analytical tools useful in processing and interpreting anthropological data. Presentation of the concepts underlying parametric statistics; nonparametric methods. Prerequisites: introductory statistics course and ASB 330, or approval of instructor.

466 Computer Archaeology. (3) F; Gaines
Methods of codifying and ordering nonmetric archaeological data. Structuring of file systems for storage/retrieval and manipulation using computer techniques. Student projects and a thorough review of the literature of computer application for the analysis of archaeological data. Prerequisite: approval of instructor.

471 Conservation: Museum Collections. (3) N; Dittert
Introduction to the documentation, analysis, cleaning, stabilization and restoration of museum collections; method, theory and practice. Prerequisite: approval of instructor.

472 Archaeological Ceramics. (3) N; Dittert
Analysis and identification of pottery wares, types and varieties. Systems for ceramic classification and cultural interpretation. Prerequisite: approval of instructor. Two lectures, 3 hours laboratory.

555 Advanced Human Osteology. (3) N
Laboratory and field techniques in dealing with the human skeleton. Emphasis on preparation, identification, radiography, sectioning, microscopy and data processing. Prerequisite: ASM 341† or approval of instructor. One lecture, 6 hours laboratory.

591 Seminar. (3) N; Staff
Selected topics in archaeology and physical anthropology.

(a) Physical Anthropology
(b) Primates and Behavior
(c) Advanced Computer Applications in Archaeology
(d) Evolution and Culture (Same as ASB 591)
(e) Interdepartmental Seminar (Same as ASB 591)

ANTHROPOLOGY (ASB)

Courses which may be applied toward the General Studies requirement in Social and Behavioral Sciences.

ASB 102 Introduction to Cultural and Social Anthropology. (3) F,S
Principles of cultural and social anthropology, with illustrative materials from a variety of cultures. The nature of culture. Social, political, and economic systems; religion, esthetics and language.

211 Women in Other Cultures. (3) N
Cross-cultural analysis of the economic, social, political and religious factors that affect women's status in traditional and modern societies.

231 Archaeological Field Methods. (4) S
Excavation of archaeological sites and recording and interpretation of data. Includes local field experience. Prerequisite: ASM 101 or approval of instructor. Two lectures, 8 hours laboratory.

311 Principles of Social Anthropology. (3) S
Comparative analysis of domestic groups and economic and political organizations in primitive and peasant societies.

312 Political Anthropology. (3) F
Comparative examination of the forms and processes of political organization and activity in primitive, peasant, and complex societies.

314 Comparative Religion. (3) F, S
Origins, elements, forms and symbolism of religion; a comparative survey of religious beliefs and ceremonies; the place of religion in the total culture. Prerequisite: ASB 102 or approval of instructor.

315 Primitive Arts and Technology. (3) F
Comparative survey of the material culture of peoples of the world emphasizing production and use of artifacts. Prerequisite: ASB 102 or approval of instructor.

320 Indians of Arizona. (3) F
The traditional cultures and the development and nature of contemporary political, economic and educational conditions among Arizona Indians.

321 Southwestern Ethnology. (3) S
Cultures of the contemporary Indians of the Southwestern United States and their historic antecedents. Prerequisite: ASB 102 or approval of instructor.

324 Peoples of Oceania. (3) N
Peoples and cultures of Oceania focusing particularly on societies of Melanesia, Micronesia and Polynesia. Prerequisite: ASB 102 or approval of instructor.

325 Peoples of Southeast Asia. (3) F
A cultural ecological perspective on the peoples of mainland and insular Southeast Asia. Subsistence modes, social organization, and the impact of modernization. Prerequisite: ASB 102 or approval of instructor.

330 Principles of Archaeology. (3) F
Prehistoric societies. Survey of dating methods, field techniques and artifactual inventories. Geographic, climatic and geological relationships.

331 Old World Prehistory I. (3) F
Development of people as bio-social animals in the Pleistocene, emphasizing technological achievements and focusing upon the relationship between technology and environment. Areas include western Europe, sub-Saharan Africa and western Asia. Prerequisite: ASM 101 or approval of instructor.

332 Old World Prehistory II. (3) S
Post-Pleistocene focus on the transition from hunting/collecting societies to dependence upon domesticates. Factors leading to the establishment of settled village life and the development of the earliest urban centers. Prerequisite: ASM 101.

333 New World Prehistory. (3) S
The variety of archaeological patterns encountered in the Western Hemisphere. Covers the period from the appearance of humans in the New World to European contact; covers the area from Alaska to Tierra del Fuego.

334 Arctic Anthropology. (3) S
Past and present Aleut-Eskimo prehistory, origins, physical features, adaptations, variation and culture with comparisons of Asian Arctic populations. Prerequisite: ASB 101 or approval of instructor.

335 Southwestern Anthropology. (3) N
Past cultures in the Southwest and their relation to present peoples using archaeological, ethnological, and linguistic evidences. Environmental and resource utilization from earliest times to the present.

337 Archaeology of Mesoamerica. (3) S
Pre-conquest cultures and civilizations of Mexico. The Aztecs, Mayas and their predecessors. Prerequisite: ASM 101 or approval of instructor.

351 Culture and Personality. (3) S
Approaches to the interrelations between the personality system and the socio-cultural environment. Prerequisite: ASB 102 or approval of instructor.

355 American Indian Views of Man. (3) N
The main historical and geographical groupings of religious material from North America (including Mexico). Myths, ritual, and prose teachings, oral and written.

356 Aspects of Southwest Indian Religion. (3) N
Selected topics of general interest in which new interpretative work is taking place. Emphasis on comparison between tribes in respect to one or more topics such as mythology, calendrical rituals, curing, drama, etc.

364 Museum Techniques. (3) F
Laboratory techniques in restoration of artifacts. Museum display practices to present anthropological material. Prerequisite: ASM 101 or approval of instructor.

381 Introduction to Linguistics. (3) F
Descriptive and historical linguistics. Survey of theories of human language, emphasizing synchronic linguistics.

383 Linguistic Theory: Phonology. (3) F
Contemporary theories of the sound system of language. Laboratory. Prerequisite: ASB 381 or FLA 400 or approval of instructor.

411 Kinship and Social Organization. (3) S; Steadman, Martin
Meanings and uses of concepts referring to kinship, consanguinity, affinity, descent, alliance and residence in the context of a survey of the varieties of social groups, marriage, rules and kinship terminological systems. Prerequisite: 6 hours of anthropology or approval of instructor.

412 History of Anthropology. (3) F; Eder, Bahr
Historical treatment of the development of the culture concept and its expression in the chief theoretical trends in anthropology between 1860 and 1950. Prerequisite: ASB 102 or approval of instructor.

415 Primitive Art. (3) S; Cain, Bahr
Art forms of primitive people in relationship to their cultural setting. Prerequisite: ASB 102 or approval of instructor.

416 Economic Anthropology. (3) F; Martin, Eder
Economic behavior and the economy in pre-industrial societies; description and classification of exchange systems; relations between production, exchange systems and other societal sub-systems. Prerequisite: ASB 102 or approval of instructor.

418 Indian Reservations Today. (3) N; Martin
Problems of reservation life; relationships between on- and off-reservation Indians.

421 The North American Indian. (3) F,S; Bahr, Martin
Archaeology, ethnology and linguistic relationship of the Indians of North America. Does not include Middle America. Prerequisite: ASB 102 or approval of instructor.

422 Archaeology of North America. (3) S; Schoenwetter
Origin, spread and development of the prehistoric Indians of North America up to the historic tribes. Does not include the Southwest. Prerequisite: ASM 101 or approval of instructor.

424 Indians of Mesoamerica. (3) S; Aguilar, Bahr
Historic tribes and folk cultures. Prerequisite: ASB 102 or approval of instructor.

426 Historical Archaeology. (3) NR; Ruppé
Principles, techniques, and important sites. Use of ethnohistory, laboratory techniques, and artifact analysis. Discussion of value to historical understanding. Prerequisite: one course in archaeology or approval of instructor.

430 Underwater Archaeology. (3) S; Ruppé
Survey of methods and techniques. Effects of changing sea levels on location and movement of human groups. Prerequisite: one course in archaeology or approval of instructor.

431 Ritual: The Creative Process. (3) N; Bahr
Ritual as an essential and creative religious act. Fundamental structures and typologies of ritual; techniques for interpretation and understanding ritual. Prerequisite: ASB 314†.

432 Mythology. (3) N; Bahr
How "myth" emerged as a concept in western civilization. "Mythic world view" as a supposed feature of primitive cultures. Methods for studying mythic and other texts collected from spoken traditions. Prerequisite: ASB 314†.

479 The Anthropology of Peasant Peoples. (3) N; Firestone, Aguilar
Description, comparison and theories pertaining to the social and community structure and world views of peasant peoples. Prerequisite: ASB 102.

481 Language and Culture. (3) S; Brandt
Application of linguistic theories and findings to non-

linguistic aspects of culture; language change; psycholinguistics. Prerequisite: ASB 102 or approval of instructor.

482 Linguistic Practice. (3) N; Brandt
Study of a non-Indo-European language with an informant. Prerequisite: ASB 381 or FLA 400 or approval of instructor.

483 Sociolinguistics and the Ethnography of Communication. (3) N; Brandt
Relationships between linguistic and social categories; functional analysis of language use, maintenance and diversity; interaction between verbal and nonverbal communication. Prerequisite: ASB 381 or approval of instructor.

532 Graduate Field Anthropology. (2-8) S
Independent research on a specific anthropological problem to be selected by the student in consultation with the staff. Prerequisites: ASM 338† or equivalent, and approval of instructor. May be repeated for credit.

533 Cultural Inventory Methods. (3) N
Problems and procedures in locating and recording archaeological sites. Analysis of site types, situations, and relation to natural resources. Interpretation from surface remains. Field work. Prerequisite: approval of instructor.

534 Public Archaeology: Legislation. (3) F
Laws affecting archaeological research; policies and procedures used to administer laws; philosophical and practical problems of legal constraints on research; analysis of public documents generated through compliance with such laws. Prerequisites: regular graduate student status, 12 completed graduate hours in archaeology, approval of instructor.

535 Public Archaeology: Implementation. (3) N
Theoretical and practical applications of cultural resources legislation and policy. Conservation, development, and management of cultural resources. Prerequisite: ASB 534† or equivalent, or approval of instructor. Seminar and field work.

542, 543 Method and Theory of Archaeology. (3, 3) F, S
Development and theoretical basis of archaeology. Rationale and methods of reconstruction of past human behavior from archaeological data. Prerequisite: approval of instructor.

544 Settlement Patterns. (3) N
Spatial arrangement of residences, distribution and density over the landscape, and utilization of a given environment for habitation. Prerequisite: approval of instructor.

546 Pleistocene Prehistory. (3) F
Development of society and culture in the Old World during the Pleistocene epoch, emphasizing technological change through time and the relationship of people to their environment. Prerequisite: ASB 331† or equivalent.

547 Rise of Urban Life. (3) S
Focus on the archaeological evidence in the Old World for the transition from subsistence economies dependent upon hunting and gathering to those dependent upon domesticated plants and/or animals. Impact of this shift in subsistence on local groups and on sedentism in both "nuclear" and "nonnuclear" areas. Prerequisite: ASB 332† or equivalent.

582 Linguistic Theory: Syntax. (3) N
Contemporary theories of the grammatical structure of languages. Prerequisite: ASB 381 or FLA 400 or approval of instructor.

583 Linguistic Theory: Phonological Systems. (3) F
Origins and development of contemporary phonological systems with particular attention to non-Western languages. Prerequisite: FLA 400 or ASB 381 or approval of instructor.

591 Seminar. (3) N
Selected topics in archaeology, linguistics and social-cultural anthropology.

(a) Cultural Anthropology
(b) Social Anthropology
(c) Problems in Southwestern Ethnology
(d) Culture and Personality
(e) Linguistics
(f) Museology
(g) Problems in Southwestern Archaeology
(h) Archaeology
(i) Evolution and Culture (Same as ASM 591)
(j) Interdepartmental Seminar (Same as ASM 591)

Special Courses: ASM and ASB 484, 493, 498, 499, 500, 580, 584, 590, 592, 598, 599, 790, 792, and 799. (See pages 33-34.)

Biological Sciences

The following curricula are offered jointly by the Department of Botany and Microbiology and the Department of Zoology. Students who elect one of these programs are advised by a member of the Botany and Microbiology Department or by a member of the Zoology Department.

Bachelor of Science Degree Curriculum

Biology—A combined offering by the faculties of the Departments of Botany Microbiology and Zoology. This major serves students desiring a broader program in the biological sciences than that provided by the more special ized majors in the degree programs of the individual departments. The major consists of a minimum of 45 semester hours of credit, of which 18 must be in upper division courses. Required courses are BIO 101, 102, 340; MIC 201† or 210†, 202. The additional 30 hours in the major must reflect a balanced distribution of courses in the two departments in the areas of physiology, ecology, morphology, and systematics. Supporting courses required are CHM 113†, 115, 231 or 331, 332, 335, 336; PHY 101 or 111†, 112, 113, 114; MAT 115† or 117† and 118; one year of an approved foreign language. (See Foreign Language Re quirement, page 77.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Biological Sciences—A combined offering by the faculties of the departments in the life sciences. The major consists of a minimum of 42 semester hours of credit, of which 18 must be in upper division courses. Required courses are BIO 101, 102, 320, 340; BOT 300 or 370; MIC 201† or 210†, 202; BOT 360†; ZOL 350; ZOL 360†. The total program must reflect a balanced distribution of courses from both departments. Required supporting courses are: CHM 113†, 231†; elementary biochemistry is strongly recommended. BIO 480† is required in the professional education program.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Biological Sciences—Consists of 24 semester hours as follows: BIO 101, 102, 340; MIC 201† or 210†, 202 and 9 additional hours in courses listed under biology, botany, entomology, microbiology, and zoology with the exception of the following: BIO 100, 218, 318; BOT 100; ZOL 110, 300. Supporting course: BIO 480† is required in addition to the 24 semester hours of credit in the biological sciences.

Botany and Microbiology

PROFESSORS:
SOMMERFELD (LS C-206) ARONSON, CANRIGHT, JOHNSON, NASH, NORTHEY, PATTEN, PINKAVA, REEVES, SCHMIDT, TRELEASE

ASSOCIATE PROFESSORS:
BIRGE, CLARK, LEATHERS, SZAREK, TOWILL

ASSISTANT PROFESSORS:
BURKE, KLOPATEK, LEE, SWAFFORD

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Botany—Consists of a minimum of 45 semester hours of credit in botany and approved related fields, of which 18 must be in upper division courses. Required courses are BIO 101, 102, 320, 340; MIC 201† or 210†, 202; BOT 350, 360†, 370 and at least one of the following: BOT 410, 434, or 450; and laboratory or field experience in the form of BIO 310 or BOT 499, (3 semester hours). Required supplementary courses CHM 113†, 115 and 231, or the sequence 331, 332, 335 and 336; MAT 115† or 141†; and one year of an approved foreign language. (See Foreign Language Requirements, page 77.)

Microbiology—A student majoring in microbiology is required to take the following courses: BIO 101, 102, 340; CHM 331, 332, 335, 336; MIC 202†, 210†, 302; plus 16 hours of upper division electives in microbiology or approved related fields. Total: 42 semester hours. In addition, the student is required to have proficiency equivalent to one year of college French, German or Russian. The required supplemental courses are: CHM 113†, 115; MAT 115† or 141†; PHY 111†, 112, 113, 114. (See Foreign Language Requirement, page 77.)

Medical Technology—Consists of 54 hours of approved courses prior to an accredited senior year professional study program. Completion of the degree is dependent upon acceptance of the student into an accredited professional study program. The University does *not* guarantee that all students will be accepted into a professional study program. Contact department for specific course requirements.

Radiology—Consists of 55 hours of approved courses in the pre-internship program selected by the advisor in consultation with the student, and 24 months internship in an approved program. Completion of the degree is dependent upon acceptance of the student into an accredited internship program. The University does not guarantee that all students will be accepted into an internship program.

Departmental Graduate Programs

The Department of Botany and Microbiology offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

BIOLOGY

BIO 100 The Living World. (4) F, S, SS
Principles of biology. Not offered for credit to students who have had advanced biology in high school. Cannot be used for major credit in the biological sciences. Three lectures, 3 hours laboratory.

101, 102 Biological Principles and Processes. (4) F, S, SS
A comprehensive treatment of biological concepts emphasizing fundamental principles of biology and the interplay of structure and function at the molecular, cellular, organismal, and population levels of organization. For majors in biological sciences and preprofessional

students in health related sciences Secondary schoo chemistry strongly recommended (BIO 101 s a prereq- u s te for BIO 102). Three lectures, 3 hours laboratory

217 Introduction to Fisheries and Wildlife Management. (3) F
Principles relat ng to management of co d and warm water fisher es and terrestr al w ld life, emphasizing man agement of ecosystems. Des gned for prospective wild- life biologists. Prerequis tes. 8 semester hours of biо- log cal sc ences

218 History of Medicine. (1) F
Development of medica concepts.

300 Natural History of Arizona. (3) F
Plant and an ma communit es of Ar zona Cannot be used for major cred t n the biolog cal sciences Prereq uisite. jun or stand ng.

301 Field Natural History. (1) F S
Organ sms and the r natura env ronment Two weekend f e d trips and a f e d project. Prerequ s te: B O 300 or concurrent enrol ment Cannot be used for major cred t in the b o og cal sciences.

310 Special Problems and Techniques. (1 3) F S
Qua ified undergraduates may invest gate a spec f c bio- ogical prob em under the d rection of a faculty mem ber. Prerequ s tes formal conference w th the facu ty member and approval of the problem by the faculty member and of the departmental cha r. May be re- peated for a tota of 6 cred ts.

318 History of Biology. (2) NR
Development of biolog cal concepts Prerequ s te. 12 semester hours of bio og cal sc ences

320 Fundamentals of Ecology. (3) F, S
Basic concepts n ecology Organ zat on, function ng and development of ecologica systems, energy flow biogeochem cal cycling, env ronmental re at ons, popu lat on dynamics Prerequisites: B O 102 or equiva ent or approva of instructor

330 Ecology and Conservation. (3) F
Eco og cal and b o og ca concepts of conservation used to understand man made ecological prob ems. Cannot be used for major cred t n the b o og cal sc ences

340 General Genetics. (4) F S, SS
Sc ence of heredity and variation Prerequisite· BIO 101, 102†. Three hours ecture 1 hour recitat on.

415 Biometry. (4) F
Stat st cal methods applied to b o og cal prob ems, n cluding des gn of exper ments, est mat on, tests of sig- hif cance, analysis of variance regress on, correlation chi square and b oassay; the use of computers. Th s course wi l not satisfy laboratory requ rements for the Libera Arts General Stud es program. Prerequis te. MAT 210 or equivalent Three hours ecture, 3 hours aboratory

424 Analysis of Ecosystems. (3) S
Emphas zes production, resp ration and decomposition Prerequisites: sen or or graduate stand ng BOT 420† ZOL 425† or equivalent courses

425 Laboratory Ecosystem Analysis. (1) S
Methods of ana yz ng energy flow and nutrient cyc ing. Prerequ sites. BOT 424†, ZOL 425† or equivalent 3 hours aboratory.

426 Limnology. (4) S
Structure and function of aquat c ecosystems with em- phasis on freshwater lakes and streams. Three ectures, 3 hours laboratory or f e d trip Prerequ s tes: B O 320† or approval of instructor.

428 Biogeography. (3) F
Environmental and h storical processes determining dis- tr but onal patterns of animals and plants emphasiz ng terrestrial fe. Prerequ site: BIO 102† or equiva ent, ju- nior stand ng

429 Advanced Limnology. (3) S
Recent l terature, deve opments, methods and lim- no ogica theory; f e d and aboratory appl cation to some part cu ar topic n imnology Prerequ site BIO 426†.

430 Concepts in Developmental Biology. (3) S
Current concepts and exper mental methods nvo ving differentiation and b osynthetic act vit es of cells and or ganisms w th examples from micro-organ sms plants and anima s Prerequisite BIO 102† or equ valent

432 Biochemical Cytology. 3) S
Ce uar functions and chemistry based on the macromolecu ar organization of ce lu ar components emphasizing the use of analytica procedures such as ce l fractionat on, ultrastructura radioautography, and cytochemistry. Prerequisites. BOT 360† or ZOL 360† or equ valent, CHM 231† or 331† or equ valent

441 Cytogenetics. (3) F
Chromosomal basis of nher tance. Prerequ site. BIO 340†.

442 Cytogenetics Laboratory. (2) F
Microscop c ana ysis of meios s, mitos s and aberrant ce d v s on Prerequisites or concurrent y: BIO 441†, and graduate status. Six hours laboratory

443 Molecular Genetics. (3) F
Nature and funct on of the gene Prerequ s tes B O 340† and a course in organ c chemistry

445 Organic Evolution. (3) F
Processes and adapt ve change and spec ation in sex ual populations Prerequ s te· B O 340† or ZOL 241†

464 Photobiology. (3) S
Pr nc p es underly ng the effects of ght on growth de velopment, and behavior of plants an mals, and micro organ sms Prerequ s tes 12 hours of courses n fe sc - ences, CHM 231† or 331†

480 Methods of Teaching Biology. (3) F, S
Methods of instruct on, exper mentat on, organization and presentation of appropr ate content in b ology. Pre- requ s tes either SED 311† or concurrent enro ment n SED 311 and 20 hours n the b o ogica sc ences. Two lectures 3 hours aboratory

512 Transmission Electron Microscopy. (4) F, S
Theory, use, and methods of preparing biolog ca mate ria s for transm ss on e ectron microscopy Prerequ - sites approval of nstructor Mater a s fee Two ectures, 6 hours laboratory

515 Scanning Electron Microscopy. (2) N SS
Theory and use of scann ng electron m croscope for b o og ca materia s. ntens ve f ve-week mini course. Prerequisite· approva of nstructor Materia s fee. Three hours lecture 6 hours aboratory.

520 Biology of the Desert. (2) N
Factors affecting p ant and anima l fe in the desert re- g ons and adaptat ons of the organ sms to these fac tors Prerequisite. 10 hours of biolog cal sc ences and/ or approva of nstructor.

526 Quantitative Ecology. (3) N
Sampling strateg es, spat al pattern analysis, species d - vers ty, class fcat on and applicat ons of mult var ate techniques to eco ogy Prerequ sites: one course in eco ogy, B O 415† or equivalent. Two lectures, 3 hours aboratory

Special Courses: B O 484, 492, 493, 494 497, 498, 499, 590, 591, 592, 598, 599 (See pages 33-34.)

BOTANY

BOT 100 Plants and Human Affairs. (4) F, S, SS
The study of plants in relation to human affairs. Emphasis on edible, medicinal and commercially significant plants, how they live and grow and how mankind has applied knowledge to manipulate them. Not for majors in the biological sciences. Three lectures, 3 hours laboratory.

300 Survey of the Plant Kingdom. (4) F
Systematic and evolutionary survey of the plant kingdom emphasizing diversity of gross and cellular structure, reproduction, life cycles and habitat. Prerequisite: one of the following: BIO 100, 102, BOT 100, ZOL 110, or equivalent. Three hours lecture, 3 hours laboratory.

301 Economic Botany. (3) F
Plants and plant products used by man throughout the world including their cultivation, processing and uses in modern life. Fibers, medicinals, beverages, perfumes, foods. Prerequisite: BIO 100 or equivalent.

350 Plant Anatomy. (4) F
Development and mature structure of tissues of vascular plants; patterns and modifications of leaf, stem, root and flower. Prerequisite: BIO 102† or equivalent. Three lectures, 3 hours laboratory.

360 Plant Physiology. (4) F, S, SS
Plant growth and development, nutrition, water relations, reproduction, metabolism and photosynthesis. Prerequisites: BIO 102† or equivalent; CHM 231†. Three lectures, 3 hours laboratory.

370 The Flora of Arizona. (4) S
Principles of taxonomy, identification of Arizona plants. Prerequisites: BIO 101 and 102†, or equivalent, or approval of the instructor. Two lectures, 6 hours laboratory.

410 Lichenology. (3) F '83
Chemistry, ecology, physiology and taxonomy of lichens. Prerequisite: BIO 102† or equivalent. Two lectures, 3 hours laboratory.

420 Plant Ecology. (4) S
Plants in relation to environments. Prerequisite: BIO 320† or equivalent. Three lectures, 3 hours laboratory or field trip. One weekend field trip.

425 Plant Geography. (3) F '84
Plant communities of the world and their interpretation, emphasizing North American plant associations. Prerequisite: BIO 102† or equivalent or approval of instructor.

434 General Mycology. (4) F
Various groups of fungi, their morphology, identification procedures and economic significance. Prerequisites: BIO 102† or equivalent, and/or MIC 202†. Two lectures, 6 hours laboratory.

445 Morphology of the Vascular Plants. (4) F '85
Comparative form and evolutionary trends in the major groups of vascular plants. Prerequisites: BOT 300 or equivalent. Three lectures, 3 hours laboratory.

448 Palynology. (2) N
Importance of spores and pollen (both fossil and modern) to systematics, evolution, ecology and stratigraphy. Prerequisite: approval of instructor.

450 Phycology. (4) S
The algae, both fresh water and marine forms, emphasizing field collection and identification of local representatives. Morphological, ecological, and economic aspects of the algae. Prerequisite: BIO 102† or approval of instructor. Three lectures, 3 hours laboratory.

455 Experimental Phycology. (4) N
Techniques employed in the isolation, identification, purification and culturing of fresh water and marine algae, emphasizing their use as experimental systems. Prerequisite: approval of instructor. Two lectures, 6 hours laboratory.

461 Physiology of Lower Plants. (3) F '84
Cellular physiology and biochemistry of algae and fungi; responses of these organisms to chemical and physical stimuli and their process or morphogenesis. Prerequisites: BIO 102† or equivalent; CHM 231†.

470 Taxonomy of Southwestern Vascular Plants. (4) SS
Identification of the vascular plants of the Southwest and the principles underlying their classification. Not open to students who have had BOT 370. Three lectures, 6 hours laboratory. Two field trips. Summer only.

475 Angiosperm Taxonomy. (3) S '85
Principles underlying angiosperm phylogeny. Prerequisite: BOT 370† or approval of instructor. Two lectures, 3 hours laboratory.

490 Paleobotany. (4) S '84
A broad survey of plant life of the past, including the structure of plant fossils, their geologic ranges, geographic distribution and paleoenvironment. Prerequisite: BIO 102 or equivalent. Three lectures, 3 hours laboratory or field trip.

510 Experimental Design. (3) S '85
ANOVAS, one-way classification of factorial and partially hierarchic designs, introductory multivariate statistics. Prerequisite: BIO 415† or equivalent. One 3-hour lecture at night.

520 Biophysical Ecology. (3) F '84
Theory of physical microenvironments and effects on plant growth. Consideration of plant energy exchange and soil-plant-atmosphere water relations. Prerequisite: BOT 360† or approval of instructor.

525 Ecophysiology. (3) F '83
Physiological adaptation to environmental stresses and its ecological significance for plant survival. Environmental and biological control of photosynthesis and transpiration. Prerequisite: BOT 360† or approval of instructor.

564 Plant Metabolism. (3) F '83
General plant metabolism and typical plant products, emphasizing biosynthesis and functions of storage products, cell wall constituents, plant acids, pigments, hormones and numerous secondary products. Prerequisites: CHM 231†; BOT 360†; or approval of instructor.

570 Plant Secondary Chemistry. (3) S '84
Biosynthesis and distribution of plant natural products within various plant taxa. Prerequisites: CHM 331†, 332† or equivalent. Three lectures.

571 Methods in Biochemical Systematics. (3) S '85
Techniques in isolation and characterization of major classes of natural products used in biochemical systematics. Prerequisite: approval of instructor. Two lectures, 3 hours laboratory.

576 Experimental Plant Systematics. (3) S '84
Interpretation of taxa, utilizing cytological, genetic, ecological, morphological and anatomical techniques and data. Prerequisite: BOT 370 or 470 or approval of instructor. Two lectures, 3 hours laboratory.

591 Seminar. (1-3) N
Topics may be selected from the following:

(a) Ecology
(b) Biosystematics
(c) Morphology
(d) Plant Physiology
(e) Mycology
(f) Molecular Biology
(g) Cacti and Succulents
(h) Phycology

Special Courses: BOT 484, 492, 493, 494, 497, 498, 499, 500, 590, 592, 598, 599, 700, 790, 791, 792, 799. (See pages 33-34.)

MICROBIOLOGY

MIC 105 Medical Technology Orientation. (1) F,S
Introduction to the field of clinical laboratory technology. Includes lecture and laboratory experience. Required for medical technology majors.

201 Microbiology. (3) F,S,SS
Basic course for nonmajors emphasizing general principles of the role of micro-organisms in health, ecology, and related applied fields. Prerequisites: CHM 101 and any one of the following: BOT 100, BIO 100, or approval of instructor.

202 Microbiology Laboratory. (1) F,S,SS
Principles and laboratory techniques used in identifying and handling micro-organisms. Prerequisite: credit or concurrent enrollment in MIC 201† or 210†. Three hours laboratory.

210 General Bacteriology. (3) F,S
Detailed study of the bacterial cell, its structure, genetics, physiology, and taxonomy. Intended for microbiology majors and others with similar preparation. *Not open to students with credit in MIC 201.* Prerequisites: BIO 102†; and CHM 115†.

302 Advanced Bacteriology Laboratory. (2) F
Advanced laboratory techniques in bacterial growth, physiology, genetics, microscopy, and basic virology. Required of microbiology majors. Prerequisites: either group A or B: (A) MIC 202† and 210†; (B) MIC 201† and 202† and approval of instructor. Four hours laboratory.

315 Medical Microbiology. (5) S
Laboratory techniques used in medical bacteriology, mycology and parasitology. Limited to commonly encountered human pathogens. Cannot be used for major credit in Zoology, Botany, or Microbiology. Prerequisite: MIC 202† and 201† or 210†. Three hours lecture, 6 hours laboratory.

360 Bacterial Physiology. (3) S
Mechanisms and control of cell metabolism, structures, and functions. Prerequisites: MIC 210; credit or concurrent enrollment in CHM 331, or approval of instructor.

370 Instrumentation. (4) F,S
Principles, structure, and application of clinical laboratory instruments, including electronics, spectrophotometric analysis, quality control, laboratory mathematics and automated analysis. Prerequisite: CHM 115† and PHY 101 or equivalents. Three lectures, 3 hours laboratory.

375 Concepts in Medical Technology. (5) S
Basic concepts and laboratory techniques in hematology, urinalysis and serology. Prerequisite: acceptance to an affiliated hospital internship program. Three hours lecture, 6-8 hours laboratory.

380 Plant Pathology. (3) F,SS
Biotic and abiotic agents of disease, including field observations and methods of control. Prerequisite: BOT 360 or approval of instructor.

401 Medical Technology Laboratory Techniques and Theory. (16) F,S
Experience, including lecture and laboratory, in the areas of hematology, clinical chemistry, microbiology and immunohematology.

402 Medical Technology—Advanced Medical Laboratory Specialization. (16) F,S
Advanced lecture series and clinical laboratory experience including patient services. Specialization in one or more areas of clinical laboratory technology.

403 Specialized Medical Technology Laboratory. (12) F,S
Advanced techniques in all areas of the laboratory based upon individualized program development for students with MLT registration or eligibility.

420 Immunology. (4) F,S
Principles of immunity and their application to diagnosis, systematics and allergies. Prerequisites: MIC 202†; CHM 231† or equivalent. Two lectures, 6 hours laboratory.

425 Advanced Immunobiology. (3) S
Cells and tissues of immune system, their structure, function, and interaction. Prerequisites: MIC 420†. Two lectures, 3 hours laboratory.

434 Medical Mycology. (3) S
Fungi as causal agents of diseases of man, including pathology and epidemiology, emphasizing techniques of diagnosis. Prerequisite: MIC 202† or equivalent. Two lectures, 3 hours laboratory.

441 Bacterial Genetics. (3) S
Survey of genetic exchange and regulatory processes in bacteria and their viruses. Bacteria and viruses as tools in genetic engineering. Prerequisites: MIC 201† or 210† and BIO 340†, or approval of instructor.

442 Bacterial Genetics Laboratory. (1) S
Techniques of mutagenesis, mapping, and strain construction. Prerequisites: MIC 202† and credit or concurrent enrollment in MIC 441†. Four hours laboratory.

470 Systematic Bacteriology. (3) F
Classification and identification of bacteria. Prerequisites: MIC 202†, 5 hours of microbiology. One lecture, 6 hours laboratory.

481 Diagnostic Bacteriology. (3) F
Biochemical and immunological methods for characterizing pathogenic bacteria. Prerequisites: MIC 202†, CHM 231† or CHM 331†. Two lectures, 3 hours laboratory.

485 Virology. (3) F
Fundamental nature of viruses and other obligate intracellular parasites, their replication, pathogenesis, ecology and cultivation. Prerequisites: 8 hours of microbiology; CHM 331†. Two lectures, 3 hours laboratory.

520 Selected Topics in Immunology. (3) F
Current literature concerning immunology, particularly concerning recent advances in immunogenetics and regulation of immune response. Prerequisites: MIC 420†.

530 Bacterial Differentiation. (3) F
Molecular biology of sporulation and germination in bacteria. Emphasis on the control of cellular differentiation. Prerequisites: MIC 441 or BIO 443, or approval of instructor.

545 Recombinant DNA Methodology. (2) S
Principles of genetic engineering using *in vitro* DNA recombination; characteristics of plasmid and phage vectors; recombinant selection and physical characterization. Prerequisites: MIC 441 and BIO 443, approval of instructor.

546 Recombinant DNA Laboratory. (2) S
Basic techniques in isolation of chromosomal, plasmid, and bacteriophage DNA; transformation; and gene-splicing methods. Prerequisites: Concurrent enrollment in MIC 545.

560 Bacterial Physiology. (3) F
Biochemical aspects of microbial growth and metabolism. Enzymes of terminal oxidation involved in synthesis and metabolism of cellular intermediates.

Prerequis tes 5 hours of microbiology; CHM 331† or equiva ent, or approva of nstructor Two lectures, 3 hours laboratory.

581 Selected Topics in Host-Bacterial Relationships. (3) S
Pathogenic mechan sms and host responses in bacteria diseases. Prerequ sites. MIC 481† or approva of the instructor; M C 420†.

591 Seminar. (1-3) N
Top cs may be selected from the following:

(a) Molecu ar B o ogy	(e) Genetic Eng neer ng
(b) V rology	(f) Immunology
(c) Enzymo ogy	(g) Bacter al Eco ogy
(d) Genet cs	(h) Pathogenic Bacterio ogy

Special Courses: M C 298 484, 492 493, 494 497, 498 499, 500, 590 592 598, 599 700, 790, 791 792, 799 (See pages 33-34.)

Chemistry

PROFESSORS:
MUNK (PS D-102), BIEBER, BIRK, D. BROWN, T. BROWN, BURGOYNE, BURKE, BUSECK, CRONIN, EYRING, FUCHS, GLAUNS NGER, HARRIS, HOLLOWAY, JUVET, LIN, LIU, LUCHSINGER, MOELLER, C. MOORE, NAVROTSKY, O'KEEFFE, PARSONS, PETTIT, VON DREELE, WAGNER, WHITEHURST, WILLIAMS, YUEN, ZASLOW

ASSOCIATE PROFESSORS:
GUST, T. MOORE, ROSE

ASSISTANT PROFESSORS:
LOHR, SANNER, SKIBO

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Chemistry Consists of 45 semester hours of credit, of which 30 must be in chemistry and 15 in closely related fields. Required courses are: CHM 117†, 118, (or 113†, 115); 225, 226, 317, 318, 319, 320 (or 331, 332, 335, 336); and 341†, 343, 453. Related courses must include PHY 111†, 112, 113, 114; and MAT 115†, 210, or equivalent or more advanced courses. The remaining courses to complete the major will be determined by the student in consultation with his her advisor. (See Foreign Language Requirement, page 77.)

Bachelor of Science Degree Curriculum

Chemistry Consists of 42 semester hours of credit in chemistry. Required courses are: CHM 117†, 118, 317, 318, 319, 320, 425, 426, 427, 428, 441, 442, 444 and 453. In addition, PHY 115†, 116, 117, 118; MAT 274†, 290†, 291 (or 270†, 271, 272); and one year of German (or Russian or French) is required. German is essential for students planning advanced study in certain fields, especially organic chemistry. An appropriate course in computer science is recommended. The remaining chemistry courses to complete the major will be determined by the student in consultation with his/her advisor. With the consent of the department chair, selected advanced courses from other related scientific disciplines may be accepted in lieu of elective chemistry courses to complete the major.

Transfer students will be interviewed and advised of possible preparatory work. They must contact the department to arrange for the interview in advance of registration. (See Degree Requirements, page 40.)

American Chemical Society Certification. A student who satisfactorily completes the Bachelor of Science degree program will be certified by the Department of Chemistry to the American Chemical Society as having met the specific requirements for undergraduate professional training in chemistry.

Chemistry Exchange Program. Selected students in either the B.A. or B.S. program have the opportunity to participate in a chemistry exchange program during their junior year with the Fédération Universitaire et Polytechnique de Lille in France. In order to qualify for this program, the student must have a working knowledge of French, and for this purpose, two years of French or the equivalent is recommended.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Chemistry Option 1. Consists of 42 semester hours of credit in chemistry and related fields. Required courses are: CHM 113†, 115, 225, 226; 331, 332, 335, 336 (or 231, 361); 341 (or 441, 442); 480 (or PSE 480† or PHY 480†); PHY 111†, 112, 113, 114; and MAT 115†, 210. The remaining courses to complete the major will be determined by the student in consultation with his/her advisor.

Chemistry—Option 2. Consists of 30 semester hours of chemistry, which includes all of the required chemistry courses listed in Option 1, and selection of the corresponding option in either mathematics or physics; that is, completion of an additional 30 semester hours in the chosen area as specified by the department selected.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Chemistry—Consists of 24 semester hours of credit in chemistry. Required courses are: CHM 113†, 115; 225, 226; 231, 361 (or 331, 332, 335, 336); and 341†. The remaining courses to complete the minor will be determined by the student in consultation with his/her advisor.

Departmental Graduate Programs

The Department of Chemistry offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

CHEMISTRY

CHM 101* Introductory Chemistry. (4) F, S
Elements of general chemistry. Adapted to the needs of students in nursing, home economics, agriculture and physical education. Recommended for General Studies credit. Normally followed by CHM 231. Three lectures, 1 quiz, 2 hours laboratory.

113* General Chemistry. (4) F, S, SS
Principles of chemistry. Adapted to the needs of students in the physical, biological and earth sciences. Prerequisite: Three semesters of high school algebra or MAT 106. One year of high school chemistry recommended. Three lectures, 1 quiz, 2 hours laboratory.

114* General Chemistry for Engineers. (4) F, S
One semester college chemistry with emphasis towards engineering. Prerequisites: Three semesters of high school algebra or MAT 106; one year of high school chemistry. Students without high school chemistry or chemical engineering majors must enroll in the CHM 113†, 116† sequence instead of CHM 114. Three lectures, 1 quiz, 2 hours laboratory.

115* General Chemistry With Qualitative Analysis. (5) F, S, SS
Continuation of CHM 113. Equilibrium theory, chemistry of metals, nonmetals and metalloids, introduction to organic chemistry. Laboratory includes qualitative analysis. Prerequisite: CHM 113† or two years of high school chemistry. Three lectures, 2 quizzes, 4 hours laboratory.

116* General Chemistry. (4) F, S
Continuation of CHM 113. Equilibrium theory, chemistry of metals, nonmetals and metalloids, introduction to organic chemistry. Prerequisite: CHM 113† or two years of high school chemistry. Three lectures, 1 quiz, 2 hours laboratory.

117*, 118* General Chemistry for Majors. (4, 5) F, S
Unified approach to chemical bonding, molecular structure, descriptive chemistry of the elements, properties of matter in various physical states, basic thermodynamics, chemical stoichiometry and chemical analysis. Prerequisites: Minimum of one year each of high school chemistry and physics, three years of high school mathematics, CHM 117 for CHM 118. Corequisite: MAT 290† (or 270†) for CHM 118†. CHM 117: Three lectures, 1 conference, 2 hours laboratory. CHM 118: Three lectures, 1 conference, 5 hours laboratory.

225* Analytical Chemistry. (3) F, S, SS
Principles and methods of chemical analysis. Primarily for students in agriculture, pre-medicine, pre-dentistry, and medical technology. Prerequisite: CHM 115† or 116†.

226* Analytical Chemistry Laboratory. (2) F, S, SS
Experiments in chemical analysis. Corequisite: CHM 225†. One conference, 5 hours laboratory.

231* Elementary Organic Chemistry. (4) F, S
Representative groups of organic compounds, emphasizing biological applications. Adapted to students in nursing, home economics, agriculture and physical education. Prerequisite: CHM 101 or 114†, or 115†, or 116†, or one year of high school chemistry with grades of A or B, or approval of instructor. Three lectures, 1 quiz, 2 hours laboratory.

261* Elementary Biochemistry. (3) F, S
Topic coverage similar to CHM 361 but at a level suitable for students with minimal backgrounds in organic chemistry and mathematics. Examples and illustrations drawn from agriculture, nutrition and medicine wherever possible. Prerequisite: CHM 231† and math equivalent to high school algebra. Students who have completed or are taking CHM 331 may not enroll.

301 Chemistry and Society. (3) S, F
A qualitative survey of chemistry and its impact on modern technology and the environment. May not be counted toward the chemistry major.

317*, 318* Organic Chemistry for Majors. (3, 3) F, S
Structures, reaction mechanisms and kinetics, and systematic syntheses of organic compounds. Prerequisite: CHM 118†. Corequisites: CHM 319† for CHM 317†, CHM 320† for CHM 318†.

319* Organic Chemistry Laboratory I for Majors. (1) F
Emphasis on mechanisms, kinetics, and products of organic reactions. Pre- or corequisite: CHM 317†. One conference, 3 hours laboratory.

320* Organic Chemistry Laboratory II for Majors. (2) S
Continuation of CHM 319. Pre- or corequisite: CHM 318†. One conference, 7 hours laboratory.

331*, 332* General Organic Chemistry. (3, 3) F, S, SS
Chemistry of organic compounds. Prerequisite: CHM 115† or 116† or 118†; CHM 331 for 332.

335*, 336* General Organic Chemistry Laboratory. (1, 1) F, S, SS
Organic chemical experiments in separation techniques, synthesis, analysis and identification, and relative reactivity. Corequisites: CHM 331† for CHM 335†, CHM 332† for CHM 336†. Prerequisite: CHM 335† for CHM 336†. Four hours laboratory.

341* Elementary Physical Chemistry. (3) F
Properties of solids, liquids, gases, solutions, equilibrium, colloidal state. For pre-medical, biology, agriculture, etc., students. Prerequisites: CHM 114† or 118† or 225†, and CHM 231† or 331†, and MAT 210†.

343* Physical Chemistry Laboratory. (1) F
Physical chemical experiments. Corequisite: CHM 341† or 441†. Three hours laboratory.

361* Principles of Biochemistry. (3) F, S, SS
Structures, properties, and functions of proteins, enzymes, nucleic acids, carbohydrates, and lipids; the utilization and synthesis of these materials by living systems, and the relationship of these processes to energy production and utilization. Prerequisite: CHM 231†, 318† or 332†.

367 Elementary Biochemistry Laboratory. (1) F, S, SS
Experiments include qualitative analysis of major biological constituents such as carbohydrates, lipids, nucleic acids and proteins, and measurement of enzyme activity. Pre- or corequisite: CHM 261†, 361† or approval of instructor. Three hours laboratory.

392 Introduction to Research Techniques. (1-3) F, S, SS
Instrumental methods and philosophy of research by

actual part c pat on n chemical research projects. Prerequis te· approva of adv sor and research superv sor May be repeated for a total of 6 credits.

401 Chemical Literature. (1) S
The spec a information too s availab e n ibraries which permit the researcher to perform an efficient literature search Top cs wi include *Chemical Abstracts Science Citation Index, National Standard Reference Data Se ries,* patents, computer search services and others. Prerequ s te. CHM 318† or 332† or approva of instructor

421* Instrumental Analysis. (3 S
Pr nc p es of instrumenta methods n chem cal ana ys s E ectroana yt cal and optica techniques. Prerequ sites· CHM 225† and 226† Pre- or corequis te. CHM 442†.

422* Instrumental Analysis Laboratory. (1) S
Experiments n chem ca analys s by e ectroana yt ca and opt ca techn ques. Corequis te CHM 421† Three hours laboratory

424 Separation Methods and Quantitative Organic Analysis. 3) F
Theory and practice of gas qu d on-exchange, and gel permeation chromatography countercurrent d str but on, e ectrophores s, and distil at on qual tat ve and quantitat ve nterpretation of R mass and NMR spectroscopy, quant tat ve methods of organ c analysis via funct ona groups Prerequis tes CHM 318† or 332†, and 442†, or approva of nstructor Two ectures, 4 hours laboratory

425 Chemical Analysis. 2) F
Pr nciples of chem cal equi br a, separat ons and anayses· chem ca nstrumentat on Pre or corequ sites: CHM 341† or 441†

426* Chemical and Instrumental Analysis. (3) S
nstrumenta techn ques for chemical analysis, methods for the interpretation of ana yt cal data. Prerequ site CHM 425†

427, 428* Chemical and Instrumental Analysis Laboratory. 2,2 F, S
Classica and nstrumental techniques n chemical analyses with emphasis on accuracy and prec sion Pre- or corequ sites: CHM 425† for CHM 427† CHM 426† for CHM 428†. One conference, 5 hours laboratory

431 Qualitative Organic Analysis. (3 F
Systematic ident f cat on of organ c compounds. Pre requis tes. CHM 118† or 226†, and CHM 320† or 336†, or approval of instructor One lecture 6 hours aboratory

438 Polymers. (2) S
Chem stry and propert es of natura and synthet c poly mers. Prerequis te CHM 318 or 332

441, 442 General Physical Chemistry. (3 3) F, S
Gases iqu ds, sol ds, solut ons equ l brium, phase ru e, e ectrochem stry, thermodynam cs atomic structure rad oact vity and co o ds Prerequis tes PHY 112† or 116† or ECE 202† MAT 274†

444* General Physical Chemistry Laboratory. 2) S
Physica chem ca exper ments Prerequ s te CHM 441†. One conference 5 hours aboratory.

447* Radiochemistry. 2) F
Rad oact v ty, natura and art f c al rad o sotopes nuclear reactions so at on of isotopes nuc ear energet cs measurement of rad oact v ty tracer techn ques and other app icat ons. Prerequ site· CHM 118, CHM 225, PHY 361 or MEE 411

448 Radiochemistry Laboratory. (2) F
Radiation measurements tracer methods, quant tat ve ident f cat on of isotopes and other procedures app ca ble to chem cal, phys cal, engineering and b o ogica prob ems Corequis te CHM 447† One conference, 5 hours aboratory

452 Inorganic Chemistry Laboratory. (2) S
Preparation and purification of typical inorganic sub stances emphasiz ng methods and techniques. Prerequis te approval of instructor One conference 5 hours laboratory

453 Inorganic Chemistry. (3) F, S
Pr ncip es and applicat ons of inorgan c chemistry. Prerequ s tes. CHM 341† or 441†.

461, 462 General Biochemistry. (3, 3) F, S
Fundamental chem stry and metabol sm of major bio log ca materia s and their role n the biochemical processes of liv ng organisms Prerequis tes. CHM 318† or 332†, and CHM 341† or 441† or approval of instructor.

467, 468 General Biochemistry Laboratory. (2, 2) F, S
The app cation of modern chemical and phys cal methods to biochemical prob ems· purif cation and character zation of biolog cal macromolecu es; quantita t ve measurement of enzyme activ ty and propert es, eva uat on of metabol c processes. Corequis tes: CHM 461† with 467†; 462† w th 468†. One conference, 5 hours aboratory

471 Solid State Chemistry. (3) F
Crystal chem stry, thermodynamics and e ectrochemistry of sol ds, nonstoichiometr c compounds, diffusion and so d state reactions crystal growth and selected top cs Pre or corequ s te. CHM 441†, or approva of nstructor

480 Methods of Teaching Chemistry. (3) N
Organizat on and presentation of appropr ate content of chemistry; preparation of reagents, experiments, demonstrations organ zation of stock rooms aborator es; experience n prob em so v ng. Prerequisite approval of instructor

481 Geochemistry. (3) F
Or g n and d stribut on of the chemical elements. Geo chem ca cycles operat ng n the earth s atmosphere, hydrosphere and thosphere Prerequ s te. CHM 341† or 441† or GLG 321 Same as GLG 481.)

482 Physical Geochemistry. (3) N
App icat ons of thermodynamic and kinet c principles to geochem ca processes Prerequisite CHM 341† or 441† or GLG 321†. Same as GLG 482)

485 Meteorites and Cosmochemistry. (3) N
Chemistry and m neralogy of meteor tes and their rela t onship to the origin of the earth, solar system and universe Prerequ s te. CHM 481† or 482† (Same as GLG 485)

501 Current Topics in Chemistry. (1) F S
Prerequis te approva of nstructor. May be repeated for credit.

521 Computer Interfacing to Chemical Instrumentation. (3) N
Assembly and mach ne anguage programming of aboratory-size computers for data acquis tion and online, rea time contro of chemica nstrumentat on. Digita logic and t m ng considerations n hardware interfacing of computers. No prior knowledge of computers or electronics assumed. Sound know edge of chemica instrumentat on desirable Two ectures, 4 hours aboratory.

523 Advanced Analytical Chemistry. (3) A
Theoret ca princip es of analytica chem stry. Prerequis tes· CHM 225† and 442†, or the r equiva ents

525 Spectrochemical Methods of Analysis. (4) N
Theoret ca and practica cons derations nvo v ng the use of opt cal nstruments for chem cal analys s emphasiz ng em ssion and absorption spectroscopy Prerequi site CHM 442†. Three lectures 3 hours laboratory

526 X-Ray Methods of Analysis. (4) N
Theoret cal and practica considerat ons nvo v ng the

use of X-ray diffraction and spectroscopy for chemical and structural analyses. Prerequisite: CHM 442†. Three lectures, 3 hours laboratory.

527 Electrical Methods of Chemical Analysis. (4) N
Theoretical and practical considerations of polarography, potentiometric, amperometric, and conductometric titrations. Prerequisite: CHM 442†. Two lectures, 6 hours laboratory.

531 Theoretical Organic Chemistry. (3) F
Reaction mechanisms, reaction kinetics, linear free energy relationships, transition state theory, molecular orbital theory, Woodward-Hoffmann rules. Prerequisites: CHM 318† or 332†, and CHM 442†.

532 Theoretical Organic Chemistry. (2) S
Prerequisite: CHM 531†.

536 Natural Products. (2) N
Organic chemistry of such natural products as alkaloids, steroids, terpenes, organic medicinals, and antibiotics. Prerequisites: CHM 532†, 537†, and approval of instructor. May be repeated for credit.

537 Organic Reactions. (3) S
Important synthetic reactions of organic chemistry emphasizing recently discovered reactions of preparative value. Prerequisite: CHM 531†.

541 Advanced Principles of Chemistry I. (3) F
Thermodynamics and kinetics as applied to various areas of chemistry. Prerequisite: CHM 442†.

545 Advanced Principles of Chemistry II. (3) S
Basic quantum theory, chemical bonding and molecular structure. Prerequisite: CHM 442†.

546 Quantum Chemistry. (3) F
Principles of quantum mechanics applied quantitatively to problems of chemical interest. Prerequisite: approval of instructor.

548 Chemical Kinetics. (2) N
Kinetic theory and rate processes. Prerequisite: approval of instructor.

553 Inorganic Chemistry. (3) F
Principles of modern inorganic chemistry and their applications over the entire periodic system. Prerequisites: CHM 442†, and CHM 453†, or their equivalents.

554 Advanced Inorganic Chemistry. (3) S
Elaboration and extension of the more important topics of CHM 553. Prerequisite: CHM 553†.

556 Topics in Inorganic Chemistry. (3) N
Prerequisites: CHM 553† and approval of instructor. May be repeated for credit.

563 Biophysical Chemistry. (3) N
Physical chemistry of macromolecules, especially proteins, nucleic acids and polysaccharides. Thermodynamics, hydrodynamics, and spectroscopy of biopolymers and their relation to structure. Prerequisites: CHM 462† and 442†.

579 Topics in Solid State Chemistry. (2-4) N
Prerequisite: approval of instructor. May be repeated for credit.

581 Isotope Geochemistry. (3) N
Geochemistry and cosmochemistry of stable and radioactive isotopes; geochronology; isotope equilibria. Prerequisite: approval of instructor. (Same as GLG 581.)

582 Topics in Geochemistry and Cosmochemistry. (3) N
Topics of current interest for students in chemistry and other fields. Sampling of data and thought concerning phase equilibria, element distribution, meteorites, the earth and other planets. Prerequisite: approval of instructor. May be repeated for credit. (Same as GLG 582.)

583 Phase Equilibria and Geochemical Systems. (3) N
Study of natural reactions at high temperatures and pressures; silicate, sulfide and oxide equilibria. Prerequisite: CHM 482†. (Same as GLG 583.)

Special Courses: CHM 294, 298, 484, 492, 493, 494, 498, 499, 590, 591, 592, 593, 598, 599, 790, 792, 799. (See pages 33-34.)

**In each of the following groups, credit is allowed for one course only:* CHM 101, 113, 114 or 117; CHM 114, 115, 116 or 118; CHM 225 or 425; CHM 226 or 427; CHM 231, 317 or 331; CHM 261 or 361; CHM 318 or 332; CHM 319 or 335; CHM 320 or 336; CHM 341 or 441; CHM 343 or 444; CHM 421 or 426; CHM 422 or 428; CHM 446 or 447.

Computer Science

A major in computer science is offered in the College of Liberal Arts or the College of Engineering and Applied Sciences. Admission requirement for Computer Science programs are above those established by the University. Contact Department for details.

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Computer Science—Consists of 42 semester hours in computer science and related areas, plus 16 hours in mathematics. Required courses in the major include CSC 100†, 101, 200, 210, 320, 340, 410, 420, 430, 450, and MAT 466† (or 464†). Required related courses are MAT 270† and 271 (or 290† and 291), 242 (or 342†), 243, and STP 326. The remaining nine hours are to be chosen from a list provided by the department, and approved by the advisor.

Faculty and course descriptions are listed on pages 219-223.

Economics

A major in economics is offered in the College of Liberal Arts or the College of Business Administration.

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Economics—Consists of 45 semester hours of credit, of which 30 must be in economics and 15 in closely related fields to be approved by the advisor in consultation with the student. ECN 201, 202, 401, and 402 are required. Also, one course in statistics (e.g., STP 226 or

QBA 221) and the equivalent of MAT 141 are required (See Graduation Requirements, page 40.)

Bachelor of Science Degree Curriculum

Economics Consists of 45 55 semester hours of credit, of which 30 must be in economics and the remainder in closely related fields to be approved by the advisor in consultation with the student. ECN 201, 202, 401, and 402, are required. Also, one course in statistics (e.g., STP 226 or QBA 221) and the equivalent of MAT 141 are required (See Graduation Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum (Secondary Education)

Economics Consists of 45 semester hours of credit including a minimum of 30 in economics and one course in methods of teaching economics. Remainder will be in closely related fields as approved by the advisor in consultation with the student. ECN 100 201, 202, 401 and 402 are required Also, one course in statistics (e.g., STP 226 or QBA 221) and the equivalent of MAT 141 are required.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Economics Consists of 18 semester hours of credit. ECN 100, 201, and 202 are required Remainder to be approved by the advisor in consultation with the student

Latin American Studies Emphasis. (See Interdisciplinary Studies, page 55) Consists of the Bachelor of Arts degree requirements in Economics. At least 30 upper division semester hours of the total program must be in Latin American content courses, including 15 hours in Economics and 15 in other disciplines A reading knowledge of Spanish or Portuguese is required, and a reading knowledge of the other language is suggested The program must be approved by the Center for Latin American Studies Fulfillment of requirements is recognized on the transcript as a bachelor's degree with a major in Economics Latin American Studies Emphasis.

Departmental Graduate Programs

The Department of Economics offers programs leading to the degrees of Master of Science and Doctor of Philosophy Consult the *Graduate Catalog* for requirements.

Faculty and course descriptions are listed on page 175

English

PROFESSORS:
SALERNO (LL B 504), BRACK, D'ANGELO, B. DOEBLER, J DOEBLER, DONELSON, ERNO, EVANS, FERRELL, FISHER, FLETCHER, M. HARRIS, KEHL, LEVY, LIGHTFOOT, NEBEKER, NEY, NILSEN, SHAFER

ASSOCIATE PROFESSORS:
BENDER, BOYER, D. BRINK, J. BRINK, BUCKINGHAM, DUBIE, ELLIS, J. GREEN, M. GREEN, GREENE, HABERMAN, HAKAC, HELMS, HERMAN, JANSSEN, JOHNSON, MORAN, MURRAY, OJALA, RANDALL, SANDS, SHINN, SWANSON

ASSISTANT PROFESSORS:
BARODY, BROSE, COLBY, DOVE, FALTZ, GUNN, NELSON, RIOS, SALDIVAR

INSTRUCTOR:
K. HARRIS

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

English Consists of 45 semester hours of credit; 36 of these hours must be in English, 9 hours in a related field to be chosen in consultation with the student's departmental advisor. Required courses are ENG 200, 221 and 222, 421 or 422, 312 or 314 or 413 or 424, a course in English literature before 1660, a course in English literature between 1660 and 1900, 341 or 342 or a course in American Literature before 1900. *No course may be used to satisfy more than one requirement.* At least 18 hours must be in upper division courses (See Foreign Language Requirement, page 77)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

English Consists of 42 semester hours of credit in English. Required courses are ENG 211† or 212†, 221, 222, 312 or 314 or 413, 341 or 342, 421 or 422, 471, 480, one literary type course, one per od course, and 12 hours of electives, six of which must be upper division Upper division courses in related fields may be elected with the approval of the advisor.

Departmental Minor Teaching Field Requirements

(Secondary Education)

(Recommended for Elementary Education)

English—Consists of 24 semester hours of credit. Required courses are ENG 211 or 212, 221 or 222, 341 or 342, 312 or 314, 471 or 480, and additional electives in English, with at least one elective in literature, as approved by the advisor.

Departmental Graduate Programs

The Department of English offers programs leading to the degrees of Master of Arts (with emphases in literature, comparative literature, teaching of English as a second language, linguistics, and creative writing) and Doctor of Philosophy. (with numerous emphases).

English Literature in Transition. Currently two major professional journals have editorial offices in the Department of English. *English Literature in Transition: 1880-1920* has been at ASU since 1971 and *English Journal* since 1980. Graduate and undergraduate students have gained editorial experience and research opportunities through the presence of these journals.

Linguistics Studies. See Interdisciplinary Studies, page 37.

ENGLISH

ENG 101 Freshman Composition. (3)
Discovering, organizing, and developing ideas in relation to the writer's purpose, subject, audience. Emphasis on modes of written discourse and effective use of rhetorical principles. Foreign students see ENG 107.

102 Freshman Composition. (3)
Critical reading, analysis, and writing about a variety of materials, with emphasis on style and kinds of written discourse. Research paper required. Foreign students see ENG 108. Prerequisite: ENG 101.

105 Advanced Freshman Composition. (3) F, S
A concentrated composition course for students with superior writing skills; intensive reading; research papers; logical and rhetorical effectiveness. Not open to students with credit in Freshman Composition. Prerequisite: see page 28. (Formerly ENG 104).

107 English for Foreign Students. (3) F, S
For students from non-English speaking countries who have studied English in their native countries, but who require practice in the idioms of English. Intensive reading, writing and discussion. Satisfies the graduation requirement of ENG 101. (Formerly ENG 111.)

108 English for Foreign Students. (3) F, S
Reading on a broader scope and more emphasis on composition. Satisfies the graduate requirement of ENG 102. Prerequisite: ENG 107. (Formerly ENG 112).

110 Introduction to Literature. (3) F, S
Introduction to literature through literary types; selections taken mainly from modern writers. (Formerly ENG 103)

200 Critical Reading and Writing. (3) F,S
Introduction to the terminology, methods, and ends of the study of literature; practice in interpretation and evaluation of various texts.

201 World Literature. (3) F
The classical and medieval periods. Selections from the great literature of the world in translation and lectures on the cultural background.

202 World Literature. (3) S
The Renaissance and modern periods. Selections from the great literature of the world in translation and lectures on the cultural background.

204 Literature of Today. (3) F, S
Poetry, short story, novel and drama. Not for English majors. Not open to freshmen.

211 Advanced Composition. (3) F, S
Further training in organization and expression of ideas. Primarily for non-English majors. Prerequisite: ENG 102†. Two lectures, conferences arranged.

212 English Prose Style. (3) F, S
Analysis and practice of writing in various classical and modern prose styles. Prerequisites: Grade of "B" in ENG 102†, English major or approval of advisor and instructor. Two lectures, conferences arranged.

213 Introduction to the Study of Language. (3) F, S
Language as code, phonology, morphology, lexicon, and the processes of language acquisition and behavior.

221 Survey of English Literature. (3) F, S
Content and form of earlier English literature, including individual and national characteristics of certain authors.

222 Survey of English Literature. (3) F, S
Based upon the later English literature.

300 Literary Interpretation and Evaluation. (3) N
Practice in writing papers on literary subjects. Alternate approaches to literature and their basis in critical theory.

301 Writing for the Professions. (3) F, S
Advanced practice in writing and editing expository prose. Primarily for preprofessional majors.

307 Utopian Literature. (3) N
Selected works from the present to the classical period, including *Walden Two, Walden, Utopia,* and *The Republic.* Primarily for non-majors.

311 Creative Writing. (3) F, S
Writing laboratory. Lectures and conferences. Separate sections for fiction and poetry.

312 Current English Usage. (3) F, S
Trends in the study of the English language in its social setting.

314 Modern Grammar. (3) F, S
Conventional, structural and generative grammars.

321 Introduction to Shakespeare. (3) F, S
Shakespeare's major comedies, histories and tragedies. Not open to English majors.

341 American Literature. (3) F,S
From Colonial times to the Civil War, including the growth of nationalism and the rise of the New England school.

342 American Literature. (3) F,S
From Whitman to the present. Influence of westward expansion, growth of regionalism, literature of social protest and post-World War II writing.

345 Selected Authors or Issues. (3-4) N
Different topics may be offered. Film topics with lab may carry 4 credits. Repeat credit for different topics.

352 Short Story. (3) F,S
Development of the short story as a literary form; analysis of its technique from the work of representative authors.

355 History of the Drama. (3) S
Development of European drama from the Greek to the Romantic Period.

356 Biblical Backgrounds of Literature. (3) F,S
Reading of the Old and New Testaments, emphasizing types, ideas and sources in literature.

357 Introduction to Folklore. (3) S
Survey of the history, genres, and dynamics of folklore with emphasis on oral traditions.

358 Afro-American Literature. (3) N
Thematic and cultural study of the literature dealing with the Afro-American in the U.S.

359 American Indian Literature. (3) F
Selected oral traditions of American Indians and their influences on contemporary Native American literary works.

360 History of Film. (4) F
Emphasis on American film, with some study of European film. Three lectures, four hours of screening.

361 Silent Film. (4) F
Development of motion pictures from 1850 through 1930. Lectures, film clips, weekly film screenings.

362 Sound Film Genres. (4) S
Examination of the Western, the horror film, the comedy, and other genres. Lectures, film clips, weekly screenings.

400 History of Literary Criticism. (3) S; Staff
Major critics and critical traditions in the western world.

405 Style and Stylistics. (3) N; D'Angelo, Murray
Linguistic, rhetorical, and literary approaches to the analysis of style in poetry, fiction, and other forms of written discourse.

409 Writing for Film. (3) N; Staff
Fiction writing within a screenplay format. Lectures, conferences, film viewing exemplary screenplays, and visiting writers from the film community.

410 Intermediate Creative Writing. (3) F,S; Staff
Lectures, writing assignments, discussion and criticism. Separate sections for fiction and poetry. Prerequisite; ENG 311 or approval or instructor.

411 Advanced Creative Writing. (3) F,S; Staff
Workshop for experienced writers with emphasis on developing individual style. Separate sections for fiction and poetry. Prerequisite: ENG 410 or approval of instructor.

412 Professional Writing. (3) N; Staff
Lectures and conferences concerning techniques of writing for publication. Prerequisite: ENG 311 or approval of instructor.

413 History of the English Language. (3) F,S; D. Brink, Moran
Development of the language from the earliest times to the modern period.

415 Medieval Literature. (3) F; Moran
Medieval English literature in translation, from Beowulf to Malory (exclusive of Chaucer), emphasizing cultural and intellectual backgrounds, and including some continental works.

418 Renaissance Literature. (3) F; Renaissance Staff
Poetry and prose, 1485-1603, exclusive of the drama. Continental background, humanism; More, Sidney, Spenser, and other representative writers.

419 Age of Transition: 1603-1660. (3) S; Renaissance Staff
Prose and poetry, exclusive of Milton and the drama. Metaphysicial, Cavalier, and Neo-classical verse; Donne, Jonson, Bacon, and other representative writers.

420 Renaissance Drama. (3) S; Renaissance Staff
Sixteenth and seventeenth century drama. Marlowe, Kyd, Jonson, and other represenatitive writers, exclusive of Shakespeare.

421 Shakespeare I. (3) F,S; Renaissance Staff
A selection of comedies, histories, and tragedies including *Midsummer Night's Dream, Henry IV, Hamlet,* and *Macbeth.*

422 Shakespeare II. (3) F,S; Renaissance Staff
A selection of comedies, histories, and tragedies including *Twelfth Night, King Lear, The Tempest,* and *Othello.*

423 Milton. (3) F,S; Renaissance Staff
Selected prose and poetry, emphasizing *Paradise Lost, Paradise Regained,* and *Samson Agonistes.*

424 Chaucer. (3) F,S; Moran
Chaucer's language, poetry and intellectual background.

425 Romantic Poetry. (3) F; Helms, Murray
Poetry of Wordsworth, Coleridge, Shelley, Keats, Byron.

426 Victorian Poetry. (3) S; Salerno, Johnson, Fletcher
Poetry of the second half of the 19th century. Special study of Tennyson, Browning, Arnold.

427 Age of Johnson. (3) S; Brack, M. Green
Chief writers, movements, and books during Johnson's career as a dominating literary figure, together with their most important relationships to predecessors and followers.

428 Age of Dryden, Swift, and Pope. (3) F; Brack, M. Green
Chief writers and movements in the nondramatic literature of the Restoration and early 18th century.

430 Cultural Backgrounds, 1832-1880. (3) N; Fletcher, Johnson
Selected works by writers such as Lamb, Carlyle, Ruskin, Mill, William Morris, Pater, and Yeats.

435 19th Century American Poetry. (3) S; Buckingham, Janssen
Themes and developments in American poetry to 1900.

439 Drama from Dryden to Sheridan. (3) S '84; Brack, M. Green
English drama of the Restoration and 18th century, especially critical theories and social forces affecting the stage.

440 American Literature to 1815. (3) N; Buckingham
Thought and expression from the time of the first English-speaking colonies to 1815.

441 20th Century American Drama. (3) N; Haberman, Shinn
American drama since World War I, especially experimental techniques.

442 20th Century British Poetry. (3) F; Haberman, Lightfoot
Major British poets of the period: techniques, aims and significance.

443 20th Century American Poetry. (3) F; J. Green, Kehl, Lightfoot
Major American poets of the period to 1945: techniques, aims and significance.

444 American Romanticism, 1830-60. (3) F; Fisher, Janssen, Levy
Art and ideas of major American transcendentalists and romantics.

445 American Realism, 1860-1900. (3) S; Ferrell, Fisher, Levy
Writers and influences that shaped the development of literary realism.

446 The American Novel from Dreiser to 1945. (3) F
Ferrel , Kehl, Levy
Major American novel sts of the period· developments in theory and practice

448 20th Century British Novel. (3) S; Haberman, Lightfoot
Twent eth century British nove s nce 1914

451 The Novel to Jane Austen. (3) F; Brack, M Green
From orig ns of prose f ction through the 18th century

452 The 19th Century Novel. (3) S, Fletcher, Johnson, Salerno
From Scott to Conrad.

453 The American Novel to Dreiser. (3) F, Ferre Janssen, Levy
Sentimental, romant c real st c and natural st c novels in America.

455 The Form of Verse: Theory and Practice. (3) N, Staff
Types, h story, crit cism and schoo s of theory of met rical form. Ana ys s of yric, narrative and dramat c poetry.

456 Classical Backgrounds of English Literature. (3) F, J Br nk, El is, Randall
Myths and legends of Greece and Rome and some of the works n wh ch they appear.

457 American Poetry Since 1945. (3) S; J Green, Keh , Lightfoot
Major American poets of the period: deve opments n theory and pract ce

458 American Novel Since 1945. (3) S; J Green Keh
Major novelists of the period: deve opments in theory and pract ce.

460 Western American Literature. (3) F S, Hakac Sands
Cr t cal examination of ideas and traditions of the l tera ture of the western Un ted States, nclud ng the novel.

461 Women and Literature. (3) N, Staff
Selected top cs n Br tish American and wor d l terature by or about women May be repeated for credit when topics vary.

463 European Drama from Ibsen to 1914. (3) N; Haberman
Chief cont nental and Br t sh dramat sts of the per od the beginn ngs and deve opment of rea sm

464 European Drama from 1914 to the Present. (3) N Haberman L ghtfoot
Chief continenta and Brit sh dramat sts of the period, emphasiz ng exper menta techn ques.

465 Film Analysis. (3) N Boyer, Sa erno
Understanding and enjoyment of f lm and its corre at on to literature, art, music, and other d scipl nes

471 Literature for Junior and Senior High School Students. (3) F,S, Staff
Prose and poetry which meet the nterests, desires and capabil t es of high schoo students Recent terature stressed.

480 Methods of Teaching English. (3 F,S, Staff
Methods of nstruct on, organ zation and presentat on of appropr ate content n Eng ish Prerequ s te. ENG 312 or 314 or 413.

485 Teaching of English as a Second Language. (3) F Ney
Nature of anguage earning, testing, analysis of d ffer ences between two languages as a bas s of nstruction Problems of cultural orientat on Prerequis te teach ng experience or approval of the nstructor.

500 Research Methods. (3) S
Methodology and resource materia s for research. Analys s of cr tic sm and scholarsh p, including evaluat on of sources. Specia sections for literature and for inguis- t cs

501 Introduction to Comparative Literature. (3) N
Problems, methods, and pr nc p es, lustrated by se ected crit cal essays and l terary texts

505 American English. (3 S
Deve opment of the Engl sh language n Amer ca n clud ng a survey of geograph ca and soc a dia ects

507 Old English. (3) F
E ements of O d Eng sh grammar, with se ected read ngs

508 Beowulf. (3 N
Intens ve literary and l ngu st c study of *Beowulf.* Pre requ s te· ENG 507

509 Middle English. (3) S 84
A study of the anguage, includ ng the principal d alects w th se ected read ngs

510 The Structure of English. (3) F
Grammat ca patterns of Eng ish particu ar y current l ngu st c approaches

511 English Phonetics and Phonology. (3 S
Current trends in phono og cal theory and ts bas s in acoustic and art cu atory phonet cs

512 The Teaching of Composition. (3) N
The theory and pract ce of teaching wr ting at a leve s Emphasis on current research. Prerequis te teach ng experience and approva of nstructor

513 Semantic Theory. (3) F
Various semantic mode s and semant c pathologies with part cular attent on to English

514 Advanced Grammar. (3) S
Tradit ona , structural, and generative Eng sh gram mars

515 Middle English Literature. (3) N
Engl sh l terature from the 12th through the 15th cen tury, exc us ve of Chaucer.

520 Renaissance Literature. (3) S
Poetry and prose of the Engl sh Rena ssance, exclud ng drama.

521 Shakespeare. (3) F
A selection of comedies, histor es, and tragedies presented in the context of l terary h story and cr t ca theor es w th an emphas s on class ca and med eva backgrounds.

525 American Literary Criticism. (3) N, F sher
Ana ysis and d scuss on of leading h stor cal and crit cal interpretat ons of Amer can terature from the begin nings to the present

530 Classical Rhetoric and Written Composition. (3 F
Relat onship of major texts n class ca rhetor c to devel opments n compos tion theory, and terary theory and pract ce through the nineteenth century

531 Rhetorical Theory and Literary Criticism. (3) S
Intensive study of major rhetorica theor sts of the 20th century n such areas as l terary crit c sm, d scourse theory, and composit on theory

532 Composition Theory. (3) N
ntens ve study n the rhetor cal categor es of nvent on arrangement sty e, a ms, modes and forms of wr tten discourse.

545, 547, 548, 549: (3) N
Selected authors or issues. May be repeated for cred t.

545 Studies in English Literature. (3) N

547 Studies in American Literature. (3) N

548 Studies in English Language. (3) N

549 Studies in Comparative Literature. (3) N

550 Contemporary Comparative Literature. (3) F
Comparative studies in modern literature in English and other literatures in translation.

591 Seminar. (3) F,S
Selected topics regularly offered in the various areas of English studies.

Special Courses: ENG 294, 298, 484, 492, 493, 494, 497, 498, 499, 580, 584, 590, 592, 593, 594, 598, 599, 790, 791, 792, 799. (See pages 33-34.)

Foreign Languages

PROFESSORS:
____(LL B-404), BININGER, CARLSON, COUCH, EKMANIS, FLYS, FOSTER, GROBE, HORWATH, MARTINEZ, SHEPPARD, VIRGILLO

ASSOCIATE PROFESSORS:
AHERN, ALARCÓN, ALEXANDER, BARKIN, CARVER, CROFT, CURRAN, FRIEDMAN, GUNTERMANN, HENDRICKSON, KNOWLTON, LOSSE, RADKE, RODD, SENNER, VALDIVIESO, VASQUEZ, VOLEK, WOLLAM, WONG

ASSISTANT PROFESSORS:
ACEVEDO, BALDINI, BURTON, COTA-CARDENAS, GRUZINSKA, LAETZ, LAFFORD, REIMAN, SIMMONS, TIPTON, WIXTED

INSTRUCTORS:
HABERMAN, MORGAN, SCHUBACK, TU, WILSON

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Asian Languages (Chinese/Japanese), French, German, Russian, Spanish—Consists of 45 semester hours of credit, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student. Of the 30 hours required for the major, a minimum of 24 hours must be taken above the 200 level and must include at least 9 hours at the 400 level or above. Specific required courses for each major area are listed in a brochure available in the department. (See Degree Requirements, page 40.)

Asian Studies Emphasis—Consists of the Bachelor of Arts degree requirements in Asian languages. In addition to the required 45 semester hours, 15 hours of Asian content courses selected with the approval of the student's advisor must be completed. Fulfillment of these requirements will be recognized on the transcript as a major in Asian Languages (Chinese/Japanese)—Asian Studies emphasis. (For an Asian Studies emphasis in other disciplines, see Asian Studies, page 52.)

Latin American Studies Emphasis (See Interdisciplinary Studies, page 55.)—Consists of the Bachelor of Arts degree requirements in Spanish. At least 30 upper division semester hours of the total program must be in Latin American content courses including 15 hours in Spanish and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required, and a reading knowledge of the other language is suggested. The program must be approved by the Center for Latin American Studies. Fulfillment of requirements is recognized on the transcript as a bachelor's degree with a major in Spanish—Latin American Studies emphasis.

Mexican American Studies Emphasis—Consists of 45 semester hours of credit, of which 30 hours must be in Spanish (to include SPA 421, 464, and 471) and 15 hours in Mexican American content courses as related fields. Fulfillment of requirements is recognized on the transcript as a major in Spanish—Mexican American Studies emphasis.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Asian Languages (Chinese/Japanese), French, German, Russian, Spanish—Consists of 45 semester hours of credit, of which 30 must be in one language and 15 in a second language or in closely related fields to be approved by the advisor in consultation with the student. Of the 30 hours required for the major, a minimum of 24 hours must be taken above the 200 level and must include at least 9 hours at the 400 level or above. Specific required courses for each major area are listed in a brochure available in the department.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Consists of a minimum of 24 semester hours of credit in one foreign language of which at least 18 hours must be taken above the 200 level (see departmental brochure for listing of required courses in each minor area).

Departmental Graduate Programs

The Department of Foreign Languages offers programs leading to the degrees of Master of Arts in French, German, and Spanish and the Doctor of Philosophy degree in Spanish. Consult the *Graduate Catalog* for requirements.

Foreign Languages for International Professions

The sequence of two semesters, listed under numbers 107 and 207 in five languages (Chinese, French, German, Japanese, and Spanish), integrates an accelerated study, a functional approach to course design, and preparation for international professions (e.g., business, diplomacy, international political economy). It is parallel to the traditional sequence of 101 through 202 and will also satisfy the Liberal Arts foreign language requirement for the B.A. degree. The sequence differs from traditional basic language programs in that all aspects of the language—vocabulary, grammar, and skill development—are practiced within the context of authentic communication for social and professional purposes in the target culture. Classes meet eight hours weekly, for 8 credit hours in each of two semesters (ten hours weekly, for 10 credit hours in Chinese and Japanese).

Students must be beginners in the language, but those who have had success in learning one foreign language are encouraged to join this program in a second language. Students should contact the Department of Foreign Languages prior to registration.

Certificate Program in Translation

The Certificate Program in Translation is designed to provide the advanced training required for professional translation in both public and private sectors, preparation for the rigorous examinations required by national and international agencies, and training as an ancillary skill for professional fields, such as international business, public health and medicine, law, etc., in accordance with guidelines recommended by the American Translators' Association. The certificate is a nondegree program consisting of 15 credit-hours of course work and two hours of in-service practicum primarily into the receptor language of English from the source languages of French and Spanish. It may be taken simultaneously with course work leading to an undergraduate or graduate degree, as a related area sequence, or as the sole program of study for members of the community who meet the admission requirements of the certificate program, but who are not enrolled in a degree program.

Admission Requirements. Since entrance to professional translation is through work, and cultural experience and examination, the two entrance requirements to this certificate program are: 1) A written proficiency examination in the source and the receptor languages at the level of completion of the fourth year or most advanced composition course in French or Spanish, which at Arizona State University are FRE 412 and SPA 412. 2) *One* of the following: a) an academic year at a university in a French-speaking or Spanish-speaking country; b) extensive work experience using French or Spanish; or c) demonstrated bilingual facility, both written and oral, in English and either French or Spanish.

Certificate Requirements. The certificate program consists of 15 credit hours of required courses: six hours general theory of linguistics and translation as a profession (FLA 400, 401), nine hours of applied translation electives in specialized areas (FLA 481, 482, 483, 485), and two hours of in-service practicum (FLA 484).

Foreign Language Requirement and Placement

For the degree of Bachelor of Arts, the College of Liberal Arts requires knowledge of one foreign language equivalent to the completion of two years' study at the college level. This normally includes a sequence of courses numbered 101, 102, 201, and 202 or 107 and 207. For important exceptions in French, Greek, and Portuguese, see statement at head of respective course descriptions. Courses taken to satisfy the foreign language requirement for the B.A. degree will not count toward the General Studies requirements.

Students who have completed their secondary education in a school where a foreign language was the official language of instruction will be considered as having satisfied the foreign language requirement. (See page 23.)

Languages not taught at Arizona State University will be accepted only as transfer credit, or upon successful passing of a proficiency examination, from an approved university.

Ordinarily, no placement or proficiency examination is administered to students who wish to continue studying a foreign language for which high school credits have already been received. Students should be guided by the following principles of equivalency:

(1) One unit (one academic year) of high school-level study will be considered, for placement purposes only, to equal one semester of study of the same language at the university level. Thus, students with one year of high school study would enroll in the second semester course (102); with two years of high school study, in the third semester course (201), etc.
(2) Students who feel that their high school language preparation was inadequate may choose to place themselves on a lower level, but not lower than 111 with two or three years of high school study and 201 with four years of high school study.

Students will not receive university credit for foreign language studies undertaken in violation of these equivalency principles.

Students with prior knowledge of a language may have all or part of their requirement waived in any one of the following ways: (1) by satisfactory results in a departmental proficiency examination; (2) by achieving a grade of at least C in the last course of the required sequence (*e.g.*, GER 102 or 111 for the B.S. in Chemistry, 202 for the B.A.); or (3) by achieving a grade of at least C in a course at the next higher level (*e.g.*, any 300 level course for the B.A.).

If college transfers are uncertain about course equivalencies, they should contact the Department of Foreign Languages.

Language Laboratory Requirement

All students enrolled in 101, 102, 201 and 202 language courses must spend a minimum of one hour per week in the language laboratory in addition to the regular class periods.

FOREIGN LANGUAGES

FLA 150 Introduction to East Asian Culture. (3) S
An introduction to the cultures of China, Japan, and Korea.

323 Survey of Soviet Literature in Translation. (3) F,S
Knowledge of Russian is *not* required. Survey of the main literary movements, prominent authors, and the most significant works of prose, poetry and drama of the Soviet period (1917 to present).

400 Linguistics. (3) S; Staff
Surveys major theories of current linguistic study and explores their application to specific issues of English, the Romance Languages, and language teaching. Open to sophomores and juniors with approval of instructor.

401 Translation Theory and Practice. (3) N
Translation theories and professional practices and ethics; bibliography, computer technology and sample texts for natural and social sicences and humanities. Prerequisite: fourth year composition or approval of instructor in respective language area.

415 Bilingualism and Languages in Contact. (3) F; Barkin
Analysis of linguistic aspects of bilingualism, e.g., pidgins and creoles, code-switching, and other contact phenomena; simultaneous/sequential bilingual language acquisition. Prerequisite: FLA 400 or equivalent, or approval of instructor.

420 Foreign Literature in Translation. (3) F,S
Not for language majors (except in Asian languages and Russian); open to language majors as a related-area course. Graduate students by permission. No prerequisite.

a)	Brazilian	h)	Latin
b)	Chinese	i)	Portuguese
c)	French	j)	Russian
d)	German	k)	Soviet
e)	Greek	l)	Spanish
f)	Italian	m)	Spanish-American
g)	Japanese		

480 Methods of Teaching Foreign Languages. (3) F
Teaching foreign languages and literatures at secondary and college levels. This course will not meet the Liberal Arts General Studies requirement for Humanities and Fine Arts. Required for admission to SED 433. Prerequisite: 12 hours of upper division courses in one foreign language.

481 Technical and Scientific Translation. (3) N
Resources, practices, strategies, and lexicon for translation of professional texts: engineering, architecture, agriculture, computer technology, electronics, physical and biological sciences, etc. Prerequisite: FLA 401†.

482 Business and Financial Translation. (3) N
Resources, practices, strategies, and lexicon for translation of professional texts: economics, finance, insurance, management, marketing, accounting, advertising, real estate, etc. Prerequisite: FLA 401†.

483 Medical and Legal Translation. (3) N
Resources and strategies for translation of professional texts: medicine, nursing, public health, criminal justice, international law, etc. May be repeated for a total of six hours credit. Prerequisite: FLA 401†.

485 Problems of Literary Translation. (3) N
Theory and practice with emphasis on application through individual translation projects. May be repeated for a total of six hours credit. Prerequisite: approval of the instructor in the respective language area.

515 Second Language Acquisition. (3) S; Barkin
Description and analysis of bilingual language acquisition and learning simultaneously or sequentially in natural and artificial settings. Prerequisite: FLA 400 or equivalent, or approval of instructor.

525 Trends and Issues in Foreign Language Teaching. (3) N
Advanced methods seminar, designed for experienced teachers.

Special Courses: FLA 294, 494, 497, 498, 499, 591. (See pages 33-34.)

CHINESE

CHI 101, 102 Elementary Chinese. (5,5) F,S
Pronunciation, grammar, elementary conversation, development of basic reading and writing skills. Standard dialect. Five lectures, 1 hour laboratory.

107 Chinese for International Professions I. (10) F
Accelerated program alternative to CHI 101, 102 sequence. Functional approach to needs of international professions.

201, 202 Intermediate Chinese. (5,5) F,S
Systematic review of grammar. Development of vocabu-

lary through reading, writing Drill in aural/oral skills. Prerequisite. CHI 102† or equivalent. Five lectures, 1 hour laboratory.

205 Chinese Calligraphy. (1) F, S
An introduction to styles and techniques of Chinese writing. Knowledge of Chinese or Japanese is not required

207 Chinese for International Professions II. (10) S
Continuation of CHI 107, alternative to CH 201, 202 sequence. Expansion of communicative proficiency in specif c areas of international professions Prerequisite. CHI 107 or approval of instructor.

309, 310, 311, 312 Chinese Conversation. (2, 2, 2, 2) F S
Intensive aural/oral drills towards conversational fluency in modern Chinese. To be offered in rotation, with each course covering different situations and vocabulary. Prerequisite: CHI 202†.

313, 314 Advanced Chinese. (3,3) F, S
The modern language in general, or specific areas depending on the student's needs or interests. Prerequisite: CHI 202† or equivalent Three lectures plus arranged laboratory

321, 322 Chinese Literature. (3, 3) F S
Selected representative works of the various genres and periods. Prerequisite: CHI 202† or approval of instructor.

413, 414 Introduction to Classical Chinese. (3, 3) F, S
Reading in various genres of pre-20th century wen-yen, with analysis of its structural characteristics Prerequisite: CHI 202† or the equivalent.

Special Courses: CHI 294, 492, 493, 494, 499, 590
(See pages 33 34)

FRENCH

Any two of the 200 level courses may be taken in any order or simultaneously to satisfy the Liberal Arts language requirements

FRE 101, 102 Elementary French. (4-4) F, S, SS
Intensive aural/oral drill in class and laboratory, basic grammar supplemented by simple prose readings Not open to students with credit in FRE 111 Four lectures, 1 hour laboratory.

107 French for International Professions I. (8) F
Accelerated program alternative to FRE 101, 102 sequence. Functional approach to needs of international professions

111 Fundamentals of French. (4) F S
Primarily for students with two years of high school French who need review to enter second year study. Not open to students with credit in FRE 102 Four lectures, 1 hour laboratory

201 Intermediate Grammar Review. (4) F S, SS
A thorough review of French grammar, including full attention to literary usage Prerequisite. FRE 102†, 111 or equivalent. Four lectures, 1 hour laboratory.

202 Intermediate Reading. (4) F S
Extensive reading in 19th and 20th century literary and cultural texts. Designed to increase the student's vocabulary and to teach prompt recognition of stylistic usages and grammatical structures. Prerequisite: FRE 102†, 111 or equivalent

203 French Conversation. (4) F, S, SS
Current usage in expression of ideas. Especially recommended for students who plan to travel in French speaking countries or who desire supplementary practice in speaking and understanding before advancing to 300-level courses. Prerequisite: FRE 102†, 111 or equivalent. One hour laboratory required

207 French for International Professions II. (8) S
Continuation of FRE 107, alternative to FRE 201, 203 sequence Expansion of communicative proficiency in specific areas of international professions Prerequisite: FRE 107 or approval of instructor.

311 French Conversation. (3) F, S
Further practice in speaking French, emphasizing current usage and promoting facility in the expression of ideas One hour laboratory work required Prerequisites. FRE 203† and 201† or 202†, or equivalents.

312 French Composition. (3) F, S
Further practice in writing French, emphasizing current usage and promoting facility in the expression of ideas. Prerequisite: eight hours of 200 level French, including 202† or equivalents.

319 Business Correspondence and Communication. (3) S
Organization and presentation of clear, effective business communications, vocabulary applicable to modern business usage Prerequisite FRE 312† or approval of instructor

321, 322 French Literature. (3-3) F, S
Representative masterpieces and significant movements of French literature Prerequisite. FRE 202†, plus either FRE 203† or FRE 311†, or equivalents

410 French Phonetics and Diction. (2) F '84
Theory and practical application Prerequisites FRE 311† 312†, or equivalents

411 Advanced Spoken French. (3) F
Improvement of spoken French. Prerequisites nine hours of 300-level French including FRE 311†, or equivalents.

412 Advanced Written French. (3) S
Improvement of composition skills. Prerequisites nine hours of 300-level French, including FRE 312† or equivalents.

415 French Civilization. (3) S 85; Wolam
Political, intellectual social, economic and artistic development of the French nation from its origins to the present Prerequisite six hours of upper division French.

431 French Women in Society and the Arts. (3) N Staff
Outstanding French women who have contributed to the shaping of society and the arts from the Middle Ages to present. Prerequisite nine hours of 300-level French, including FRE 321†, 322†, or approval of instructor.

441 French Literature of the 17th Century. (3) F 84· Grobe
From 1600 to 1660. Prerequisite nine hours of 300-level French including FRE 321†, or approval of instructor.

442 French Literature of the 17th Century. (3) S 85, Grobe
From 1660 to 1700 Prerequisite. nine hours of 300 level French including FRE 321†, or approval of instructor.

445 French Literature of the 18th Century. (3) F '84; Wolam
Contributions of the philosophers development of the novel and drama Prerequisite: nine hours of 300- level French, including FRE 321† or approval of instructor

451 French Poetry of the 19th Century. (3) S '85, Gruzinska
From Romanticism to Parnassian poetry to Symbolism Prerequisite: nine hours of 300 level French, including FRE 322†, or approval of instructor.

452 French Novel of the 19th Century. (3) S 84 Gruzinska
From Constant, Hugo Balzac, Stendhal and Sand to

Flaubert and Zola, with emphasis on major literary movements. Prerequisite: nine hours of 300-level French, including FRE 322†, or approval of instructor.

453 Theater of the 19th Century. (3) N; Gruzinska
From Romantic drama to the Symbolist Theater. Representative plays of Hugo, Musset, Vigny, Dumas, Becque, Rostand, Feydeau and Mirbeau. Prerequisite: nine hours of 300-level French, including FRE 322†, or approval of instructor.

461 Pre-Atomic Literature. (3) F '83; Wollam
Representative authors from Proust, Malraux to Sartre, from 1900 to 1945. Prerequisite: nine hours of 300-level French, including FRE 322†, or approval of instructor.

462 Post-Atomic Literature. (3) S '84; Radke
Representative authors including Camus, Duras and Robbe-Grillet, from 1945 to present. Prerequisite: nine hours of 300-level French, including FRE 322†, or approval of instructor.

471 The Literature of Francophone Africa and the Caribbean. (3) F '84; Losse
Selected prose, poetry and drama of black authors from Africa and the Caribbean. Prerequisite: nine hours of 300-level French including FRE 322†, or approval of instructor.

500 Bibliography and Research Methods. (3) F
Required of all graduate students.

510 Explication de Textes. (3) N
Detailed analysis of literary texts.

511 French Stylistics. (3) N
Art of writing literary French, comparative stylistics.

515, 516 Intellectual Currents in France, from the Middle Ages Through the 20th Century. (3-3) N
Significant social, esthetic, philosophic, and scientific ideas as presented by major writers of fiction and nonfiction.

521 History of the French Language. (3) N
Principal phonological, morphological and semantic developments of French from its Latin origins to the present. Prerequisite: some familiarity with Latin recommended.

531 Medieval French Literature. (3) F '83
Readings in the epics, early drama, roman courtois and other representative literary genres of the Middle Ages.

535 French Literature of the 16th Century. (3) S '84
Readings in French Renaissance literature with special attention to the humanist movement and to Rabelais, Montaigne and the Pleiade.

591 Seminar. (3) N
Topics may be selected from the following:

(a) French Literary Criticism
(b) Corneille, Molière and Racine
(c) Diderot, Voltaire and Rousseau
(d) Balzac
(e) Romanticism
(f) Proust
(g) Realism and Naturalism
(h) French Existentialist Literature
(i) Advanced Problems in French Literature
(j) Flaubert
(k) Stendhal and Zola

Special Courses: FRE 294, 492, 493, 494, 498, 499, 590, 592, 598, 599. (See pages 33-34.)

GERMAN

GER 101, 102 Elementary German. (4-4) F, S, SS
Reading, writing, speaking and understanding of basic German with emphasis on pronunciation and grammar. Not open to students with credit in GER 111. Four lectures, 1 hour laboratory.

107 German for International Professions I. (8) F
Accelerated program alternative to GER 101, 102 sequence. Functional approach to needs of international professions.

111 Fundamentals of German. (4) F, S
Primarily for students with two years of high school German who need review to enter second year study. Not open to students with credit in GER 102. Four lectures, 1 hour laboratory.

201, 202 Intermediate German. (4-4) F, S, SS
Intensive review of grammar with emphasis on the development of the skills of speaking, listening comprehension, reading, and writing. Prerequisite: GER 102† or 111 or equivalent. Four lectures, 1 hour laboratory.

207 German for International Professions II. (8) S
Continuation of GER 107, alternative to GER 201, 202 sequence. Expansion of communicative proficiency in specific areas of international professions. Prerequisite: GER 107 or approval of instructor.

303, 304 Scientific German. (3-3) F, S
Acquisition of a specialized vocabulary through the reading of German scientific publications. Does not satisfy the Liberal Arts language requirement for B.A. degree. Prerequisite: GER 102† or 111.

311, 312 German Conversation. (3-3) F, S
Expansion of idiom through oral practice dealing with contemporary articles, essays, and stories. (Three hour credit limit for majors). Prerequisite: GER 202† or equivalent.

313 German Composition. (3) S
Intensive practice in writing, emphasizing style and grammar. Prerequisite: GER 202† or equivalent.

314 Introduction to German Literature. (3) F
Beginning study of German poetry, drama, the novel and the *Novelle*. Prerequisite: GER 202† or equivalent.

319 Business Correspondence and Communication. (3) S
Organization and presentation of clear, effective business communications; vocabulary applicable to modern business usage. Prerequisite: GER 313† or approval of instructor.

321, 322 German Literature. (3-3) F, S.
From the beginning to classicism and from romanticism to the present. Prerequisite: GER 202† or approval of instructor.

411 Advanced Grammar and Conversation. (3) F
Improvement of diction and idiom through intensive oral review. Prerequisite: GER 311† or 312† or equivalent.

412 Advanced Grammar and Composition. (3) S
Improvement of writing ability. Prerequisite: GER 313† or equivalent.

415 German Civilization. (3) S '85; Horwath
Aspects of political, social and cultural life of the German-speaking world. Prerequisite: any 300-level course in German or approval of instructor.

445 German Literature: Enlightenment to Classicism. (3) F '83, S '85; Senner
Major works of the literary epochs in the 18th century. Prerequisite: GER 321† or approval of instructor.

451 German Literature: Biedermeier to Naturalism. (3) S '84; Horwath
Representative works of prose and poetry from 1820 to 1890. Prerequisite: GER 322† or approval of instructor.

461 Contemporary German Literature. (3) SS '84; Laetz
German writers since 1945. Prerequisite: GER 322† or approval of instructor.

500 Bibliography and Research Methods. (3) F '84
Required of all graduate students.

511 German Stylistics. (3) S '85
Art of writing literary German, comparative stylistics.

521 History of German Language. (3) S '84
Linguistic development of German from the earliest records to the present.

523 German Drama. (3) N;
Drama of the 19th and 20th centuries.

525 German Novel. (3) S '85
Special studies in the German novel.

527 The *Novelle*. (3) N
Special studies in the German short story.

531 Middle High German Language and Literature. (3) F '83
Reading and discussion of specimens of the Middle High German epics, romances, and other literary genres.

541 Baroque. (3) F '83
Studies in poetry, prose and drama of the 17th and early 18th centuries.

551 Romanticism. (3) F '84
Treatment of early and late Romanticism.

555 Modern German Literature. (3) F '84
Major works from the period of Expressionism to 1945.

591 Seminar. (3) N
Special topics are concerned with a figure, theme or work in German literature or Germanic studies. Topics may be selected from the following:

(a) Goethe
(b) Faust
(c) Schiller
(d) Kleist
(e) Kafka
(f) Hesse
(g) Grass and Boll
(h) Germanic Studies

Special Courses: GER 492, 493, 494, 498, 499, 590, 592, 598, 599. (See pages 33-34.)

GREEK

Completion of GRK 101, 201, 301, and 302 will satisfy the Liberal Arts language requirements.

GRK 101 Elementary Greek. (4) F
For beginning students only.

201 Intermediate Greek. (4) S
Continuation of GRK 101. Prerequisite: GRK 101 or approval of instructor.

301, 302 Greek Literature. (3-3) F, S
Readings in the masterpieces of ancient Greek literature; advanced grammar. Authors read are changed each year in accordance with needs of the class. May be repeated for credit. Prerequisite: GRK 201† or approval of instructor.

Special Courses: GRK 492, 493, 494, 499. (See pages 33-34.)

ITALIAN

ITA 101, 102 Elementary Italian. (4-4) F, S
Aural/oral drill in class and laboratory, and basic grammar supplemented by simple prose readings. Four lectures, 1 hour laboratory.

201, 202 Intermediate Italian. (4-4) F, S
Intensive review of the fundamentals of Italian grammatical structure to increase the student's ability in composition, translation and idiomatic expression. Prerequisite: ITA 102† or equivalent. Four lectures, 1 hour laboratory.

311, 312 Italian Composition and Conversation. (3-3) F, S
Development of writing ability and oral expression. Prerequisite: ITA 202† or equivalent.

325 Introduction to Italian Literature. (3) S
Italian literature through the interpretation of representative works in drama, poetry and novel. Prerequisite: ITA 312† or approval of instructor.

441 Dante: *Divina Commedia*. (3) N
Critical reading of the three *Cantiche (Inferno, Purgatorio, Paradiso).* Prerequisite: ITA 325†.

449 20th Century Italian Literature. (3) N
Major works, figures and movements of contemporary Italian literature. Prerequisite: ITA 325†.

Special Courses: ITA 492, 493, 494, 499. (See pages 33-34.)

JAPANESE

JPN 101, 102 Elementary Japanese. (5-5) F, S
Pronunciation, conversation and structural grammar. Aural/oral drill. Graduated introduction of basic reading and writing skills. Five lectures, 1 hour laboratory.

107 Japanese for International Professions I. (10) F
Accelerated program alternative to JPN 101, 102 sequence. Functional approach to needs of international professions.

201, 202 Intermediate Japanese. (5-5) F, S
Grammar review and continued oral practice. Increased emphasis on reading and writing. Prerequisite: JPN 102† or equivalent. Five lectures, 1 hour laboratory.

206 Calligraphy. (1) S '84
Introduction to the practice of calligraphy in Japan with emphasis on the derivation of Japanese *kana* syllabaries from Chinese characters. Prerequisite: CHI 205 or JPN 101.

207 Japanese for International Professions II. (10) S
Continuation of JPN 107, alternative to JPN 201, 202 sequence. Expansion of communicative proficiency in specific areas of international professions. Prerequisite: JPN 107 or approval of instructor.

309, 310 Intermediate Japanese Conversation. (2-2) F, S
Practice in current usage in expression of ideas. Recommended especially for those who have not had the opportunity to practice Japanese in Japan. Prerequisite: JPN 202†.

311, 312 Advanced Japanese Conversation. (2-2) F, S
Intensive aural/oral practice toward conversational fluency. Prerequisite: JPN 202†.

313, 314 Advanced Japanese. (3-3) F, S
Designed to develop skill and accuracy in written Japanese. Prerequisite: JPN 202† or equivalent.

321 Japanese Literature. (3-3) F, S
Readings in representative masterpieces of modern Japanese literature. Authors read change each year in accordance with the needs of the class. May be repeated for credit. Prerequisite: JPN 313† or approval of instructor.

414 Introduction to Classical Japanese. (3) S' 85
Readings from various genres of pre-20th century literature, with analysis of the structure of the classical language. Prerequisite: JPN 313† or approval of instructor.

Special Courses: JPN 294, 492, 493, 494, 499, 590. (See pages 33-34.)

LATIN

LAT 101, 102 Elementary Latin. (4-4) F, S
For beginning students only.

201, 202 Intermediate Latin. (4-4) F, S
Selected Latin literature, both classical and post-classical; Vergil's *Aeneid;* advanced grammar. Prerequisite: LAT 102† or approval of instructor.

421, 422 Roman Literature. (3-3) F,S
Readings in the Latin masterpieces. Authors read change each year in accordance with needs of the class. May be repeated for credit. Prerequisite: LAT 202 or approval of instructor.

Special Courses: LAT 492, 493, 494, 499. (See pages 33-34.)

PORTUGUESE

Completion of POR 101, 201, 313, and 314 will satisfy the Liberal Arts Language requirements.

POR 101 Elementary Portuguese. (5) F
Basic grammar with intensive drill in class and laboratory directed toward conversational fluency. Five lectures, 1 hour laboratory. Prerequisite: one year of Spanish, French, or Italian, or approval of instructor.

201 Intermediate Portuguese. (5) S
Continuation of POR 101. Intensive drill of fundamentals in class and laboratory directed toward conversational fluency. Five lectures, 1 hour laboratory. Prerequisite: POR 101 or approval of instructor.

313, 314 Portuguese Composition and Conversation. (3-3) F, S
Designed to develop skill in written Portuguese and corrected oral expression. Must be taken in sequence. Prerequisite: POR 201† or approval of instructor.

321 Luso-Brazilian Literature. (3) N
Representative masterpieces of Portuguese and Brazilian literature from the beginning to the present. Prerequisite: POR 313† or approval of instructor.

472 Luso-Brazilian Civilization. (3) N; Curran
Lectures, readings and discussion of important aspects of Luso-Brazilian civilization. Topics from music, art, folklore, literature, history and politics. Prerequisite: POR 313† or approval of instructor.

Special Courses: POR 492, 493, 494, 499, 590. (See pages 33-34.)

RUSSIAN

RUS 101, 102 Elementary Russian. (4-4) F, S, SS
Structural grammar and basic vocabulary. Introduction and reinforcement of aural/oral reading and writing skills. Four lectures, 1 hour laboratory.

201, 202 Intermediate Russian. (4-4) F, S, SS
Systematic review of grammar. Development of vocabulary through reading, writing. Drill in aural/oral skills. Prerequisite: RUS 102† or equivalent. Four lectures, 1 hour laboratory.

211, 212 Basic Russian Conversation. (3-3) F, S
Intensive aural/oral drill to supplement reading and grammatical skills acquired in RUS 101, 102†, 201†, and 202†. Required of Russian majors. Prerequisite: RUS 102†.

303, 304 Scientific Russian. (3-3) F, S
Acquisition of scientific vocabulary through reading from current Soviet scientific publications. Does not satisfy the Liberal Arts language requirement for B.A. degree. Prerequisite: RUS 102†.

311, 312 Russian Composition and Conversation. (3-3) F, S
Development of writing ability and oral expression. Prerequisite: RUS 202†.

321, 322 Survey of Russian Literature. (3-3) F, S
The main literary movements, prominent authors and the most significant works of prose, poetry and drama to the 1917 revolution. Prerequisite: RUS 202† or equivalent.

323 Survey of Soviet Literature. (3) F, S
The main literary movements, prominent authors and the most significant works of prose, poetry and drama of the Soviet period (1917 to present). Prerequisite: RUS 202† or equivalent.

411, 412 Advanced Composition and Conversation. (3-3) F, S
Designed to improve aural discrimination, self-expression in oral and written skills, emphasizing vocabulary building. Subject materials drawn from current Soviet publications. Prerequisite: RUS 312†.

417, 418 Applied Russian Phonetics. (2-2) N
General improvement in the student's language skills through aural/oral training in Russian phonology and an analysis of Russian orthography. Prerequisite: RUS 312†.

420 Russian Poetry. (3) N
Development of Russian poetry from its beginnings to the present, including both native and emigré poets. Topics in criticism and the study of poetics. Prerequisite: RUS 312† or approval of instructor.

421 Pushkin. (3) N
Pushkin's poetry, plays and prose fiction, including *Eugene Onegin, The Little Tragedies, Tales of Belkin, Queen of Spades* and *The Captain's Daughter.* Taught in English. Does not satisfy the Liberal Arts language requirement for B.A. degree.

423 Dostoyevsky. (3) N
Dostoyevsky's major works of fiction, including *Crime and Punishment* and *Brothers Karamazov.* Taught in English. Does not satisfy the Liberal Arts language requirement for B.A. degree.

424 Tolstoy. (3) N
Tolstoy's major works, including *War and Peace* and *Anna Karenina.* Taught in English. Does not satisfy the Liberal Arts language requirement for B.A. degree.

425 Chekhov. (3) N
Chekhov's major works, representative short stories and major plays, including *The Cherry Orchard* and *Three Sisters.* Taught in English. Does not satisfy the Liberal Arts language requirement for B.A. degree.

426 Soviet Dissident Literature (1917—Present). (3) N; Ekmanis
Including such authors as Khvylovy, Pasternak, Sinavsky, Daniel', Voinovich, Zinov'ev, Belsevica, Venclova, and others. Prerequisite: RUS 312† or approval of instructor.

430 Russian Short Story. (3) N; Burton
Detailed study of representative works of the Russian short story genre. Authors included are from both Imperial and Soviet Russia. Prerequisite: RUS 312†.

440 History of the Russian Language. (3) N
Principles of historical linguistics presented through the evolution of the Russian language from Proto-Indo-European to the present. Readings of historical documents in Old Russian and Old Church Slavic. Prerequisite: RUS 312† or approval of instructor.

441 Survey of Russian Culture. (3) N
Interplay of artistic, social and political forces in the development of Russian culture from the Kievan period to

the present Exc us ve use of Russ an language source materia s Prerequisite RUS 312† or approva of n-structor

591 Seminar. (3) N
Topics may be selected from the following·

(a) Pre 19th Century Russian Literature
(b) 19th Century Russ an L terature
(c) Russ an Poetry to 1890
(d) Russ an Poetry, 1890 to Present
(e) Russian L terary Cr t c sm
(f) Soviet Socia ist Rea sm
g) Contemporary Soviet Authors

Special Courses: RUS 492, 493, 494, 499, 590. (See pages 33-34.)

SPANISH

SPA 101, 102 Elementary Spanish. (4-4) F S SS
Fundamenta s of the language Not open to students with credit in SPA 111. Four lectures, 1 hour laboratory

107 Spanish for International Professions I. (8) F
Acce erated program alternative to SPA 101 102 sequence. Funct onal approach to needs of nternat ona professions

111 Fundamentals of Spanish. (4) F, S
Pr mari y for students with two years of high school Spanish who need review to enter second year study. Not open to students w th credit in SPA 102. Four lec tures, 1 hour aboratory

201, 202 Intermediate Spanish. (4 4) F, S, SS
Continuation of fundamentals Emphas s on the deve - opment of the sk l s of read ng, l stening comprehen-sion, speaking and writ ng. Prerequis te. SPA 102† or 111 Four lectures, 1 hour aboratory

203, 204 Intermediate Spanish for Bilinguals. (4 4) F, S
Des gned to meet the needs of the Span sh speak ng student May be taken in eu of 201 202. Emphasis on composition, terature, conversat on and review of grammar fundamenta s. Prerequis te SPA 102† or 111 or p acement. Four lectures, 1 hour laboratory

207 Spanish for International Professions II. (8) S
Cont nuation of SPA 107, a ternat ve to SPA 201, 202 sequence. Expans on of communicat ve prof c ency n spec f c areas of nternat ona profess ons Prerequ site SPA 107 or approval of nstructor.

311, 312 Spanish Conversation. (3-3) F S
Designed pr mar ly for non-majors to promote faci ty in coherent and express ve dict on n Spanish. Prerequ site· SPA 202† or equivalent

313, 314 Spanish Conversation and Composition. (3 3) F S, SS
Des gned to deve op ski and accuracy in spoken and written Span sh. Requ red of majors to be taken in se quence Prerequis te SPA 202† or equ valent

315, 316 Spanish Conversation and Composition for Bilinguals. (3 3) F, S
Designed to meet the needs of the Spanish speak ng student May be taken in eu of 313-314. Prerequis te· 202† or 204† or approval of nstructor

319 Business Correspondence and Communication. (3) S
Organization and presentat on of c ear, effective busi ness communications; vocabu ary applicable to modern bus ness usage Prerequ s te: SPA 314† or 316† or ap prova of nstructor.

325 Introduction to Hispanic Literature. (3) F, S
A cr tical approach to and analys s of literary types. po etry, drama, short story and novel. Required of a l ma-jors Prerequisite. SPA 202† or 204†

412 Advanced Conversation and Composition. (3) F, S
Oral and wr tten Span sh communication skil s, with particular attention g ven to developing fluency and fac ity Required of majors Prerequ site· SPA 314† or 316† or approval of instructor

413 Advanced Spanish Grammar. (3) F
ntens ve ana ys s of the Spanish anguage Requ red of teach ng majors. Prerequisite SPA 314† or 316† or ap prova of nstructor.

417 Spanish Phonetics and Phonology. (3) F '83; Barkin, Foster, Lafford
ntroduction to the theory and practice of Span sh phonet cs and phonology. Prerequisite. SPA 314†, or 316†

420 Applied Spanish Linguistics. (3) S; Barkin, Sheppard
Appl cation of inguistic principles to the acqu sition, analysis and teaching of Span sh. Prerequisite: FLA 400 or any other ntroductory ingu stics course.

421 Spanish in the Southwest. (3) F '83, S 85; Acevedo Mart nez
Ana ys s of Southwest spoken and written Spanish as compared to standard Spanish. Designed for students prepar ng for b lingua b cu tural work Prerequ site. SPA 314† or 316† or approval of instructor.

424 Masterpieces of Hispanic Literature. (3) S
Selections from the terature of the H spanic world and d scussion of ts cu tural background Requ red of but not mited to teach ng majors Prerequisite SPA 325†

425, 426 Spanish Literature. (3-3) F, S
Survey of Span sh terature from ts beg nn ng to the present Prerequ s te: SPA 325†

427, 428 Spanish-American Literature. (3-3) F, S
Survey of major works, f gures and movements from Colonia per od to 1880 and from 1880 to present. Pre requ s te· SPA 325†

429 Mexican Literature. (3) N
Selected readings from pre-Co omb an wr ters/poets (e g Macui xochit) through the novel of the Revo ution to the present Prerequ s te. SPA 325†

434 Drama of the Golden Age. (3) S '85· B n nger, Fr edman, Mart nez
Dramatic works of Lope de Vega, Ca deron de la Barca and the r contemporaries. Prerequis te SPA 325†

435 Cervantes - *Don Quijote.* (3) F 84; Friedman, Sheppard, Va div eso
Don Quijote and the development of the novel. Prereq uisite SPA 325†.

436 Generation of 1898. (3) S 84, Flys Vasquez
Works of Unamuno, Baroja Azorin and the r contem-porar es, stud ed aga nst the deologica background of the turn of century in Spain. Prerequ site SPA 325†.

437 20th Century Spanish Poetry. (3) F '83 Flys, Knowlton
Major trends n Spanish poetry from Modern sm to present. Prerequ s te· SPA 325†

454 19th Century Spanish American Narrative. (3) F 83, Ahern, V rg o
Principal works in the nove , short story, narrative fic t on and narrat ve (Gauchesque) poetry. Prerequisite· SPA 325†.

455 Spanish American Modernism. (3) S 85; Foster, V rgil o
Principal works and f gures of literary Modern sm, 1880 1920; emphas s on internat onal terary context of the movement Prerequ site· SPA 325†

456 20th Century Spanish American Fiction. (3) S 84, Cota-Cardenas, Foster Volek
Major works and movements Prerequ site. SPA 325†.

457 Contemporary Spanish American Poetry. (3) F '84; Ahern, Volek
Major works and problems in contemporary poetry and poetics with emphasis on Paz, Parra, Cardenal and new poetry since 1960. Prerequisite: SPA 325†.

464 Mexican American Literature. (3) F; Acevedo, Alarcón
Representative literature in Spanish and English by Mexican Americans, emphasizing socio-cultural as well as literary values. Prerequisite: SPA 325†.

471 Civilization of the Spanish Southwest. (3) S; Acevedo, Alarcón
The political, intellectual, social, economic and artistic development of the Spanish-speaking people of the Southwest. Prerequisite: SPA 314† or 316† or approval of instructor.

472 Spanish-American Civilization. (3) F; Curran
Growth of the institutions and cultures of Spanish-American people. Prerequisite: SPA 314† or 316† or approval of instructor.

473 Spanish Civilization. (3) S; Flys, Valdivieso
Political, intellectual, social, economic and artistic development of the Spanish nation from its origin to the present. Prerequisite: SPA 314† or 316† or approval of instructor.

485 Mexican American Short Story. (3) N; Alarcon, Cota-Cardenas
Critical study of contemporary short stories by Mexican American authors with emphasis on their Spanish-language writings. Prerequisite: SPA 325†, or approval of instructor.

486 Mexican American Novel. (3) N; Alarcon, Cota-Cardenas
Social and literary contexts of representative novelists, emphasizing their Spanish-language writings. Prerequisite: SPA 325†, or approval of instructor.

487 Mexican American Drama. (3) N; Alarcon, Cota-Cardenas
Representative dramatic works with emphasis on the history and development of this genre from its regional origins to the present. Prerequisite: SPA 325†, or approval of instructor.

500 Bibliography and Research Methods. (3) F
Required of all graduate students.

540 History of the Spanish Language. (3) S
Linguistic development of the Spanish language from the epoch of Vulgar Latin to the present day.

541 Spanish Language in America. (3) F '83;
The major dialects of Spanish in the Americas and their historical, social and cultural development. Prerequisite: SPA 540 or approval of instructor.

542 Studies in the Spanish of the Southwest. (3) S '84
Examination of bilingualism and the social and regional dialects of Spanish in the Southwest. Prerequisite: FLA 400 or equivalent.

543 Structure of Spanish. (3) S '85
Analysis and discussion, within the framework of contemporary linguistic theories, of selected problems in Spanish morphophonology, syntax, and semantics. Prerequisite: FLA 400 or equivalent.

545 Concepts of Literary Criticism. (3) F '84
Aims and methods of modern literary scholarship. Discussion of major theories of literary analysis.

560 Medieval Spanish Literature. (3) N
Major figures and works of the Middle Ages in Spain.

561 Golden Age Spanish Prose Fiction. (3) N
Major figures and works of the 16th and 17th centuries, with emphasis on the picaresque novel.

562 Golden Age Spanish Poetry. (3) N;
Major figures and works of the 16th and 17th centuries, with emphasis on lyric poetry.

563 Spanish Romanticism. (3) N
Principal figures and works of the Spanish Romanticism, with emphasis on international literary context of the movement.

564 19th Century Spanish Prose Fiction. (3) N
Principal figures and works of Realism in the 19th century novel, with emphasis on Galdós.

565 20th Century Spanish Drama. (3) N
Principal figures and works of Spanish dramatic literature from the Generation of 1898 to the present.

566 Generation of 1927. (3) N
Major poets of the Generation of 1927, with emphasis on works of Lorca, Guillén, Salinas and Aleixandre.

567 Contemporary Spanish Novel. (3) N
Major works of post-Civil War Spanish fiction.

570 Indigenous Literatures of Spanish America. (3) N
The indigenous literary traditions with emphasis on Nahuatl, Mayan and Quechua literatures through readings in Spanish translations.

571 Colonial Spanish American Literature. (3) N
The major figures and works from Conquest to Independence.

572 Spanish American Drama. (3) N
Major contributions of Spanish American drama, with emphasis on contemporary dramatists.

573 Spanish American Essay. (3) N
Major works of the essay within the framework of intellectual history and literary movements.

574 Spanish American Vanguard Poetry. (3) N
Examination of poetic developments, 1920-1940, with emphasis on Huidobro, Vallejo, Neruda and the international context of their works.

575 Contemporary Spanish American Novel. (3) N;
Principal novels of the *Nueva Narrativa Hispanoamericana*, within the context of contemporary theories of the narrative.

576 Contemporary Spanish American Short Story. (3) N
Principal short stories of the *Nueva Narrativa Hispanoamericana*, within the context of contemporary theories of the narrative.

577 Regional Spanish American Literature. (3) N
The figures and works of major national (Peru, Argentina, Chile, Mexico), and regional (Caribbean) literatures. Topics offered on a rotating basis. May be repeated for different topics.

578 Novel of the Mexican Revolution. (3) N
Representative works and authors of this genre (Güzman, Azuela, Urquizo, Muñoz, Romero), including related or peripheral off-shoots in indigenous novels.

579 18th Century Hispanic Literature. (3) N
The literature of the Enlightenment in Spain and Colonial Spanish America.

581 Latin American Popular Culture. (3) N
Studies in selected topics of Latin American popular culture, with emphasis on appropriate academic models for the critical analysis of these materials.

591 Seminar. (3) N
Spanish and Spanish American literary, cultural, and linguistic topics.

691 Figures and Works Seminar. (3) N
Topics may be selected from Spanish and Spanish American literatures.

Special Courses: SPA 294, 298, 484, 492, 493, 494, 497, 498, 499, 580, 590, 592, 594, 598, 599, 692, 799. (See pages 33-34.) Prerequisite for SPA 590: approval of instructor, advisor and department chair. Secure forms in the Foreign Languages office.

Geography

PROFESSORS:
McTAGGART (COB 338), LOUNSBURY, MARCUS, PARKER, WEIGEND
ASSOCIATE PROFESSORS:
ACKER, ALDRICH, BRAZEL, COMEAUX, GOBER, GRAF, MINGS, PASQUALETTI, SARGENT, ZONN
ASSISTANT PROFESSORS:
CARLETON, FROST, HENKEL

Departmental Major Requirements

Bachelor of Arts and Bachelor of Science Degree Curricula

Geography Consists of 45 semester hours of credit. The required courses are GPH 111 or 411; 371 and 491; GCU 102, 375, and 495; an additional 3 or 4 hour course in GPH; an additional 3-hour course in GCU; and a 3 hour course in regional geography. A further 4-6 hours of electives must be chosen, for a total of 36 hours in geography. The remaining 9 hours are to be made up of electives from related fields of study, chosen in consultation with an advisor. At least 18 hours must be in upper division courses. In addition, the Bachelor of Arts degree carries a foreign language requirement (see Degree Requirements, page 40).

Area Studies Emphasis. (See interdisciplinary studies, pages 52, 57.) Consists of the Bachelor of Arts degree requirements in geography, along with additional requirements in the fields of Latin American Studies or Asian Studies.

For the *Latin American Studies Emphasis,* at least 30 upper division semester hours of the program must be in Latin American content courses, including 15 hours in geography (or in courses approved by the geography advisor) and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required and a reading knowledge of the other language is suggested. The program must be approved by the Center for Latin American Studies. Fulfillment of requirements is recognized on the transcript as a bachelor's degree with a major in Geography Latin American Studies.

For the *Asian Studies Emphasis,* the program requires 30 semester hours of wholly Asian content courses, selected from the list drawn up by the Center for Asian Studies. Also required is knowledge of an Asian language; this is deemed to be fulfilled by 16 semester hours of credit or the equivalent in Chinese, Japanese, or any other Asian language approved by the Center in respect of any individual program.

Special Emphasis Programs—Two special emphasis programs, Urban Studies and Meteorology Climatology, are available within the Bachelor of Science degree curriculum in geography.

Urban Studies Emphasis—The required courses are GPH 111 or 411; 371 and 491; GCU 102, 359 or 360, 361, 357, 375, 444 and 495. In addition, students must select one 3-hour regional course, and one from the following list of options: GCU 351, 352, 401†, 442†, 453, 461, and GPH 481 If GPH 481 is not selected, a further 3 hour course in GPH is required. At least 9 of the 15 hours in fields related to geography must be in urban-oriented course work.

Meteorology-Climatology Emphasis The required courses are GCU 102, 375 or 495, GPH 212, 213, 214, 215, 310, 311, 371, 412, 413, 491. Students must also choose one regional course and any other 3 hour course in GCU. Also required are the following related courses: ESE 474, 475, MAT 270†, 271, 272 (or MAT 290†, 291), PHY 111†, 112, 113, and 114. Completion of this program satisfies the criteria for employment with the National Weather Service.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Geography Consists of 45 semester hours of credit, of which a minimum of 30 must be in geography and 15 in a related teaching field or fields. Departmental minor teaching field requirements (Elementary and Secondary Education) consists of a minimum of 24 semester hours of credit. Courses GPH 111 or 411 and GCU 121 are required. The remaining hours are to be selected in consultation with an advisor.

Departmental Graduate Programs

The Department of Geography offers programs leading to the Master of Arts and Doctor of Philosophy degrees. Consult the *Graduate Catalog* for requirements.

CULTURAL GEOGRAPHY

Courses which may be applied toward the General Studies requirement in social and behavioral sciences.

GCU 102 Introduction to Human Geography. (3) F,S
Systematic study of human use of the earth. Spatial organization of economic, social, political and perceptual environments.

121 World Geography. (4) F,S
Description and analysis of areal variations in social, economic and political phenomena in major world regions.

141 Introduction to Economic Geography. (3) F,S
Production, distribution and consumption of various types of commodities of the world and relationships to the activities of man.

209 Introduction to the Study of Energy. (3) F
An integrative, non-technical introduction to many aspects of energy, including: power plants, resources, lifestyles, environment, geography, economics, policy. Field trip.

253 Introduction to Cultural and Historical Geography. (3) F,S
Cultural patterns, including such phenomena as language, religion and various aspects of material culture. Origins and diffusion and division of the world into cultural areas.

322 Geography of Anglo-America. (3) F
Spatial distribution of relevant physical, economic and cultural phenomena in the United States and Canada.

323 Geography of Latin America. (3) F
Spatial distribution of relevant physical, economic and cultural phenomena in South, Middle and Caribbean America.

325 Geography of Europe. (3) S
Spatial distribution of relevant physical, economic and cultural phenomena in Europe. Recommended for social studies teachers and students of European history.

326 Geography of Asia. (3) S
Spatial distribution of relevant physical, economic and cultural phenomena in Asia, excluding the U.S.S.R.

327 Geography of Africa. (3) F
Spatial distribution of relevant physical, economic and cultural phenomena in Africa.

332 Geography of Australia and Oceania. (3) A
Spatial distribution of relevant physical, economic and cultural phenomena in Australia, New Zealand and Pacific Islands.

350 The Geography of World Crises. (3) F
Contemporary world crises viewed from a perspective of geographic concepts and techniques.

351 Population Geography. (3) S
Demographic patterns; spatial, temporal and structural investigation of the relationship of demographic variables to cultural, economic and environmental factors.

352 Political Geography. (3) S
Relationship between the socio-physical environment and the state.

357 Social Geography. (3) F
Environmental perception of individuals and groups. The spatial aspect of social and physical environments is stressed.

359, 360 Cities of the World. (3-3) A
Historical development and evolution of the earth's urban patterns; internal structure of selected world cities. First semester: Middle East, China and Japan, Southeast Asia, Europe; Second semester: Latin America, Anglo America, Sub-Saharan Africa, Australasia.

361 Urban Geography. (3) F, S
External spatial relations of cities, internal city structure and spatial aspects of urban problems in various parts of the world, particularly in the United States.

364 Geography of Energy. (3) F
Production, transportation and consumption of energy, emphasizing the electric power industry and its environmental problems.

375 Introduction to Geographic Research Methods. (3) S
Scientific techniques used in geographic research. Prerequisite: approval of instructor.

401 Topics in Cultural, Economic and Political Geography. (1-3) F, S, SS; Staff
Open to students qualified to pursue independent studies. Field trips may be required. Prerequisite: approval of instructor.

421, 423, 424, 426, 428, 431, 432: Following courses concern spatial distribution of relevant physical, economic and cultural phenomena in the area designated.

421 Geography of Arizona and Southwestern United States. (3) F, S; Comeaux, Henkel

423 Geography of South America. (3) F; Frost, Henkel
Prerequisite: GCU 323 or approval of instructor.

424 Geography of Middle America. (3) S; Frost, Mings
Central America. Prerequisite: GCU 323 or approval of instructor.

426 Geography of the Soviet Union. (3) S; Weigend
Prerequisite: GCU 121 or approval of instructor.

428 Geography of Middle East. (3) N; Henkel
The Near East, emphasizing current political and economic developments. Prerequisite: GCU 121 or approval of instructor.

431 Geography of the Far East. (3) N; McTaggart
Japan, China, Korea, excluding the U.S.S.R. Prerequisite: GCU 326 or approval of instructor.

432 Geography of Sub-Saharan Africa. (3) N; Henkel
A regional analysis, emphasizing south of the Sahara. Prerequisite: GCU 327 or approval of instructor.

441 Economic Geography. (3) F, S; Gober, Mings
Spatial distribution of primary, secondary and tertiary economic and production activities. Prerequisite: GCU 141 or approval of instructor.

442 Geography of Transportation. (3) N; Mings, Gober
Geographic analysis of world trade routes and transportational systems. Prerequisite: GCU 141 or 441.

444 Applied Urban Geography. (3) N; Sargent
Designed to prepare the student for employment in planning agencies. Includes application of urban geographic principles to present day planning problems. Prerequisite: GCU 361.

453 Recreational Geography. (3) S; Mings
Examination of problems surrounding the organization and use of space for recreation. Introducing geographic field survey methods of data collection and analysis. Saturday field trips may be required.

455 Historical Geography of Anglo-America. (3) N; Comeaux
Changing geography of the United States and Canada from pre-Columbian times to about 1900. Emphasis on evolving economic patterns. Recommended for social studies teachers and students of American history.

461 Geographic Applications of Urban and Regional Planning. (3) N; McTaggart, Sargent
Philosophy of the planning concept, nature and function of planning commissions and development of comprehensive plans. Prerequisites: GCU 361 or 444† or approval of instructor.

462 Geography of Food and Famine. (3) S; Parker
Spatial distribution of relevant physical, economic and cultural factors influencing production and consumption of foodstuffs. Field trips may be required.

495 Quantitative Methods in Geography. (3) S· Zonn, Brazel, Gober
Statistical techniques applied to the analysis of spatial distributions and relationships. Introduction to models and theory in geography. Prerequisite. MAT 106 or approval of instructor.

501 Geography Colloquium. (1) N
New trends in the discipline; current research being conducted by geography students, faculty and invited guests May be repeated for credit

524 Geographic Area Analysis. (3) F
Examination of area development with n a spatial context Geograph c methodolog es associated w th m - croanalysis of pertinent phys cal, socia and economic factors. Prerequ s tes 15 hours of geography and ap proval of nstructor.

525 Geographic Regional Analysis. (3) S
Examination of regional growth with n a spatia context Contemporary theory and methodo ogy in regional sci- ence emphas zing appl cat on n geographic and macro land use analys s. Prerequ sites· 15 hours n geography and approval of instructor.

526 Spatial Land Use Analysis. (3) S
Determination, c assif cation, and analysis of spatial variations n land use patterns. Exam nation of the pro cesses affect ng land use change. Prerequ site. 15 hours of geography or approva of nstructor

529 Contemporary Geographic Thought. (3) S
Comparat ve evaluation of current phi osophy con cerning the nature and trends of geography. Prerequi s tes. 15 hours of geography and approval of nstructor

585 Advanced Research Methods in Geography. (3) F
Specia ized research techniques and methodolog es in economic pol tica or cu tural geography

591 Seminar. (3) F, S, SS
Se ected top cs in economic, po itical or cu tural ge- ography. Field tr ps may be requ red

596 History of Geographic Thought. (3) N
Development of geographic thought from Herodotus and Strabo to Humboldt and Ritter.

Special Courses: GCU 492, 497, 498, 499, 500 580, 584, 590 592 594 598 599, 600, 680, 683, 684, 690, 691, 692, 700, 780 784, 790, 791, 792, 799. (See pages 33-34)

PHYSICAL GEOGRAPHY

Courses which may be applied toward the General Studies requirement in sciences and mathematics.

GPH 111 Introduction to Physical Geography. (4) F, S
Spatial and functiona relationsh ps among cl mates, andforms, so ls, water and p ants Three lectures, 3 hours laboratory. Field trips are required

210 Physical Environment. (3) F
Pr nc p es of phys cal geography re at ng to environ- mental problems pert nent to contemporary society. Po lution, maladjusted land use resource exploitat on

211 Introduction to Landforms. (3) S
Geograph c character stics of major types of landforms, stress ng areal association by use of maps. F e d trips are required. Prerequisite. GPH 111 Two lectures 3 hours laboratory.

212, 213 Introduction to Meteorology I, II. (3-3) A
Atmospher c processes and elements. Genera and loca circulation, heat exchange and atmospheric mois- ture. Students whose curricula requ re a laboratory course must also reg ster for GPH 214† 215†. Prereq- u s te: GPH 111 or approval of instructor

214, 215 Introductory Meteorology Laboratory. (1 1) A
Introduction to meteorological observations and measurement Numer cal and cartographic nterpreta- tion of weather data May be taken concurrently w'th, or subsequent to, GPH 212†, 213†, respectively. Three hours laboratory

271 Maps and Map Reading. (3) F
Techniques of interpretat on of the many types of maps, map project ons and h story of mapping Field tr ps are required. Prerequ site· GPH 111.

310, 311 Synoptic Meteorology I, II. (4 4) F 83, S '84, Carleton
D agnostic techniques and synoptic forecasting In- cludes practica operation of f eld stat ons and tech- n ques of weather ana ys s. F eld trips are required Prerequis te: GPH 212†, 213† or approval of instructor Three ectures, 3 hours laboratory.

317 Marine Geography. (3) F, S
Spatial ana ys s of the phys cal character st cs and potential economic and cu tural resources of the oceans. Prerequisite· GPH 111 or 411 or approval of nstructor.

371 Cartography. (3) F, S
Basic map drafting, grid comp lation, s mp e des gn and use of cartograph c nstruments. Fie d trips are re qu red. Prerequis tes. GPH 111 and 271† or approval of instructor Six hours aboratory.

372 Air Photo Interpretation. (3) S
Aerial photographs as a means of determining to- pography, vegetation and culture; scale, use of index, vertica and obl que photographs and stereoscopes Prerequisites. GPH 111, 211†

381 Geography of Natural Resources. (3) S
Nature and d stribution of natural resources and the problems and princip es associated with the r use.

401 Topics in Physical Geography. (1-3) F,S,SS; Staff
Open to students qual f ed to pursue independent stud- es Field tr ps may be requ red Prerequisite approval of nstructor.

405 Energy and Environment. (3) S
Sources, regu atory and technica contro s, d stribut on, and consequences of the supply and human use of en ergy Prerequ sites· students are expected to have taken courses in the phys cal and/or ife sciences as preparat on, or approval of nstructor

411 Physical Geography. (3) F,S, Brazel, Graf, Marcus ntroduct on to phys ography and the physical elements of the environment Open only to students who have not taken GPH 111 F e d trips are required

412 Physical Climatology. (3) S, Marcus, Brazel
Phys ca processes of the earth-atmosphere system on regional and global scales, concepts and ana ys s of en ergy, momentum and mass ba ances. F e d work re quired. Prerequ site. GPH 212† 213† or 310†, or ap- proval of instructor

413 Meteorological Instruments and Measurement. (3) S 84, Brazel
Design and operation of ground-base and aerologica weather measurement systems. Co lection, reduct on, storage, retr eva and analysis of data. Fie d trips are re qu red. Prerequ site. GPH 212†, 213† or approva of n- structor.

414 Climatic Analysis. (3) F Braze
Processes that produce variations in cl mate over t me and space Includes changes n c imate produced by human and natura forces and nvo ves the analysis of climatic data to ident fy temporal and spat al variat ons. Prerequ s te GPH 212† or approval of instructor

433 Alpine and Arctic Environments. (3) F; Marcus
Reg onal study of advantages and l mitations of the nat- ural env'ronment upon present and future prob ems in-

volving resource distribut on, human act vit es and re gional and nterregional adjustments. F eld tr ps are re qu red. Prerequis te· GPH 111 or approva of instructor.

481 Environmental Geography. (3) S; Marcus, Pasqualett
Problems of env ronmental quality nclud ng uses of spat al ana ys s, research des gn and fie d work n urban and rural systems. Field tr ps are requ red. Prerequ site. approval of instructor.

491 Geographic Field Methods. (6) SS; Staff
Field techniques inc ud ng use of aeria photos, large sca e maps, fractional code system of mapp ng, urban and rural field analysis to be done off campus, trave fees required. Prerequ site. approva of nstructor

571 Computer Mapping and Graphics. (3) F
Util zat on of the dig tal computer in ana ys s and mapping of geographic data nc udes p otting surficia dis play, compositing and graph cs Fie d tr ps are required Prerequ sites: GPH 371† and approva of nstructor

575 Geographic Applications of Remote Sensing. (3) S
Use of imaging and non-imag ng methods of remote ac quis tion of data nc uding sate lite sensors a rborne radar, mu tiband scanning convent ona photographic sensors and ground based equipment. F eld tr ps are requ red Prerequisites. GPH 372† GCU 585 or GPH 491†

581 Resource Development. (3) S
Resource dynam cs including the physica , econom c, cultural, pol tica and h storical factors nf uenc ng product on and consumpt on patterns Prerequis tes GPH 381, 481† or equ valent.

591 Seminar. (3) F S
Selected topics in phys cal geography Fie d trips may be required

Special Courses: GPH 294, 484 492 497, 498, 499 500, 580, 584 590, 592, 598 599 600, 680, 683, 684, 690, 691, 692, 700, 780, 784, 790 791, 792, 799 (See pages 33 34.)

Geology

PROFESSORS:
KNAUTH (PS F 686), BUSECK, DIETZ, GREELEY, HOLLOWAY, KR NSLEY, LAR MER, LUNDIN, MOORE, NAVROTSKY, PÉWÉ, RAGAN, SHER DAN

ASSOCIATE PROFESSORS:
BURT, FERRY, MAL N STUMP

ASSISTANT PROFESSORS:
GREGORY, YUEN

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Geology Consists of 45 semester hours. Courses GLG 100 or 101 or 301, 102, 310, 321†, 323, 335, 336, 424 and 435 or their equivalents are required. Supporting courses required in related fields· CHM 113†, 116; PHY 111†, 112, 113, 114; MAT 118†, 226. The additional work necessary to complete the major must be taken from the departmental list of approved courses. GLG 472 cannot be used to fulfill the requirements for a major. (See Foreign Language Requirement, page 77.)

Bachelor of Science Degree Curriculum

Geology—45 semester hours are required, including the following basic courses or their equivalent. GLG 100 or 101 or 301, 102, 310, 321†, 323, 335, 336, 400, 424, 435 and 450. Supporting courses required in related fields are CHM 113†, 116; PHY 115†, 116, 117, 118; MAT 290†, 291 or MAT 270†, 271, 272 or MAT 274†. To complete the total required hours, other courses in geology or in related fields listed by the department as approved may be taken. GLG 472 cannot be used to fulfill the requirements for a major. One year of foreign language is required. French, German or Russian is strongly recommended. (See Degree Requirements, page 77.)

Bachelor of Arts in Education Degree Curriculum

Departmental Teaching Major

Geology—Consists of 42 semester hours of credit of which a minimum of 30 will be in geology. The following courses in geology or their equivalents are required: GLG 100 or 101, 102, 310, 321†, 323, 335, 336, 362†, or 435†. Additional courses and substitutions that are necessary to complete the major will be se ected from geology and closely related fields as approved by the student's advisor. Supporting courses required in related fields are: CHM 113†, 116; PHY 111†, 112, 113, 114; MAT 118†.

Departmental Teaching Minor

Twenty-four semester hours will be selected from courses below. The following courses or their equivalent are recommended for a teaching minor in Geology (Earth Science): GLG 100 or 101, 102. Any of the following courses or their equivalent may be used to complete a minor in Geology (Earth Science): GLG 310, 321†, 323, 335, 336, 362†, 400, 424†, 435, and 436. Any substitutions for the above courses must be approved by the advisor.

Departmental Graduate Programs

The Department of Geology offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Gradu ate Catalog* for requirements.

GEOLOGY

GLG 100 General Geology. (4) F,S,SS
Nonlaboratory ntroduct on to physical and historical geo ogy. The earth, its or gin, processes that affect it, sequence of events n its evolution and succession of l fe upon it GLG 100 and 101 may not both be taken for cred t Possible field trips.

101 Physical Geology. (4) F,S
Basic princ ples of geo ogy Geology, geochemistry, and geophysics in relation to materia s and processes acting upon and within the earth's crust Rocks, minera s, weathering, earthquakes, mountain building processes vo canoes, running water, ground water and glac ers. Three lectures, 3 hours laboratory Some field tr ps during laboratory, possible weekend f eld trips.

102 Historical Geology and Modern Problems. (4) S
Basic principles of applied geology and the use of these pr nciples n the nterpretation of geologic h story. Laboratory techniques invo ving map nterpretation, cross sect ons, and fossi s. Three ectures, 3 hours laboratory. Some f e d tr ps during laboratory, poss ble weekend field trips.

105 Introduction to Planetary Science. (3) F
P anets asteroids comets and meteorites: their geologica evolution, surfaces nterior, atmospheres, ex ob ology Terraform ng and space colonies

220 Rocks, Minerals and Gemstones. (3) N
Identif cation and class fication of specimens with special reference to Arizona. Poss ble weekend field trips. Not open to students with cred t n GLG 321

300 Geology of Arizona. (3) F,S
Bas c and historica geology, fossils, mining, energy resources, environmental problems, andscape development and meteorites, cast n examples from Arizona. Majors who have taken GLG 101 for credit may not en roll.

301 Geology for Engineers. (3) N
Physica geo ogy emphas zing structural geo ogy, ground water and relation of geology to engineering problems Two lectures 3 hours laboratory Some fie d tr ps during laboratory

302 Man and Geologic Environment. (3) N
Geo og c hazards, problems of waste disposal and land use plann ng env ronmental problems related to sol d earth.

303 Geology of Arizona Laboratory. (1) F,S
Laboratory for GLG 300 2 hours Weekend fie d trip to Grand Canyon

304 Geology of the Grand Canyon. (2) N
Review of the discovery, history, or g n and geology of the Grand Canyon of the Co orado R ver n Arizona. Six day f eld trip down the r ver (first six days after com mencement n May) requ red at student's expense Field research and term paper on trip a so required

305 Geology of the Earth, Moon and Planets. (3) S
Geological studies of the p anets and satel ites through the analysis of spacecraft data and f e d studies. Weekend field trips

310 Structural Geology. (3) S
Geo ogic structures and the mechanical processes involved n their formation Prerequisite GLG 101 or 301. Two lectures, 3 hours laboratory Poss ble f eld trips

321 Mineralogy. (4) F
Crysta lography, crystal chemistry and crystal physics as applied to m nera s; determinat ve methods, or gin and occurrence, hand specimen study. Prerequisites: MAT 118†; CHM 116† or concurrent enrollment. Three ectures, 3 hours laboratory. Possib e field trips.

323 Optical and X-ray Techniques. (3) S
Polarizing m croscopy, optica crystallography and min eralogy ntroduction to X-ray techniques Prerequ site. GLG 321† Two lectures, 3 hours laboratory

335 Principles of Paleontology. (2) F
Emphas s on preservation growth, species concept, and evolution as demonstrated by the fossil record Prerequisite: GLG 102 or approva of instructor Geology majors must enroll concurrently in GLG 336 Two lectures.

336 Invertebrate Paleontology. (3) F
Biology, skeletal morphology and systematics of fossil invertebrates. Prerequisite. GLG 102 or approva of nstructor. Corequisite for geology majors. GLG 335 One lecture discussion, 6 hours laboratory Poss ble field tr ps.

362 Geomorphology. (3) N
Land-forms and processes which create and mod fy them Laboratory and field study of phys ographic features. Prerequisites. GLG 101, 310†, 424† or con current enrollment. Two lectures, 3 hours aboratory. Some field trips during laboratory; possible weekend f eld trips.

400 Geology Colloquium. (1) F,S
Presentation of recent research by geology students, faculty, and invited guests. Required at least 3 out of 4 semesters for junior and senior geology majors May be repeated for a total of 4 credits Prerequisite: two courses in the department or approval of nstructor.

405 Geology of the Moon. (3) N
Current theor es of the origin and evolution of the Moon through photogeologica analyses and consideration of geochemical and geophys cal constra nts. Prerequ site. GLG 105 or 305 or approva of instructor Possible weekend field trip.

406 Geology of Mars. (3) N
Geological evolution of Mars through analyses of spacecraft data, theoretical model ing, and study of terrestrial analogs, emphasis on current work. Prerequisite: GLG 105 or 305 or approva of instructor. Possib e weekend field tr p

412 Geotectonics. (3) F
Orig n of continents and ocean basins. Evolution of the crust in time. Drifting sea floor spread ng and other large-sca e movements of the earth s crust. Upper mantle processes Emphasis on current work Prerequi site: GLG 310†

418 Geophysics. (3) F
Sol d earth geophysics, geomagnetism, gravity, seis mo ogy, heat flow, emphasiz ng crust and upper mantle. Prerequisites GLG 101 or 301, PHY 112†, 114†, and MAT 291† or MAT 272†, or approval of instructor Two lectures, 3 hours aboratory. Some fie d trips dur ng lab oratory, poss ble weekend fie d trips.

419 Thermal-Mechanical Processes in the Earth. (3) S
Emphas s on app ied mathematical techn ques heat conduct on problems in geo ogy, thermal convection, stresses n the l thosphere, viscoelastic processes n the Earth. Prerequisites: PHY 115†, 116†

420 Volcanology. (3) N
Distribution of past and present volcanism, types of volcanic activity, mechanism of eruption, form and structure of volcanoes, geochemistry of volcanic activ ty. Prerequisite: GLG 424†. Poss ble weekend f eld trips

424 Petrology-Petrography. (4) F
Theoretica and laboratory study of the origin and c assification of gneous and metamorph c rocks. Hand specimen and thin section study of rocks. Prerequisites. GLG 321†, 323†. Three lectures, 3 hours laboratory Possible weekend field trips.

435 Sedimentology. (3) S
Origin, transport deposit on and diagenes s of sedi- ments and sedimentary rocks. Physical analysis, hand spec men examination and interpretation of rocks and sediments Prerequ sites· GLG 102, 321†, 323†. Two lectures, 3 hours laboratory. Possib e weekend f eld trips.

436 Principles of Stratigraphy. (3) S
Sources of sediments deposit ona env ronments and the pr nc ples n de im ting, corre at ng and naming of stratigraphic units. Prerequ sites. GLG 102, 335†, 435†. Three lectures Possible weekend fie d tr ps.

441 Ore Deposits. (3) N
Origin occurrence, structure and m neralogy of ore de- posits. Prerequisites GLG 424† or approva of n structor Three lectures Possib e weekend field trips.

446 Ground Water Geology. (3) N
Pr nc p es governing the occurrence movement, qual ty, class f cat on and recovery of underground water, with special reference to Arizona Prerequis te· GLG 435†. Possib e field tr ps

450 Geology Field Camp. (6) SS
Geolog cal mapp ng techniques on aer al photos and topographic maps Prerequ sites GLG 310†, 321† Field based w th excursions

462 Environmental Geology of Cold Regions. (3) N
Geo og ca and eng neering importance of seasonal and perennia ly frozen ground (permafrost Properties, dis tribut on, orig n of ice n the ground and ts appl cation to engineer ng and land uti zat on problems Prerequ - s tes GLG 101, 435† PHY 111† and 113†, or approva of instructor. Possible weekend field tr ps.

472 Earth Science. (3) F,S
Principles of earth sc'ence and their influence in forming the scenic features on the surface of the earth. GLG 472 cannot be taken for cred t by one who has completed GLG 100 or 101 or the r equivalents Pos s ble f e d trips

481 Geochemistry. (3) F
Or g n and d stribut on of the chemica e ements Geo- chem cal cyc es operating in the earth's atmosphere, hydrosphere and ithosphere Prerequisites· CHM 341† or 441† or GLG 321†. (Same as CHM 481.)

485 Meteorites and Cosmochemistry. (3) N
Chemistry of meteor tes and their re at onsh p to the origin of the earth solar system and universe. Prerequi- site· GLG 481† or 482† (Same as CHM 485)

490 Topics in Geology. (1 3) F S, SS
Spec al topics n fol owing fie ds. m nera ogy petro ogy, econom c geo ogy, geochemistry, petro eum geo ogy reg ona geology geomorpho ogy, geophys cs plane tary geo ogy, pa eontology strat graphy sed mentology, volcanology f eld geo ogy and structura geo ogy. Pre requisite. approval of nstructor May be repeated for credit.

501 Geology of Arizona. (3) F S
Basic and historica geo ogy fossils m n ng, energy re sources, env ronmenta prob ems andscape develop ment, and meteor tes cast n examp es from Arizona Three lectures. Research paper requ red

502 Geology Colloquium. (1) F, S
Presentat on of recent research by geology students, faculty and 'nv ted guests. May be repeated for a tota of 4 credits. Prerequisite two courses in the depart ment or approval of nstructor

504 Geology of the Grand Canyon. (2) S
Review of the d scovery, h story, origin and geology of the Grand Canyon of the Co orado River n Arizona Six day field trip down the river (first six days after com- mencement in May) required at student's expense Field research and term paper on trip also required.

505 Geology of Arizona Laboratory. (1) F, S
Laboratory for GLG 501, 2 hours. Weekend field trip to the Grand Canyon.

510 Advanced Structural Geology. (3) N
Mechan cs of rock deformation, emphasizing relation- ship between field observation, theory and experiment. Stress, strain, simple const tut ve relationships, failure criteria, and the basis of continuum methods. Prerequ - s tes: GLG 310†, 424† or approva of instructor. Pos- sible f eld trips

523 Advanced Mineralogy-Crystallography. (3) S
Crysta lography, principles of X ray and electron diffrac- tion, defects n crystals, electron microscopy of miner als Three lectures Prerequisites· GLG 321† or CHM 441 or equiva ent.

524 Advanced Igneous Petrology. (3) N
Theoret cal and practical aspects of the genesis of ig- neous rocks. Study of selected suites. Modern labo- ratory techniques Prerequisite· GLG 424†. Two lec tures, 3 hours laboratory. Possible weekend field tr ps.

525 Advanced Metamorphic Petrology. (3) N
Theoretica and laboratory study of metamorphic rocks. Processes of contact and regional metamorph sm. Ad vanced methods and instrumentations Prerequisite. GLG 424†. Two lectures, 3 hours laboratory. Possible weekend f eld tr ps.

561 Glacial Geology. (3) N
Propert es, d stribution and origin of glac al deposits, inc uding princ ples of their strat'graphy and corre at on Env ronmenta geo ogy problems n glaciated regions. Prerequis te· GLG 362†. Two lectures, 3 hours labo- ratory Some f eld trips during laboratory; possib e weekend f eld tr ps

562 Quaternary Geology. (3) N
Geo ogy of the Quaternary Period in both g aciated and unglaciated areas. Stratigraphy, corre ation and environmental app cation of Quaternary depos ts. Spe- c al reference to the Southwest Prerequisite. GLG 362† or approval of instructor. Two lectures, 3 hours laboratory. Some f eld tr ps during laboratory, possib e weekend field tr ps.

581 Isotope Geochemistry. (3) N
Geochem stry and cosmochem stry of stable and radio- act ve sotopes, geochronology, sotope equ libria. Pre- requ s te. approva of nstructor (Same as CHM 581.)

582 Physical Geochemistry. (3) N
Appl cation of thermodynamic and kinet c princip es to geochemical processes Prerequ site. GLG 321† or CHM 341 or 417† or 441† (Same as CHM 582)

583 Phase Equilibria and Geochemical Systems. (3) N
Natura reactions at high temperatures and pressures; s l cate, su f de and oxide equ libria. Prerequisite· ap- prova of nstructor. (Same as CHM 583.)

591 Seminar. (1-3) F, S SS
Topics may be selected from the fol ow ng:

(a) Igneous, Metamorph c, and Sedimentary Petrology
(b) Pleistocene Env ronment
(c) Advanced Geophysics
(d) Structura Geology
(e) Paleoecology
(f) Advanced Stratigraphy
(g) Minera ogy and Crystallography
(h) Mineral Deposits
(i) Geochem stry

(j) Physical and Chemical Sedimentology
(k) Biostratigraphy
(l) Environmental Geology
(m) Planetary Geology
(n) Stratigraphic Micropaleontology
(o) Volcanology

See related courses. ASB 541† Archaeological Pollen Analysis· BOT 490† Paleobotany

Special Courses: GLG 484 492, 493, 494, 498, 499, 590, 592, 593, 598 599, 690, 691, 692, 783, 790, 791, 792, 799 (See pages 33 34)

Health and Physical Education

PROFESSORS:
KRAHENBUHL (PEBW M-201), CORBIN, CORDER, LANDERS, MILLER, ODENKIRK, OSTERHOUDT, PANGRAZI, PITTMAN, SKINNER, STONE, TOOHEY, WELLS

ASSOCIATE PROFESSORS:
BRYANT, BURKETT, DARST, DEZELSKY, OLSEN, PACKER, SHIRREFFS

ASSISTANT PROFESSORS:
CMICH, GRIER, PIETTE, PIKE, WULK

INSTRUCTOR:
CREWS

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Health Science (Community Health Emphasis) Consists of 62 64 semester hours of credit of which 40 must be in the major. Courses HES 100, 340, 360, 361†, 382, 480, 482, 483 and 498 are required. Related fields include ZOL 201, 202; and one course in chemistry. Thirteen hours of health science electives and 12 hours of related field electives are selected by the student in consultation with a faculty advisor. (See Degree Requirements, page 40).

Physical Education Consists of 38 semester hours of credit of which 28 must be in the major field. Courses ZOL 201, 202, and PED 170, 335†, 340†, 345†, 450 and selected physical education activity courses are required. At least 18 semester hours must be in upper division courses and the entire program must be planned in consultation with the student's advisor. Concentration within the program of studies may be directed toward such nonteaching options as exercise science, sports administration, or sport and the media. (See Degree Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Health Science (School Health Emphasis) Consists of 38 semester hours of credit. Courses HES 100, 340, 360, 361†, 382, and 480 are required. Related fields include ZOL 201 and 202, and one course in chemistry. Twelve hours of health science electives and 8 hours of related field electives are selected by the student in consultation with a faculty advisor. At least 18 semester hours must be in upper division courses.

Physical Education—All majors are required to complete 10 credits of professionally oriented activities as prescribed by the department. Also required are 37 credits in the following theory courses: PED 170, 335†, 340†, 345†, 361, 376, 382, 450, 480, 483, DAN 367 and EED 313. Additionally 300 hours of field experience in sports related leadership roles must be completed prior to student teaching (150 hours for transfer students). A 2.25 GPA is required for entrance to upper division major courses and SED 433† student teaching. A minimum of 9 credits of student teaching is required, which includes both elementary and secondary school teaching experiences.

Departmental Minor Teaching Field Requirements (Secondary Education)

Health Science—Consists of 24 semester hours of credit. Courses HES 100, 340, 360, 361†, 382, and 480 are required. An additional 6 hours of health science electives are to be selected by the student in consultation with a health science advisor.

Coaching of Athletics (Men and Women) Consists of 32 semester hours of credit. Courses ZOL 201, 202; PED 335†, 340†, 346, 383† and 486† are required; plus 9 hours from PED 291† and electives selected by the student in consultation with an advisor.

Athletic Trainer's Certificate (Men and Women) Consists of 41 hours of credit. Courses PSY 212; PGS 100; ZOL 201, 202; HES 100; FON 141; PED 270†, 335, 340, 382, 383†, 485 and PED 486 are required; plus electives selected by the student in consultation with an advisor. Note. Six (6) semester hours of credit or two years' equivalent work of 600 clock hours of internship.

Departmental Graduate Programs

The Department of Health and Physical Education offers programs leading to the Master of Science degree in Physical Education, Master of Education—Secondary Education (Health Science), Master of Education—Secondary Education (Physical Education), Education Specialist—Secondary Education (Physical Education), Doctor of Philosophy in Exercise Science, Doctor of Education—Secondary Education (Physical Education), and Doctor of Philosophy—Secondary Education (Physical Education). Consult the *Graduate Catalog* for requirements.

HEALTH SCIENCE

HES 100 Personal Health. (3) F, S, SS
Human struggle for achieving harmony between the slowly-changing inner environment and the rapidly-changing outer environment. Some sections may be offered with discussion groups. Consult schedule of classes.

304 Human Sexual and Reproductive Health. (3) S
Issues of curriculum development and program planning. Designed to prepare professionals to instruct younger persons in these areas.

305 Substance Abuse. (3) F
General properties, principles of action, and behavioral effects of psychoactive drugs. Focuses on how substances affect health of humans.

306 Consumer Health. (3) F, S
Examination of consumer behavior in the health marketplace. Emphasis on systems of healing, health insurance, quackery and product safety.

340 School Health. (3) F, S, SS
Basic plan of the school health program; health services, health instruction and school health environment. Analysis of school health problems.

360 Fundamentals of Disease Control. (3) F, S, SS
Epidemiology of communicable and non-communicable diseases. Disease prevention and control. Primarily for prospective health teachers and public health educators.

361 Foundations of Health Science Education. (3) F, S, SS
Analysis of research in various disciplines which contribute to health education. Primarily for prospective health teachers and public health educators. Prerequisites: HES 100 and 382; 6 semester hours in social and behavioral sciences.

382 Introduction to Public Health. (3) F, S, SS
Public and community health is examined including governmental, voluntary, and community agency activities which promote health among populations.

400 Health and Aging. (3) F
Issues of health, illness and disease among the elderly. Introduction to basic aging and health concerns of older people. Prerequisites: Senior standing, 9 semester hours of health or biological sciences, or approval of instructor.

401 Patient Education. (3) S
Issues in patient behavior, the illness role, learning theory and the educational process as it relates to medical care settings. Prerequisites: Senior standing, SOC 101 and PGS 100 (or equivalent), 9 semester hours of health science or approval of instructor.

470 Environment and Public Health. (3) F, S
Principles of environmental health, involving management of ecosystems and their relationship to public and community health.

480 Methods of Teaching Health. (3) F, S
Techniques and materials for health instruction. Health Education majors and minors only. Prerequisites: HES 100, 360, 361 and 382.

482 Advanced Public Health. (3) F, S
Theory and concepts of public health practice. Program planning, implementation and evaluation applied to a diversity of public health problems. Prerequisites: HES 340 and 480.

483 Supervised Field Training. (3-6) F, S.
Opportunities to observe and work in public and voluntary agencies, either in preparation for beginning-level employment or better understanding of the interrelationships in community health programs. Prerequisite: 24 hours of required health science courses. May be repeated for a total of 9 hours.

501 International Health. (3) F
A systematic comparison of the factors that affect public health on a global basis.

502 Health Problems of the Southwest. (3) S
Coccidioidomycosis, allergies, vector infestations, diabetes among the Pima Indians, arthritis, dysenteries, rabies, airborne viruses, histoplasmosis, sanitation, air and water pollution, pesticide contamination of food products.

504 Education for Human Sexuality. (3) F
Current concepts of human sexuality are explored and applied to curriculum development and program planning in health education.

505 Drug Dependency: Perspectives and Approaches. (3) S
Classification of mood-modifying substances in terms of effects. Motivational and social forces contributing to the dynamics of the problem; control and treatment.

554 Behavioral Aspects of Health Education. (3) F
The nature of health and disease from a cultural, social, and psychological perspective. Strategies for attaining health promotive behaviors.

560 Curriculum Construction in Health Education. (3) N
Problems of curriculum construction with respect to acquisition of materials, establishment of basic curriculum philosophies, application of education principles, and sequence of course content.

Special Courses: HES 484, 494, 498, 499, 590, 591, 592, 593, 594, 598, 599. (See pages 33-34.)

Students who complete satisfactorily selected HES 494 courses or HES 470 are eligible to qualify for a certificate of accomplishment from the Center for Disease Control, U.S. Department of Health and Human Services.

PHYSICAL EDUCATION

A $5.00 towel and locker fee is required each semester by students using towel and locker facilities for physical education classes and intramural activities.

Physical Education Activity classes (PED 105, 205, 305, 310) may not be taken for audit.

PED 105 Physical Education Activity. (1) F, S, SS
Beginning instruction in adapted physical activities and a variety of sports: golf, ice skating, scuba, karate, judo, handball, equitation, tennis, swimming, weight training, gymnastics, and other activities. Three hours a week. May be repeated for credit.

110, 111 Professional Activities, Individual and Team Sports. (1,1) F, S
Skills, strategies and knowledge of se ected physica activities. One lecture, one aboratory Physical Educa tion majors only May be repeated for credit

170 Introduction to Physical Education. (3) F, S, SS
Orientation to and exp oration of the field of physica education, to be taken in the freshman year Required of students majoring in physical educat on

175 Occupational and Physical Therapy. (2) S
Backgrounds, purposes and functions of the profes- s'ons of phys cal therapy and occupationa therapy the r relationships to health professions and commun ty agenc es.

183 Introduction to Athletic Training. (3) F
The ro e and responsibil ty of the athlet c tra'ner, daily tra ning room procedures and basic taping and wrap- p ng sk lls

205 Physical Education Activity. (1) F, S, SS
Intermediate levels. Cont nuat on of PED 105 Three hours a week May be repeated for credit

210, 211 Professional Activities, Individual and Team Sports. (1,1) F, S
Skills, strategies and knowledge of se ected phys cal activities One ecture one laboratory. Phys cal Educa tion majors on y. May be repeated for cred t.

270 Instructorship in Standard First Aid. (1) F, S
For individuals seeking the Standard First Aid Cert f cate, lead ng to qual ficat on as a first a d instructor. Prerequ s te: must be 18 years of age.

283 Prevention and Care of Athletic Injuries. (3) F
Taping, injury recognit on, emergency care and ob servat on procedures in ath et c train ng. Prerequisites. ZOL 201 and 202†.

290 Sports Officiating. (3) F, S
Rules and mechan cs of officiating used n footba l basketbal , baseba l and track and field.

291 Theory of Coaching. (2) F, S
Theory of coach ng competitive sports. Each class meets four hours per week Physica educat on majors and coach ng minors, or approval of area cha'r

305 Physical Education Activity. (1) F, S
Advanced levels Continuat on of PED 205 Includes Red Cross Senior Life Saving, Red Cross Water Safety Instructorsh p (Prerequisite. Current Senior Red Cross L fe Saving Certificate), and other aquat c act v'ties Three hours a week. May be repeated for cred t

310 Collegiate Sports. (1) F S
Credit may be given for part cipat on n competitive sports For men and women May be repeated for a to ta of 4 credits T me arranged. Y grade on y.

335 Biomechanics. (3) F, S SS
K nemat cs and dynamics appl ed to human movement Development of biomechan cal concepts for application in analysis and evaluation of neuromuscular sk lls Pre requisite. ZOL 201.

340 Physiology of Exercise. (3) F S, SS
Effects of the various types of exercise upon body structure and function. Prerequisite· ZOL 202†.

345 Motor Development and Learning. (3) F, S, SS
Development of perceptua motor behavior from nfancy through adulthood Acquisition of neuromuscu ar skil s is examined w th references to b o og ca , psychologica and social determinants. Prerequisites: ZOL 201 and 202†.

346 Psychology of Coaching. (3) S, SS
Principles of learning appl ed to coaching sports. Psy chologica and social prob ems of coaching.

361 Physical Education in the Secondary School. (3) F, S, SS
Current trends and theories such as elective programs, coed classes, legal ssues, contract teaching, curricu um and administration

376 Physical Education for the Elementary School. (3) F, S, SS
Scope and values of physica educat on and movement educat on in the e ementary school. Methods, materials and pract ce n teaching activ ties for pr'mary, interme- diate and upper grades.

382 Physical Education for the Atypical Student. (3) F, S
Handicapping conditions found among students and adaptat on of exerc ses and act vities to ndividual needs. Open to al students. Prerequisite: PED 335† or nstructor's approval

383 Advanced Techniques and Evaluation of Athletic Injuries. (3) S
Eva uat on of athletic njuries, recogn t on of the mpor tance of phys cal exams. Cond tioning programs and d squalifying factors n athletics. Prerequisite PED 283. Des gned for students seeking NATA certif cat on.

450 History and Philosophy in Physical Education. (3) F, S, SS
Historica and ph losoph cal her tage of phys cal educa t on from ear y Greek society to present-day phys cal educat on, emphasizing developments n the United States.

480 Methods of Teaching Physical Education. (2,2) F, S
Methods of instruction organization and presentation of appropr ate content n e ementary and secondary phys cal education. Four ectures.

483 Evaluation in Physical Education. (3) F, S, SS
Analysis and construction of tests Ana ys s of data and nterpretation of measurement in physica educat on programs.

485 Rehabilitation of Athletic Injuries. (3) S
App ication of pr nciples and practices regard ng the use of moda it es and rehabil tation techniques in the athletic tra ning room. Prerequis te. PED 383. Designed for students seeking NATA certification.

486 Coaching/Athletic Training Internship. (1-6) F, S
Re at onship of theory of coaching ath et cs and/or ath etic tra n ng techn ques to practical app ication of coach ng and/or athletic training techniques. Prerequi site. approval by disc pl ne cha r. Y grade on y.

501 Research Statistics. (3) S
Statistica procedures; sampling techniques, hypothes s test ng, and experimenta des gns as they re ate to stud es reported in research pub cat ons

505 Research Laboratory. (3) F, S
Advanced research techn ques n use and calibration of aboratory equ pment util zed in cinematographic analy sis card orespiratory testing and motor learn ng ex per mentat on.

510 Biomechanics. (3) S, SS
Stat cs, dynamics strength of materials, and fluid dy- nam cs as applied to human movement. Current re search n biomechanics and techniques of research

521 Motor Learning and Development. (3) F, S, SS
Theories and pr nc ples underlying motor learn ng, per- formance and development. Ro e of v sua and kines theth c perception, and genera and specific abi ities in motor learn ng and performance.

522 Psychology of Coaching. (3) S, SS
Ath ete's behavior n competitive sport, with emphasis on persona ty and motivationa techniques.

530 Exercise Physiology. (3) F, SS
Immediate and long-term adaptations to exerc se with special reference to training and the role of exerc se in cardiovascular hea th.

534 Athletic Conditioning. (3) S, SS
Bases of sports condition ng, including: aerobic and anaerob c power, strength, flexibi ty, analysis of condi tion ng components for sports.

536 Fitness Program Development. (3) F
Planning, organization, and administration of fitness programs Exercise testing and prescr ption Programs for specia groups

542 Environmental Aspects of Human Performance. (3) S
Mechanisms of physiologica response of healthy human beings to desert, arct c, mounta n and undersea env ronments, with emphasis on the effect of env ron mental stresses upon exercise performance.

550 Historical Bases of Physical Education. (3) F, S SS
Golden Age of Greece, Rena ssance and modern Europe Cultural, economic and educational forces which influenced the development of physical educa tion, dance, and athletics in the United States.

552 Philosophical Bases of Physical Education. (3) F, S, SS
Idealism, rea ism, naturalism, experimenta ism, and ex istentialism as they relate to the deve opment of physical educat on programs

555 Sport and the American Society. (3) F, S, SS
Impact of sports upon the American cu ture, with focus on competition, economics, myths, minorities, and the O ympic syndrome

560 Theory of Administration. (3) F, S SS
Administrative philosophies, development of concepts related to processes of administration, types of ad m n strative behavior, tasks and respons b lities of the administrator, eva uation of the effect veness of administrat on

561 Administration of Athletics. (3) F, SS
Manag ng an ath et c program, financing, budget po i cies staging and promot on of athletic contests, schedules travel insurance, and current ath et c trends

562 Facility Development. (3) F, S
Pr nciples, standards, personnel, designs, and equipment util zed n the p ann ng, construct on, and mainte nance of ndoor/outdoor facil ties

565 Improving Sport Skills. (3) N
Factors in successful motor performance in skil s used in ind vidua dual, and team sports

568 Principles of Evaluation. (3) N
Examinat on of literature and research perta ning to princ ples for evaluating performances, statistical procedures necessary to the imp ementat on of grading plans

570 Adapted Physical Education. (3) S, SS
Contemporary adapted, deve opmental, remed al and corrective physical educat on programs; understanding of pr nciples prob ems, and recent deve opments in th s area

572 Trends and Issues in Physical Education. (3) F, S, SS
Literature, research, and practices in contemporary physical education, nc uding finances Title IX, teach ng and coaching philosoph es, school organ zat on, and non teaching phys cal educat on programs

573 Curriculum Construction in Physical Education. (3) F, S, SS
Appl cation of principles, practices, and funct onal philosophies of curriculum making in physical educa t on. Prerequis te major in phys cal educat on or teaching experience

574 Behavioral Analysis in Sport and Physical Education. (3) SS, N
The application of behavioral principles, practices, philosophies and research to teaching physica educa t on and coaching athletics

576 Physical Education for Elementary School Children. (3) S, SS
Current practices and research perta ning to elementary schoo physical education programs.

577 Movement Experiences for Pre-School Children. (3) SS N
Movement activities for pre-schoolers based on the needs and character st cs of young ch ldren.

Special Courses: PED 484, 494, 498, 499 500, 580, 584, 590, 591, 592, 593, 594, 598, 680, 683, 684, 690, 691, 692, 780, 783, 784, 790, 791, 792, 799. (See pages 33-34)

History

PROFESSORS:
GIFFIN (SS 204), BARLOW, BURG, DANNENFELDT, HUBBARD, KARNES, KLEINFELD, MULHOLLAN, PAULSEN, TAMBS, TRENNERT, YOUNG

ASSOCIATE PROFESSORS:
ADELSON, BATALDEN, FULLINWIDER, KAHN, KEARNEY, LOEWENBERG, LUCKINGHAM, MacKINNON, PHILLIPS, R. D. SMITH, STOWE, TILLMAN, WARNICKE, WOOTTEN

ASSISTANT PROFESSORS:
CARROLL, DELLHEIM, DIBBERN, JACKSON, ROSALES, ROTHSCHILD, L. C. SMITH, WE NER

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

History Consists of 45 semester hours of credit of which 30 must be in history and 15 in closely related fields to be approved by the advisor in consultation with the student. At least 18 hours in history courses and six hours in the related fields must be in upper division courses. A minimum grade point average of 2.25 in the 30 hours of history courses is required. (See Foreign Language Requirement, page 77.)

Latin American Studies Emphasis (See Interdisciplinary Studies, page 55.) Consists of the Bachelor of Arts degree requirements in history. At least 30 upper division semester hours of the total program must be in Latin American content courses, including 15 hours in history and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required and a reading knowledge of the other language is suggested. The program must be

approved by the Center for Latin American Studies. Fulfillment of requirements is recognized on the transcript as a bachelor's degree with a major in History Latin American Studies Emphasis.

Asian Studies Emphasis (See Interdisciplinary Studies, page 52.) Consists of the Bachelor of Arts degree requirements in history, with the language requirement being fulfilled with an Asian language. Thirty semester hours of the total degree program must consist of Asian area courses selected with the approval of the departmental advisor. Lower division language courses may not be counted within the 30 hour requirement. Completion of this program is recognized by a Bachelor of Arts degree with a major in History Asian Studies Emphasis.

Bachelor of Science Degree Curriculum

History Consists of 60 semester hours of credit, of which 42 (including HIS 481 and 482) must be in history and 18 in closely related fields and quantitative studies, as approved by the advisor in consultation with the student. HIS 481 and 482 are required for all degree candidates. At least 27 hours in history courses and nine hours in the related fields must be in upper division courses. A minimum grade point average of 2.25 in the 42 hours of history courses is required. (See Degree Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

History Consists of 42 semester hours of credit, of which at least 30 must be in history courses. At least 18 of the history hours must be in upper division courses. At least three hours of credit must be taken in United States history. The remaining history and related area courses must be selected in consultation with an advisor from the Department of History. A minimum grade point average of 2.25 in history courses is required for admission to practice teaching and for graduation. The course HIS 480 may *not* be counted as part of the 42-hour major requirement.

Departmental Minor Teaching Field

Bachelor of Arts in Education Degree Curriculum

History Consists of 24 hours of credit in history courses, of which at least nine must be in upper division courses. The program must include at least three hours in United States history.

Departmental Graduate Programs

The Department of History offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

HISTORY

Courses listed in pairs or triplicate may be taken in any order

HIS 100, 101, 102 Western Civilization. (3, 3, 3) F S, SS
Traces origin and development of Western man and his institutions HIS 100, Ancient World through the Middle Ages HIS 101, Renaissance and Reformation through Age of Enlightenment HIS 102, French Revolution to the present

103, 104 The United States. (3 3) F S, SS
Growth of the Republic from colonial times with the first semester covering through the Civil War period and the second continuing to the present day.

105 China: Literature and Revolution. (3) A
Novels short stories poems etc. will be used to explore the social history and revolutions of modern China with emphasis on 1915 to the present

106 The People's Republic of China. (3) A
Analysis of major political, social economic, and intellectual trends in China since the founding of the People's Republic in 1949

200 Latin American Civilizations. (3) A
The culture, economics and politics of Latin American nations *Not open to history majors*

270 Judaism in American History. (3) NR, Loewenberg
A chronological analysis of Jews and Judaism in American history and letters.

294 Selected Topics in History. (3) N
A full description of topics for any semester is available in the History Department office. May be repeated for credit

303, 304 American Cultural History. (3 3) F S, SS
Culture in a broad connotation including ideas, ideals the arts and social and economic standards. First semester the nation's colonial background and early national period; second semester the age of industrialism and modern America

305, 306 Asian Civilizations. (3,3) F, S, SS
The civilizations of China Japan, and India The second semester may also include Southeast Asia. First semester to mid-17th century, second semester mid-17th century to present

320 Ancient Greece. (3) A
History and civilization of the Greek world from the Bronze Age to the Roman conquest of the Hellenistic kingdoms

321 Rome. (3) A
History and civilization of Rome from the beginning of the Republic to the end of the Empire.

322, 323 The Middle Ages. (3 3) A
Political, socio economic, and cultural developments of Western Europe First semester, Early Middle Ages second semester High Middle Ages

324, 325 Renaissance and Reformation. (3, 3) A
324. Antecedents and development of the Renaissance

in Italy and its spread to the rest of Europe. 325: The Protestant and Catholic Reformations in the 16th century.

326, 327 Early Modern Europe. (3, 3) A
Social, economic, cultural, and political changes in 17th and 18th century Europe. First semester, 17th century; second semester, 18th century.

329, 330 Nineteenth Century Europe. (3, 3) A
Political, social, economic, and intellectual currents in Europe from Napoleon through World War I. First semester, 1815-1866; second semester, 1866-1918.

331, 332 20th Century Europe. (3, 3) A
Europe in its world setting since World War I, emphasizing major political and social issues. First semester, 1914-1945; second semester, 1945 to the present.

351, 352 England. (3, 3) F, S
Political, economic, and social development of the English people. First semester, to the 17th century; second semester, 17th century to the present.

362 The American Indian. (3) F
History of the American Indian with emphasis on the government's Indian policy and the impact of the white man on tribal culture.

364 The Black American Experience. (3) F, S
The Afro-American in American history, thought and culture, emphasizing those aspects that were directly influenced by their presence.

365 Islamic Civilization. (3) NR
An interdisciplinary survey of art history and religion in Islamic civilization.

366 The Modern Middle East. (3) NR
Impact of the Western world upon Middle Eastern governments, religion, and society in the 19th and 20th centuries; problems of modernization and the role of the Middle East in world affairs.

367, 368 The West in American History. (3, 3) A
First semester, the Turner Thesis of the significance of the frontier in American history, beginning with discovery and exploration and continuing to the period of Texas and the Mexican War; second semester, the development of the frontier thesis to 1890, emphasizing Arizona and the Southwest.

369 The West in the 20th Century. (3) N
Role of the western states in American history since 1890 with emphasis on politics, the environment, industry and labor, and the changing position of ethnic minorities.

370 Women in United States History, 1600-1800. (3) F
Examination of lives of American women and women's social organizations.

371 Women in United States History, 1880-1960. (3) S
Examination of lives of American women, and women's social organizations.

373, 374 United States Military History. (3,3) F, S
The implementation of American foreign and domestic policies by strategic means. Prerequisites: HIS 103 and 104. First semester: Colonial foundations to the Civil War. Second semester: America as a world power.

375 History and Theory. (3) N
Historical and theoretical sources of modernity, particularly moral and cultural relativism, value-free social science, behaviorism, humanism Marxism and atheism.

380 History of the Mexican-American. (3) A
Role of the Mexican-American in U. S. history.

383, 384 Latin America. (3, 3) A
First semester, ancient civilization, explorers and conquerors, and colonial institutions; second semester, nationalistic development of the independent republics since 1825.

401 American Colonial History. (3) A; Burg
Political, economic, social, and cultural history of the colonial era. Concentrates on English colonies, with some consideration of Spanish, French, and other colonial regions in North America.

403 Early National Period in American History. (3) A; Burg
Political, social, and economic development of the United States from the Revolution to 1828.

404 The Jacksonian Era. (3) A; Loewenberg
American ideals, with emphasis on equality in the political, social, and economic life of the nation, 1828-1850.

406 Civil War and Reconstruction. (3) A; Hubbard
Causes and development of the war; political, constitutional, and social issues of Reconstruction, and their effects on post-war America.

407 Populism and Progressivism. (3) A; Phillips
Political, social, economic, and intellectual trends in the United States, 1877-1918.

409, 410 Recent American History. (3, 3) A; Kearney, Smith
First semester, 1913-1932, Wilsonian diplomacy and the First World War, the 1920s, the origins of the Great Depression, Hoover administration; second semester, 1932-1945, the New Deal, society during the Depression, Second World War.

411 Contemporary America. (3) F, S; Smith
The United States from 1945 to the present.

413 Origins of the American Economy. (3) N;
American economic growth from the colonial period to 1900; trade and commerce, problems of slavery and agriculture, industrial development, and the government's role in the economic sector.

414 The 20th Century American Economy. (3) N;
America as a world economic power from 1900 to the present; business changes and cycles, government regulation, agriculture, labor, and the problems of a mature economy.

415, 416 American Diplomatic History. (3, 3) A; Paulsen, Mulhollan
American relations with foreign powers. First semester, 1776-1898; second semester, 1898 to the present.

417, 418 Constitutional History of the United States. (3, 3) N; Paulsen
Origin and development of the American constitutional system. First semester, colonial origins through Reconstruction; second semester, Reconstruction to the present.

419, 420 American Urban History. (3, 3) A; Luckingham
The history of the city in American life. First semester, colonial times to the late 19th century; second semester, 19th century to the present.

421 History of American Labor. (3) A;
Labor union history, ideological origins of modern labor law, and agricultural labor. Emphasis on labor problems and development in the 20th century.

422 Social History of American Women. (3) A; Rothschild
Women's role, status, and achievements in America. Changes in family patterns and effects of immigration, industrialization, and urbanization.

423 Recent American Intellectual History. (3) A; Fullinwider
Major movements in 20th century science, religion, and philosophy.

424 The Hispanic Southwest. (3) N; Stowe
Development of the Southwest in the Spanish and Mexican periods to 1848.

425 The American Southwest. (3) N Luckingham
Deve opment of the Southwest from 1848 to the present.

426 Indian History of the Southwest. (3) S, Trennert
Comprehens ve rev ew of historical events from prehis toric peoples, the Spanish and Mexican periods, Amer - can period after 1846 to the present.

427 A History of Labor Law and Philosophy. (3) N
Co lect ve bargain ng practices around the wor d, with a review of the development and nf uence of Amer can labor law.

428 Arizona. (3) F S; Staff
Emergence of the state from ear y t mes to the present

430 20th Century Chicano History. (3) A; Rosales
Historica development of the Chicano community n the 20th century.

431 The French Revolution and the Napoleonic Era. (3) N
Condit ons in France before 1789 the Revo ut onary decade from 1789 to 1799, the organ zat on of France under Napo eon and the impact of changes in France on European soc ety.

433 Modern France. (3) A
France since 1870

434 Hitler: Man and Legend. (3) A, K e nfeld
A b ograph cal approach to the German Third Re ch emphas zing nature of Naz reg me Wor d War , and h stor ography.

435 Modern Germany. (3) A; Kle nfeld
Germany since 1840

437, 438 Eastern Europe and the Balkans. (3 3) A, Bata den
Peoples and countr es of eastern and southeastern Europe in the 19th and 20th centuries First semester, 1800-1914, emphasiz ng the Hapsburg and Ottoman Emp res; second semester, 1914 to the present, empha sizing the successor states

441 Imperial Russia. (3) A Batalden
Development of Russian pol tica , economic soc al, rel gious, and intellectua nst tut ons and traditions from the end of the 17th century to the collapse of the tsarist autocracy in 1917.

442 The Soviet Union. (3) A G ffin
An examination of Sov et polit cs, economic develop ment and fore gn relations from the 1917 Revolut on to the present.

443 Russia and the United States. (3) A; Giff n
Off c a and unoff c al relat ons between Russia and the U.S , late 18th century to the present Emphasizes peri- od following the Bo shevik Revolut on

445 Tudor England. (3) A; Warnicke
Political, socia economic, and cu tural developments n 16th century England

446 Stuart England. (3) A Warnicke
Po it cal, soc al, econom c, and cultura developments in 17th century Eng and

449 Modern Britain. (3) A, Ade son
Factors contributing to Britain's pos t on as the world s leading power in the 19th century and ts dec ine from that pos tion n the 20th century.

450 British Constitutional History. (3) A; Warnicke
Historica development of the const tutiona system of Great Britain from the M dd e Ages to the present em phasizing the growth of democracy.

451 The British Empire. (3) A, Adelson
British imperial sm and co on al sm in Africa, the Ameri- cas, Asia, and the South Pacif c

452, 453 Economic History of Modern Europe. (3,3) N, Weiner
Impact of ndustr al sm upon the pol tica , soc al, and cultural life of Europe First semester Rena ssance to the 19th century, second semester, 19th and 20th cen- tur es.

454, 455 Intellectual History of Modern Europe. (3,3) A; Bar ow
Major developments in European thought from the sc - entif c revolut on to the present HIS 454, Copern cus through Bentham HIS 455 Kar Marx to the present

456, 457 History of Spain. (3,3) N; Stowe, Tambs
Cultura , economic, pol tica , and social development of Spa n First semester, ear iest days to 1700. Second se- mester, 1700 to the present.

458 Age of Conquest: Latin America. (3) F Stowe
Estab ishment of Spanish and Portuguese emp res in America ber an and pre Conquest backgrounds with emphasis on the Conquest and ts impact through the ear y 17th century.

459 Change and Reform: Colonial Latin America. (3) S, Stowe
Exam nation of pol tica , economic, and soc al nst tu tions Emphasis on 17th century changes and the 18th century reforms eading to ndependence movements

460, 461 Spanish South America. (3 3) N, Tambs
Po t ca econom c, and socia development of the Span sh speak ng nations of South America s nce n- dependence. First semester the 19th century second semester, 20th century deve opments

463 Intellectual and Cultural History of Latin America. (3) N Tambs
Ma n currents of thought, the outstanding th nkers and the r mpact on 19th and 20th century Lat n Amer ca Cultural and nst tut ona basis of Lat n American l fe.

464 The United States and Latin America. (3) A; Karnes
The Lat n American strugg e for dip omat c recognit on, attempts at po it cal un on, particpat on n nternat ona organ zations since 1810 and relations between the United States and Lat n America

466, 467 Mexico. (3,3) A Rosa es Stowe
Po it cal, econom c soc al, and cu tural developments F rst semester earliest t mes to 1810; second semester 1810 to the present.

468 Brazil. (3) N, Tambs
Discovery, conquest and sett ement by the Portuguese achievement of independence, r se and fa l of the em- p re, prob ems and growth of the republ c to the present

470 Chinese Cultural History. (3) A, T llman
Ch nese thought and cu ture from Confuc us to the present.

471, 472 Diplomatic History of East Asia. (3 3) N, Kahn
Fore gn re ations of Ch na Japan, and Korea First se- mester, Opium War to 1905 second semester, 1905 to the present.

473, 474 China. (3 3) A Til man, MacKinnon
Pol tica , economic, social, and cu tural h story of the Ch nese peop e. F rst semester, early t mes to the late 17th century, second semester, mid-17th century to the present.

476 Modern Southeast Asia. 3) N MacKinnon
Imperialism and revolut on in 19th and 20th century Southeast As a.

477, 478 Japan. (3 3) A· Kahn
Pol tica , econom c, soc al, and cultura history of the Japanese people. F rst semester, early times to the 19th century, second semester, 19th century to the present.

479 The Chinese Communist Movement. (3) N, MacK nnon
Ana ys s of the communist movement in 20th century China, w th emphas s on ts h stor cal setting.

480 Methods of Teaching History. (3) F; Phi lips
Methods in instruction, organization, and presentation of the subject matter of history and c osely all ed fields.

481 Quantification in History. (3) A; We ner
Uses of stat st ca and quantitative techniques in the study of h storical problems in polit ca analysis, new ec onomic theory, demography, and socia h story.

482 Historical Statistics. (3) A; D bbern
Stat st ca rout nes and computer programs app cable to histor cal quant f cation

501 Historical Research and Writing. (3) F
Surveys current methodolog ca pract ces, recent his torical monographs, and the research ski s and too s used by h storians. Requ red of students in historical ed ting emphasis.

502 Public History Methodology. (3) F
Introduct on to h storical research methodolog es, tech- n ques and strategies used by pub ic histor ans Read ings, short papers guest speakers. Requ red for pub ic history emphasis.

503 Public History Research. (3) S
ndividual and group research projects uti z ng the ap proaches and techniques of the publ c h storian. Re quired for public history emphas s

512 European Historiography. (3) A;
Methods and theor es of writers of European history.

513 American Historiography. 3) A
Methods and theories of writers of Un ted States history

514 Latin American Historiography. (3) N,
Methods and theories of writers of Latin Amer can history

520 Historical Editing and Publishing Procedures I. (2) F
Introduction to editing of scho ar y journa s and books Covers manuscript eva uation and preparat on copy editing, proofreading and re ated topics.

521 Historical Editing and Publishing Procedures II. (2) S
Advanced work n copy edit ng, substantive editing, and manuscript eva uation. Inc udes treatment of author editor re at ons and preparat on of ndexes. Prerequi- site: HIS 520.

522 Issues in Historical Editing. (2 F
Survey of journa and textbook pub ish ng, including pub sh ng law, financia aspects of pub sh ng, book de sign, printing technology, and related top cs. Prerequ s tes HIS 520, 521 and 584 (Ed t ng nternship)

591 Seminar. 3) N
May be repeated for cred t Topics may be se ected from the fo low ng areas

(a) Un ted States H story
(b) European H story
(c) Engl sh History
(d Latin American H story
e) East As an History
(f) British H story

Special Courses: HIS 294, 298, 484, 492 493 494, 497, 498, 499 500 580 583, 584, 590 591 592, 593, 594, 598, 599 600 680 683 684, 690, 691, 692 693, 700 780 783, 784, 790, 791, 792 799 (See pages 33-34.)

Home Economics

PROFESSORS:
_____(HEC106), HOOVER, MONTS, MORGAN
ASSOCIATE PROFESSORS:
BAKER, STANGE, STREUFERT
ASSISTANT PROFESSORS:
CREIGHTON, FILSINGER, HARTWIGSEN, HUNTER, MONTE, PETERS, ROOSA, VAUGHAN

Departmental Major Requirements

The Department of Home Economics awards the Bachelor of Arts or Bachelor of Science degree upon successful completion of a four-year curriculum of 126 semester hours as pre scribed on page 48 under the College of Liber- al Arts. Courses HEC 230 and 430 are re- quired. Six hours of the home economics courses listed on page 50 and not within the major area of specialization may be applied to fulfill the Liberal Arts General Studies re- quirements.

For either the B.A. or B.S. degree, students must select one of the following areas of con- centration:

Family Studies/Child Development

Human Nutrition Dietetics with an option in:
1) Nutritional Science or 2) Dietetics (gener- al, management, clinical, or community)

General Home Economics

Home Economics Education

Home Economics in Business with an option in:
1) Decorative Arts, 2) Food Service Man- agement, 3) Consumer Service in Foods, or 4) Textiles and Clothing

When field experience is included in the cur- riculum to complete requirements for gradua- tion, students should register for HEC 451 Field Experience, identifying it with the area of specialization.

American Dietetic Association requirements consist of 68 hours of approved courses leading to an internship. See chair of depart- ment for further information

Bachelor of Arts Degree Curriculum

Home Economics—Consists of 45 semester hours of credit of which 30 are in home eco- nomics and 15 in related fields; 20 semester hours of credit must be in home economics up- per division. The specific courses will be deter- mined by the student in consultation with the

advisor, depending on the area of specialization. (See Degree Requirements, page 40 and Foreign Language Requirement, page 77.)

Bachelor of Science Degree Curriculum

Home Economics—Consists of 50 semester hours of credit of which at least 20 must be in upper division home economics courses. The specific courses will be determined by the student in consultation with the advisor, depending on the area of specialization. (See Degree Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree

Home Economics—Consists of 36 semester hours of credit in home economics. Major courses required are: TXC 123; FON 141, 142; CDE 232†; PGS 100; SOC 101; CDE 337; FAS 331†, 357†; HEC 451†; HEE 461†, 480, 481. Select two from HEE 153; DEH 272, 373. General Studies courses required: DEH 172, FAS 354, CHM 101 or 113†, a mathematics course, and an American history course. Remaining credits to meet major requirements are selected in consultation with advisor.

Center for Family Studies

The Center for Family Studies is an educational, research and service agency of the University within the College of Liberal Arts in the Department of Home Economics. The Child Development Laboratory is affiliated with the Center. The main purpose of the Center is to carry out research programs which foster the understanding of family life from an interdisciplinary point of view. Policies and programs of the Center are guided by an interdepartmental advisory committee.

Departmental Graduate Programs

The Department of Home Economics offers programs leading to the degree of Master of Science. Consult the *Graduate Catalog* for requirements.

CHILD DEVELOPMENT

CDE 232 Child Development. (3) F, S
Development from conception through later childhood Significance of family membership Recognition of individuality within the universal pattern of human development. Guided observations. Prerequisites: PGS 100 SOC 101.

337 Guided Interaction with Children. (3) F, S
Discussion and application of methods for communicating with children and for guiding young children in cognitive and social learning experiences. Participation in the Child Development Laboratory. Prerequisite CDE 232 or equivalent Two lectures, 3 hours laboratory.

430 Family as a Learning Environment. (3) N
Family interaction which enhances the development and growth of infants or toddlers Participation with child parent pairs Prerequisite: CDE 337† or equivalent Lecture and laboratory May repeat for a total of 6 credits

434 Organization and Administration of Preschools. (3) N
Planning operation and evaluation of programs for young children as related to national regulations, needs of the child, family and community Investigation of exemplary programs Prerequisite CDE 337† or approval of instructor May include field trips

437 Analysis of Child Behavior. (3 6) S
Developmental problems during childhood and methods for changing children's behavior based upon observation and behavior analysis Three lectures, may include 3 hours laboratory per credit up to 3 Prerequisites. CDE 337† or equivalent, plus 6 semester hours of psychology

531 Advanced Child Development. (3) S
Major developmental theories related research, and their application to family interaction Prerequisite CDE 232†, CED 522, or approval of instructor

532 Behavior of Young Children. (3) F
Focus on developmental behavioral problems of early childhood Application of research based principles to child guidance Prerequisite 6 semester hours in upper division child development courses or approval of instructor

DECORATIVE ARTS

DEH 171 Introduction to Decorative Arts: Cultural Influences. (3) F S
Focus on how diverse cultures have expressed themselves through the decorative arts May include field trips

172 Introduction to Decorative Arts: Basic Design. 3) F S
Elements and principles of art as they relate to design problems in our physical environment Majors only or approval of instructor May include field trips 2 lectures, 2 hours studio

271 Creative Textiles. (3 N
Ancient textile techniques and their relationship to today's lifestyle Creative experiences in a variety of techniques May include field trips One lecture 4 hours studio

272 Basic Issues in Housing. (3) F
The study of housing human needs, effects of the housing environment upon humans legal and financial trends

371 Decorative Textiles. 3) S
Investigation of the fabrication and esthetic qualities of textiles Cultural and historical expression of design as related to interiors Prerequisite DEH 171 or approval of instructor May include field trips

373 Interior Furnishings. (3) F S
Evaluation of furnishings designed for the home in a functional, economic and esthetic framework. Prerequisite: DEH 172 or approval of instructor TXC 223 is recommended. May include field trips

472 Housing and Society. (3) S
Family housing as affected by legislation with application to contemporary housing

474 History of Interior Furnishings I. (3) F
The design of furnishings as an expression of culture from antiquity to the 20th century.

475 History of Interior Furnishings II. (3) S
Des gn of furnishings as an expression of cu ture of the Amer can per ods and the 20th century. Prerequis te: DEH 474 or approva of nstructor.

476 Socio-Psychological Aspects of Housing. (3) N
Soc al and psychological factors affecting ndividual and family hous ng decis on mak ng. Prerequis te: DEH 272

477 Advanced Interior Furnishings. (3) F S
Emphas s on furnish ngs and des gn ng spec al act vity areas in residentia env ronments. Prerequ sites: DEH 373, 476, TXC 223. May inc ude f eld tr ps.

572 Current Housing Issues. (3) N
Focuses on selected current hous ng issues, their re a tionship to and effect on the family

FAMILY STUDIES

FAS 330 Personal Growth in Human Relationships. (3) F, S
Persona deve opment and behav or as re ated to competency in interpersonal relationships within the fami y Processes of fam y nteraction Prerequis tes SOC 101 and PGS 100, or equ va ents.

331 Family Relationships. (3) F, S
Issues, cha lenges and opportunit es re at ng to present day fam y l ving Factors influencing nter-relat ons with n the fami y Prerequ s te. course n psychology or sociology.

332 Human Sexuality. 3) F, S
Re ationsh p of sexua ity to fami y l'fe and to major so c etal ssues Emphas s on developing hea thy, pos tive and respons ve ways of ntegrating sexua and other aspects of human v ng. Prerequis te· PGS 100

354 Consumer Economics: Issues. (3) F, S
Relationship of the consumer to the economy as a determ nant of the family pattern of v ng. Current consumer problems and sources of protect on

357 Management in the Family. (3) F S
Management as a means to real zation of ndiv dual and fam y values and goals; creat on, al ocat on and use of resources. Focus on dec s on mak ng. Prerequis tes SOC 101 and PGS 100 or equiva ent.

430 Parent-Child Relationships. (3) S
Needs of parents and chi dren and the dynam cs of parent-ch ld nteract on, center ng on the years n the fam y fe cycle through the chi dren s elementary schoo experiences. Prerequ site CDE 232† or FAS 330† or 331†.

431 Parent-Adolescent Relationships. (3) F
Dynam cs of the relationships between parents and ad olescents. Deve opmental characterist cs of ado escence and the correspond ng adu t stage. Prerequ s tes CDE 232†, FAS 331†

432 Family Development. 3 N
Normat ve changes n famil es over time from format on unti disso ut on Emphas s on the marita subsystem in m ddle and later years Prerequisites. CDE 232† and FAS 331†, or approva of nstructor

435 Advanced Family Relationships. (3) F
Recent research ssues and trends re at ng to fam ly n teraction nf uence of fami y compos tion, phys cal en v ronment, fam ly patterns and va ues on family dynam cs. Prerequisite FAS 331†.

436 Conceptual Frameworks in Family Studies. (3) S
S gn f cant organ zing approaches to study of the fam ly w th part cular focus on the eco system nteract ona and deve opmental frameworks Appl cation to d verse ndiv dua and fam ly s tuat ons Prerequ sites: FAS 331† 357 or 454† and CDE 232†

440 Fundamentals of Counseling. (3) S
Counseling in relation to fam ly interaction, attention to communication skills relevant to a var ety of he ping relat onships.

454 Consumer Economics: Family Finance. (3) S
Major family income and expenditure alternatives in attainment of family goals

535 Family Relationships in the Middle and Later Years. (3), N
Developmenta processes and generational re ation sh ps of the fam ly n the middle and ater stages of the fam ly fe cyc e. Prerequis tes· CDE 232†, FAS 331† or approval of instructor.

536 Family Crises and Resources. (3) N
Spec a prob ems encountered n the fami y. ind v dual and community resources for approaching them Prerequisites. FAS 330†, CED 522 or equivalent.

537 Individual Development in the Family Milieu. (3) N
The family as a framework for human deve opment. Re c procal influence between ind vidual and fam ly deve opment. Prerequ sites: CDE 232†, FAS 331†

538 Approaches to Marriage and Family Counseling. (3) N
Methods currently used in marr age and family counse ing and consideration of theoretica bases under ying the methods. Prerequis te. approva of instructor.

551 Family Decision-Making. (3) F
Theory and research focusing on central ty of decision to management in fam ly settings Ecological systems approach to fam ly decis on ssues. Prerequisite. FAS 357† or approva of instructor.

554 Family Economics. (3) N
Analysis of pub c po icy affecting fam ly econom c behavior w th respect to d'vorce, taxation, credit, popula on and other ssues. Prerequis te FAS 354 or ECN 201 or ECN 500†.

591 Seminar. (3) N
May be repeated for cred t. Top cs may be selected from the following areas: a) Consumer Education, b) Cross-Cultural Management; c) Issues of Scarce Resources; d) Va ues.

FOOD AND NUTRITION

FON 141 Human Nutrition. (3) F, S
Basic princip es of human nutrit on as they relate to hea th and we l being of ndiv dua s and families. Emphasis on the nutr ents and factors wh ch affect their ut zation n the human body.

142 Applied Food Principles. (3) F, S
Appl ed scientific pr nc ples of food preparation and product on. Two ectures, 3 hours laboratory

341 Food: Management and the Consumer. (3) S
Factors affecting the food supply, consumer protection buy ng and management of human and material resources Laboratory· Planning organizing, preparing and serv ng food management of time, money and energy consideration of nutr ent needs food qua ity and consumer acceptabil ty Prerequ s tes FON 141, 142. Two lectures, 3 hours aboratory.

343 Food Service Systems Procurement. (3) F
Food purchas ng for nst tut ons· cost factors, food laws quality standards, and bas c manufacturing processes Prerequ s te: FON 341† or approva of instructor Two ectures 3 hours laboratory Field tr ps may be taken.

344 Food Service Systems Management. (3) S
Organ zat on, administrat on, and management of food serv ce n hospita s and other institutions. Prerequisite: FON 343† or approval of instructor Two lectures, 3 hours laboratory. F eld trips may be ncluded.

440 Advanced Human Nutrition I. (3) F
Metabol c reactions and nterrelat onships of vitamins, minerals, and water. Prerequis tes: FON 141, ZOL 202†, and CHM 361† CHM 332† recommended.

441 Advanced Human Nutrition II. (3) S
Metabolic reactions and nterrelat onships of car bohydrate, lipid and prote n. Prerequisites: FON 141, ZOL 202†, and CHM 361† CHM 331†, 332 recommended.

442 Experimental Foods. (4) F
Food product development techn ques food eva uat on and testing, and investigation of current research into food composition Prerequisites. FON 142, CHM 231†. Two lectures, 6 hours laboratory

444 Diet Therapy. (3) S
Pr nciples of nutr t onal support for prevent on and treatment of d sease Prerequ s tes. FON 141 and ZOL 202.

445 Quantity Food Production. (3) F
Standard methods of food preparation in quantity; operation of nst tutional equ pment, menu plann ng for nstitut on Exper ence in quantity food service Prerequ s tes: FON 141 343† and 344†, or approva of in structor One lecture, 6 hours aboratory May requ re f eld trips.

446 Human Nutrition Assessment Laboratory. (4) N
C in cal and b o-chem cal evaluat on of nutrit ona status. Prerequis tes: CHM 367† and FON 440† or 441†. One lecture, 9 hours aboratory

448 Community Nutrition. (3) F
Food re ated behav ors; community organ zat on and delivery of nutr tion services program design m plementation, and eva uat on strategies and nutr tional assessment of popu at on groups Prerequ site FON 141. SOC 101 and PGS 100 are recommended.

450 Nutrition in the Life Cycle I. (3) F
Emphas s on nutr t ona needs and problems dur ng pregnancy, lactation, nfancy and chi dhood. Prerequ s te. FON 141.

451 Nutrition in the Life Cycle II. (3 S
The nutr t ona requ rements and nutrition re ated d sorders of adolescence, middle adu thood and later l fe. Prerequ s te: FON 141.

462 Consumer Service in Foods. (3) N
Organizat on, econom cs and market ng as re ated to the food and equ pment ndustr es Prerequisite FON 142.

541 Recent Developments in Nutrition. (3) N
Survey of research Prerequ s te: FON 440† or 441† or approval of nstructor.

542, 543 Current Research in Nutrition I, II. (1, 1) N
I. Vitam ns and M nera s I. Carbohydrates, Lipids and Proteins. Prerequ s te FON 141 or equivalent or approval of nstructor.

548 Recent Developments in Foods. (3) N
D scuss on and cr tique of current research. Prerequi s tes: FON 142 and CHM 232†

HOME ECONOMICS

HEC 230 Family Environment Interaction. (3) F S
Ecolog cal study of the fami y. For home economics ma jors on y.

430 Contemporary Issues in Home Economics. (3) F, S
Signif'cant nat'onal and nternationa issues and pub c po icies affecting ndiv dual and fam ly we l be ng. For majors on y. Prerequisite: HEC 230.

451 Field Experience. (1-3) N
Supervised study n the area of student's spec al zation (CDE, DEH, FAS FON, HEE, TXC) n cooperat on with commun ty bus ness institutions. Students must make arrangements w th nstructor one semester n advance of enro ment Prerequisite. complet on of 60 hours and approval of nstructor. For Family Management (FAS) majors, prerequis te: FAS 357 May be repeated for a total of 3 hours For Textiles and C othing (TXC) majors ntern program (credit 12 hours), prerequisite grade point average of 3 0, senior standing the semester of program part c pation TXC 122, ECN 201 or 202 MKT 300

500 Research Methods. (3) F
Purposes of research. Experimenta des gn, methods of data co ect on, thes s proposal development

HOME ECONOMICS EDUCATION

HEE 153 Analysis of Home Equipment. (3) S
Equipment for the home Princ ples of construct on operation se ect on and effective use of equipment Two ectures 3 hours aboratory May nc ude f e d trips

453 Advanced Analysis of Home Equipment. (3) N
Current trends in home appl ances Adaptations for n div dua s having spec al needs Kitchen and aboratory p ann ng Prerequis te HEE 153 or approva of nstructor Two ectures 3 hours aboratory. May nc ude fie d tr ps.

461 Presentations in Home Economics. (1-3) S
I, App cat on of demonstrat on pr nc p es, I Mu timedia presentat ons I Deve opment of aud ov sual materials for home economics Prerequis tes. jun or stand ng and approva of instructor One hour ecture, 6 hours abo ratory for each module

480 Methods of Teaching Home Economics. (3 4) F
Instruct on, organ zation presentat on and evaluation of subject matter n home economics. HEE students regis ter for 4 cred ts D etet c students register for 3 cred ts

481 Teaching Occupational Home Economics. (3) S
Career or entation related to home economics, cooperative work-related instruction programs and youth c ub adv sement assoc ated with secondary home economics programs Open only to home economics majors or m nors May nc ude field tr ps

582, 583 Program Planning and Evaluation in Home Economics. (3, 3 N
Process of plann ng and provid ng accountabi ty for in d vidual progress

584 Current Trends of Teaching Home Economics. (3) N
Focus on teaching home econom cs re ated to current ssues and prob ems facing fam lies and society. Open on y to home econom cs majors or minors.

585 Administration and Supervision of Home Economics Education. (3) N
Deve opment of nd v duals for state c ty, schoo , and co ege leadership ro es Emphas s on superv sion of students teachers.

586 Current Trends of Teaching Home Economics. (3) N
Focus on teach ng home economics related to current ssues and prob ems fac ng famil es and soc ety. Open only to home economics majors or m nors

TEXTILES AND CLOTHING

TXC 122 Clothing and Human Behavior. (3) F, S
Emphas zes cultura inf uences human behavior and des gn

123 Clothing Construction. (3) F S
Construction processes re ated to fabr cs des gn and

fashions. Course may be waived on successful completion of a placement test given each semester during registration week. One lecture, 4 hours studio.

223 Introduction to Textiles. (3) F, S
Basic properties, processing, end uses, and care of textile products.

321 Pattern Designing. (3) F, S
Flat patterns used to develop fundamental principles in designing individualized garments. Prerequisites: TXC 122, 123. One lecture, 4 hours studio.

323 Advanced Textiles. (3) F, S
Textile technology, fiber science, dyeing, finishing, and other topics. Prerequisites: TXC 223, CHM 101; CHM 231† is recommended. Two lectures, 3 hours laboratory. May include field trips.

423 Apparel Analysis. (3) F, S
Specialized processes used with a wide variety of apparel fabrics. Interrelationships between fabric properties and apparel design. Prerequisite: TXC 321†. Two lectures, 2 hours studio. May include field trips.

424 History of Costume. (3) F, S
Evolution of costume from ancient Egypt to the 20th century. Prerequisites: TXC 122 and an ARH course. May include field trips.

425 Twentieth Century Apparel. (3) F, S
Cultural, decorative, and functional influences on clothing. Prerequisite: TXC 424†.

426 The Clothing and Textile Industries. (3) F, S
Organization and marketing problems and practices specific to the textile and clothing industries. Prerequisites: TXC 122, 223, ECN 201.

429 Textile Analysis. (3) N
Introduction to textile testing equipment and evaluation of data. Prerequisite: TXC 323†. Two lectures, 3 hours laboratory. May include field trips.

521 Experimental Textile Analysis. (3) N
Current textile research and methods. Individual projects relating to textile performance. Prerequisite: approval of instructor. May include field trip.

523 Sociopsychological Aspects of Clothing. (3) N
Socio-psychological theories to the selection and use of clothing. Prerequisites: TXC 122; SOC 101, ECN 201.

526 Clothing and Textile Economics. (3) N
A profile of textiles-related industries, government and labor demands, consumer expectations, and new products and markets. Prerequisites: ECN 201 and two textile courses.

Special Courses: CDE, DEH, FAS, FON, HEC, HEE, TXC 294, 484, 494, 498, 499, 500, 580, 584, 590, 591, 592, 593, 594, 598, 599. (See pages 33-34.)

Interdisciplinary Humanities Program

PROFESSORS:
Bettie Anne Doebler and Participating Faculty

Departmental Major Requirements

Bachelor of Arts Degree Program

Humanities—The major in humanities is interdisciplinary and may be intercollegiate; it consists of 45 hours. The student will take 29 hours in HUP designated courses. The remaining 16 hours, taken in satisfaction of the related fields requirement, must be focused in a single disciplinary area such as philosophy, literature, history, art history, theatre history, or in an interdisciplinary area studies program such as film studies. Required humanities courses are HUP 101, 102; 313 or 314; two from among 322 through 329; 311 or 312; 318; 320; one from among 413 through 415; and one upper division elective. The 16 hours taken in the related field will be determined in consultation with individual faculty advisors. For further information, contact the Humanities Office, LL C-341, 965-6747.

Graduate Program

The program also offers the Master of Arts degree in Humanities through the Committee on Humanities. Consult the *Graduate Catalog* for requirements.

HUMANITIES

HUP 101, 102 Humanities in the Western World. (4,4) F,S
Interrelation of arts and ideas in Western Civilization. HUP 101, Hellenic through Medieval; 102, Renaissance to the present. Two lectures, 2 discussion meetings per week.

103, 104 Humanities in the Eastern World. (4,4) F,S
Interrelation of art, architecture, literature, music, philosophy, religion, theatre and other performing arts within the contexts of the major stylistic periods of Eastern civilization. Cultural achievements of the past as they relate to contemporary life. Two lectures, 2 discussion meetings per week. HUP 103, China; 104, India or Japan.

105 Introduction to Myth and Symbol. (3) F
Myth and symbol as expressive and structural elements of the humanities. Examples from mythology and artistic symbolism of the Western tradition.

110 Contemporary Issues in Humanities. (3) F,S
Responses of literature, art history, history, philosophy, religion and other disciplines to common problems affecting modern American Life.

150 Introduction to Eastern Asian Culture. (3) S
Introduction to the cultures of China, Japan, Korea. (Also listed as FLA 150).

201 Technology and Social Change. (2) F
Technology as related to social change, contemporary and possible future impacts of technology on society. (Also listed as STE 201.)

310 Man and Machine. (2) F
Impact of technology as it extends and limits individual self determination on humanistic and mechanistic approaches to understanding individual identity. (Also listed as STE 310 and PHI 321.)

311, 312 Science and Technology in History. (3,3) F,S
Development and application of scientific knowledge and its effects on human aspirations and values from ancient times through the Industrial Revolution to present. HUP 311 not a prerequisite for HUP 312. (Also listed as STE 311, 312 and PHI 322, 323.)

313, 314 Comparative Arts of the East. (3,3) F, S
Intensive study of styles and forms in visual, verbal, and performing arts. HUP 313, China; 314, India or Japan. Prerequis te: HUP 103 for 313; 104 for 314.

315 The Asian Woman I, II, III. (1,1,1) A
Traditional and modern As an woman in Eastern and Western societ es. May be taken singly or in any combinat'on. Three five-week modules: I Film; II—Arts; III Society.

316 Women and the Humanities. (3) F S
Topics: women as artists, women and religion; women n art literature, and the med a; women n western culture May be repeated when top cs vary for a total of 6 hours

318 Perception and Judgment in the Arts. (3) A
App ication of perception theory to the arts. Creativ ty, art forms as cons of rea ity, the role of language n eva uation

320, 321 Myth and Symbol. (3) F S
Mytho ogies n literary form Theor es about the r re a tionship to the esthetic and intellectua d mensions of cultures. HUP 320 Theories of interpretat on, pr marily Greek and Mediterranean, 312, socia and pol tica as pects, may include Hindu, Celt c, Norse and others.

324, 326, 327, 328, 329 Comparative Arts and Ideas of the West. (3 each) F,S
Art, arch tecture, l terature, music, and the performing arts w th n the contexts of social nst tut ons and rel g ous and philosophic perspective. May be taken con currently. Prerequ s te: HUP 101 or 102 or approva of instructor.

324 The Middle Ages

326 The European Renaissance

327 The Age of Reason

328 The Nineteenth Century

329 The Twentieth Century

365 Islamic Civilization. (3) F
An interdiscipl nary survey of art, history, and religion.

402 Technology, Society and Human Values. (3) F S, SS
Values which mot vate mankind to create technology. Areas of conflict and resolut on between basic human values and technological society Read ng and discussion with v s ting ecturers. Prerequ s te junior stand ng or above One lecture two discussion meetings per week. (A so listed as STE 402)

411 Social Effects of Invention. (3) N; Welch, Past n
The role of sc'ence and nvention, private and pub ic sector in the development and appl cat on of technology Personal and public responsib ity of sc'entists and eng neers Prerequisite· junior standing. (Also listed as STE 411.)

413 Comedy: Meaning and Form. (3) S
Nature and character stics of comedy n the l terary, fine, and perform ng arts. Prerequ s te. HUP 101 and 102 or equivalent.

414 Tragedy: Meaning and Form. (3) A
Nature and character stics of literary and artist c express ons cal ed trag c. Prerequ site: HUP 101 and 102 or equ valent.

494 Special Topics in the Humanities. (3) N
Open to all students. Topics include:

(a) Western H stor cal or Contemporary Cultures
(b) Non-Western Cu tures
(c) Cultures of Ethn c Minorit es
(d) American F ne Arts
(e) Comparative Fine and Performing Arts

498 Pro-Seminar in the Humanities. (3) N
For students with a major or minor n humanit es Problems of comparative methodologies, and principles of syntheses of disc pl nary areas n the humanities. Other students admitted with approval of nstructor.

501 Interpretation of Culture. (3) A
Methodo og es and comparat ve theories for the study of relationsh ps between var ous aspects of cu ture, the h story of ideas, and the arts. May be repeated for a total of 6 hours credit

502 Theory and Criticism of the Arts. (3) S
Ph'losophical analysis of the esthetic exper ence and various works of art. Soc al, moral, and pyschologica funct ons of art Defin t ons of art artistic style, art st c truth.

505, 506 Esthetic Principles in Eastern Humanities. (3,3) F,S
Pr ncip es and ssues in art and esthetics n the East. HUP 505, Ch na, 506, ndia or Japan Prerequ site: HUP 313 for 505, 314 for 506 or approva of nstructor

507 Comparative Esthetics: East/West. (3) A
Cross-cu tural appl cation of selected principles and issues n esthetics.

520 Esthetics of Film. (3) F SS
Theory of f lm as an art form Includes film image and language, fi m and real ty, ro e and function of the fi m crit c and the experimenta avant-garde.

591 Seminar. (3) N
Topics in the comparat ve arts may be selected from the areas l sted below Prerequ site: Humanit es gradu ate student or approval of instructor.

(a) Anc ent Near-East Cultures
(b) Ancient Greece
(c) Roman and Romanesque Wor ds
(d) The Gothic Synthesis
(e) The Rena ssance
(f) Baroque and Neo Class cal
(g) Romant c sm
(h) The Contemporary Wor d

Additional courses may be selected from Cultural Anthropology, Architecture Art, Communication, Cultural Geography, Intellectual and Cultural History Dance, Foreign Languages and English (Literature) Journalism and Telecommunication, Music, Philosophy, and Theatre.

Special Courses: HUP 294, 492, 493 497, 499, 590 592, 598, 599. (See pages 33-34)

Liberal Arts

Interdisciplinary (LIA) courses offered by the College of Liberal Arts

LIA 100 University Adjustment and Survival. (3) F,S
Ana ysis of student motivat'on and goals Reinforcement of language fac ility and study sk lls Use of the library. Orientation to Un versity resources and proce dures. Specia section offered for mature women returning to higher education. (F on y).

101 The Use of Research Libraries. (1) F S
Interdisc p inary resources and serv ces of the Un vers ty Library, with an emphasis on research. Open to freshmen and sophomores.

171H, 172H, The Human Event. (3-3) F, S
Landmarks n the social and intellectual development of the human race, with emphasis on Western Civilization.

Enro lment restr cted to members of the Honors Pro gram. Consu t the Honors office for appl cab lity to Gen eral Studies requ rements.

Special Courses: LIA 294, 298, 484, 492 493, 494, 497, 498, 499

WOMEN'S STUDIES

WST 100 Women and Society (3) F, S
nterdisc plinary ntroduct on examin ng cr tica ssues n Women s Stud es Y credit only.

Special Courses: WST 484, 494, 498, 499, 590, 591, 598

Mathematics

PROFESSORS:
BUSTOZ (PS A-216), ANDERSON, FELDSTEIN, GOLDSTEIN, GOLUBITSKY, GRACE, SMAIL, JACOBOWITZ, KELLY, LEONARD, McDONALD, NERING, SAVAGE, SHERMAN, H A. SMITH, L. SMITH, A. WANG, C. WANG

ASSOCIATE PROFESSORS:
BEDIENT, DRISCOLL, FARMER, HASSETT, HELTON, D HERRERO, IHR G, KEYFITZ, KUIPER, KURTZ, McMAHON, MOORE, NIELSON, SANSONE, H L. SM TH, STEWART, SWIMMER, N. WEISS, YOUNG

ASSISTANT PROFESSORS:
A CKIN, KADELL, LAKE, L SKOVEC, McCARTER, QUIGG, ROSENSTEEL, WOODFIELD

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Mathematics Consists of 45 semester hours of which at least 30 must be in mathematics and the remaining hours in closely related fields to be approved by the advisor. The required courses must include MAT 270†, 271, 272, 219, 342, 371 or 460, 374, two 400-level mathematics courses to be approved by the ad visor, and CSC 100† or 183†. The department recommends a one year sequence in some closely related field. Students who plan to attend graduate school in mathematics should consult their advisor concerning an appropri ate curriculum as early as possible. (See Fore gn Language Requirement, page 77.)

Bachelor of Science Degree Curriculum

Mathematics Consists of 55 semester hours of which at least 42 must be in mathematics and the remaining hours in closely related fields to be approved by the advisor. The required hours must include MAT 270†, 271, 272, and 342, and CSC 100† or 183†. To satisfy the remaining required hours the following options are available:

General Mathematics Option. Requires MAT 219, 371, 372 and 374. The remaining hours in mathematics are to be approved by the advisor and must include 9 hours at the 400 level. The department recommends a one-year sequence in some closely related field.

Computational Mathematics Option. Requires MAT 243, 371, 464 465, 467 or 374, STP 326 or 420 or 421, CSC 100-101, 200, and 210. The remaining hours are to include three 400-level courses, at least two of which must be in mathematics, and all of which must be approved by the advisor.

Applied Mathematics Option. Requires MAT 371, 372, 374, MAT 419 or IEE 473, 451, 461, 462, 464. PHY 115-116 also is required and the corresponding laboratory course (PHY 117-118) is strongly recommended. Students should choose additional courses from MAT 415, 416, 419, 443, 463, 465, 472, 475, STP 421, 425, 427, IEE 476†, and CSC 101.

Statistics and Probability Option: Requires MAT 219, 371, 372, STP 421, and one course from each of two of the following groups: (a) STP 427; (b) STP 425; and (c) MAT 419, IEE 473†, 476†. The remaining courses in mathematics, to be approved by the advisor, may be selected from the three groups above or from among MAT 464, 465, 466, STP 429, CSC 101. A coherent set of courses in a related field is also required.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Mathematics *Option 1.* Consists of at least 36 semester hours in mathematics. Required courses are MAT 219†, 270†, 271, 272, 310, 342, 371 or 374 or 460, 443 and 483†, STP 420 and CSC 100† or 183†. MAT 482† is required as part of the 31 hour professional education requirement, but cannot be counted as part of the 36-hour major requirement.

Mathematics *Option 2.* This option may be exercised only in combination with Option 2 in Chemistry (page 68) or Physics (page 112). The mathematics portion of this 60-hour program consists of 30 semester hours of credit in mathematics. Required courses are MAT 219†, 270†, 271, 272, 310, 342, 371 or 374 or 460, and 443. A computer science course (CSC 100† or 183†) is recommended.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Mathematics—Consists of at least 24 semester hours of credit. Required courses are MAT 219†, 270†, 271, 272, 310, 342, and one of 371, 374, 460.

Departmental Graduate Programs

The Department of Mathematics offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

MATHEMATICS

MAT 105 The Creative Art of Mathematics. (3) F S,SS
Designed to acquaint students in the arts humanities and social sciences with the nature of modern mathematics Recommended for students selecting a single mathematics course

106 Intermediate Algebra. (3) F S,SS
Topics from basic algebra such as linear equations polynomials, factoring exponents, roots and radicals. Prerequisite One year of high school algebra

115 College Algebra and Trigonometry. (4) F,S,SS
A pre-calculus course on those topics in algebra and trigonometry which are essential to the study of analytic geometry and calculus. Not open to students with credit in MAT 117 or 118. Prerequisite: three semesters of high school algebra or MAT 106†.

117 College Algebra. (3) F,S,SS
A precalculus course on topics in algebra and properties of elementary functions which are essential to the study of analytic geometry and calculus. Not open to students with credit in MAT 115. Prerequisite. three semesters of high school algebra or MAT 106†.

118 Plane Trigonometry. (2) F S,SS
A precalculus course on topics in trigonometry which are essential to the study of analytic geometry and calculus. Not open to students with credit in MAT 115 Prerequisite MAT 117† or equivalent.

119 Finite Mathematics. (3) F,S SS
Topics from set theory, probability and linear algebra Applications will be emphasized Prerequisite: MAT 115† or 117† or equivalent

141 Mathematics for the Social, Life and Management Sciences. (2 4) F,S,SS
Set theory, systems of equations matrix algebra and other topics of interest to students in the social life, and management sciences May be taught with 3 lectures and 2 recitations per week or as a regular lecture meeting 4 hours per week Prerequisite for 4-credit option MAT 106†, prerequisite for 2 credit option MAT 117† or equivalent.

180, 181 Theory of Elementary Mathematics. (3 3) F S SS
Number systems, intuitive geometry elementary algebra, and measurement. Intended for prospective elementary school teachers Prerequisite for MAT 181 MAT 180 or approval of instructor.

210 Mathematical Analysis. (3) F S,SS
Differential and integral calculus of elementary functions, with applications. Not open to students with credit in MAT 260, 270 or 290 Prerequisite: Mat 115† or 117† or 141† or equivalent

219 Mathematical Structures. (3) F S
Sets, functions, proofs probability, nature of mathematical models. Intended for sophomore mathematics majors and others interested in the nature of mathematics Prerequisite one semester of calculus or approval of instructor.

242 Elementary Linear Algebra. (2) F,S SS
Introduction to matrices, systems of linear equations determinants vector spaces, linear transformations, and eigenvalues Emphasizes development of computational skills Prerequisite: A semester of calculus or approval of instructor

243 Discrete Mathematical Structures. (3) F
Introduction to lattices, graphs, Boolean algebras, and groups, with emphasis on topics relevant to computer science. Prerequisite. sophomore standing, or approval of instructor

260, 261 Technical Calculus I, II. (3 3) F,S,SS
Analytic geometry differential and integral calculus of elementary functions emphasizing physical interpretation and problem solving Not open to students with credit in MAT 270 or 290 Prerequisite for MAT 260 MAT 115† or equivalent, prerequisite for MAT 261. MAT 260† or approval of instructor

270 Calculus with Analytic Geometry I. 4) F,S SS
Real numbers, limits and continuity differential and integral calculus of functions of one variable [Not open to students with credit in MAT 290. The sequence MAT 270-271 may be substituted for MAT 290 to satisfy requirements of any curriculum] Prerequisites. MAT 115†, or 117† and 118†, or equivalent

271 Calculus with Analytic Geometry II. (4) F S,SS
Methods of integration applications of calculus, elements of analytic geometry, improper integrals, sequences and series. [Not open to students with credit in MAT 291 The sequence MAT 270-271-272 may be substituted to satisfy requirements for MAT 290 291] Prerequisite MAT 270† or equivalent.

272 Calculus with Analytic Geometry III. 4) F,S SS
Vector valued functions of several variables multiple integration, introduction to vector analysis [The sequence MAT 270-271 272 may be substituted to satisfy requirements for MAT 290-291] Prerequisite MAT 271† or equivalent

274 Elementary Differential Equations. (3) F S,SS
Introduction to ordinary differential equations adapted to the needs of students in engineering and the sciences. Prerequisite MAT 271† or equivalent, 's required· credit in MAT 272† or equivalent, 's recommended

290 Calculus I. (5) F S
Differential and integral calculus of elementary functions topics from analytic geometry essential to the study of calculus. Prerequisites MAT 115†, or 117† and 118†, or equivalent

291 Calculus II. 5) F,S
Further applications of calculus partial differentiationtegrals, and infinite series Prerequ'site MAT 290† or equivalent.

302 Abstract Computing Machines. (3) S
Representations of finite state machines Equivalence and reduction Homing and distinguishing experiments Machine identification Machine decompositions. Memory and information loss Equivalent to CSC 355 Prerequisite. MAT 243†.

310 Introduction to Geometry. (3 F,S
Congruence, area parallelism, similarity and volume, Euclidean and non Euclidean geometry Prerequisite MAT 272† or equivalent

342 Linear Algebra. (3) F S,SS
Linear equations and matrices vector spaces, determ nants, linear mappings, eigenvalues, nner product spaces, and b linear forms. Prerequ site. cred t or concurrent reg strat on n MAT 272†, or equivalent.

362 Advanced Mathematics for Engineers and Scientists I. (3) F,S,SS
Comp ex numbers, part al d fferentiation, multip e integrals, vector ana ys s and Four er series. Prerequ site· MAT 272† or equ valent

363 Advanced Mathematics for Engineers and Scientists II. (3) S
Specia functions comp ex variables, integral transforms, part al d fferentia equations and probabil ty. Prerequis tes· MAT 274† and 362† or equ valent.

371 Advanced Calculus I. (3) F
Continuity, Tay or s theorem, partial d fferentiat on mp c t function theorem, vectors, linear transformations and norms in R^n, mu tiple ntegrals, power series. Prerequis te· MAT 272† or equ valent, and cred t or concurrent reg strat on in MAT 342†

372 Advanced Calculus II. (3) S
Maps from R^n to R^m, line and surface integra s, di vergence and Stokes theorems, R^m topology, series, un form covergence, improper ntegrals (Not open to students w th credit in MAT 460) Prerequ site. MAT 371†.

374 Introduction to Ordinary Differential Equations. (3) F S
First order equations inear equations, constant coef f c ent equat ons, regu ar singular points Besse s equat on, linear systems, existence, and uniqueness theorems Prerequis te· Cred t or concurrent reg - strat on n MAT 272†, or equivalent.

380 Arithmetic in the Elementary School. (3) F
Historical numeration systems overv ew of elementary number theory includ ng pr mes, factor zation divis bi ty, bases modular systems, l near congruence, and cont nued fractions. Prerequ s te. MAT 181† or approval of nstructor

381 Geometry in the Elementary School. (3) S
Informal geometry nclud ng concepts of ength, area, vo ume, sim larity, and congruence. Class f cation of figures straightedge and compass constructions, mot on geometry. Prerequis te: MAT 380† or approva of n structor.

400 Computability and Unsolvability. (3) A
Tur ng machines and computab lity computable and part al computable funct ons, recurs ve sets and pred cates recurs ve y enumerable sets, unsolvab e dec sion problems app cations. Prerequ site. MAT 243†.

401 Theory of Formal Languages. (3) S
Theory of grammar methods of syntactic ana ys s and specif cation, types of artif c al languages, relat onsh p between formal anguages and automata Equ valent to CSC 459. Prerequ s te: MAT 243† or 342†

410 Introductory Topology. (3) F
Topology of the real numbers equ valence of sets transf nite induct on Designed to deve op the student's crit cal faculties and creat ve abil ties n mathemat cs Prerequis te: MAT 272† or equiva ent

412 Projective Geometry. (3) N
Projective geometry and its relationsh p to Eucl dean and other geometr es. Prerequ site· MAT 342†. MAT 310† is recommended.

415 Combinatorial Mathematics I. (3) F
Permutations and combinations, recurrence relations, generat ng functions, graph theory and comb natoria proof techn ques Prerequis te· MAT 342†.

416 Combinatorial Mathematics II. (3) S
Cont nuation of MAT 415 cons dering some advanced aspects of the theory as well as applications. Topics to be chosen: transport networks, matching theory, block designs, coding theory, Polya's counting theory, and applications to the physical and life sciences. Prerequisite. MAT 415† or approval of instructor. MAT 443† is recommended.

419 Linear Programming. (3) S
L near programm ng and the simplex algorithm, network problems, quadratic and nonl near programming. Prerequisite: One semester of college calculus.

431 Foundations of Mathematics. (3) A
Top cs from mathemat ca logic and set theory. May be repeated for credit w th approva of instructor Prerequ site MAT 342† or approval of instructor.

442 Advanced Linear Algebra. (3) F,S
Deeper and more abstract study of the topics in MAT 342. Invariant subspaces, canonical forms and matr ces inear programming, dual spaces, bil near and quadratic forms, and mult l near algebra. Prerequ site· MAT 342† or equivalent

443 Abstract Algebra. (3) F,S,SS
Introduction to the most important a gebraic structures including groups, rings ntegra doma ns, and fields. Prerequis te: MAT 342† or approval of nstructor.

445 Theory of Numbers. (3) S
Prime numbers, unique factorization theorem, congruences. Diophant ne equations primitive roots, quadratic reciprocity theorem. Prerequisite· MAT 342†.

451 Mathematical Modeling. (3) A
An n depth study of one or more mathemat cal models which occur n the phys cal or biological sciences, May be repeated for credit with approval of instructor. Prerequ sites· MAT 274†, or 374†, and 242† or 342†, or approval of instructor.

460 Applied Real Analysis. (3) F,S
Vectors, curv linear coordinates, Jacob ans, implicit funct on theorem, line and surface integrals, Green's, Stokes and d vergence theorems. (Not open to students w th credit in MAT 372) Prerequis tes: MAT 274† or 374†, and 242† or 342†

461 Applied Complex Analysis. (3) A
Analytic functions, complex ntegrat on, Tay or and Laurent series res due theorem, conformal mapping, and harmonic functions. Prerequ site: MAT 272† or equ valent

462 Partial Differential Equations. (3) A
Second order partial differentia equat ons, emphasiz ng Lap ace wave and diffusion equations, solutions by the methods of characteristics, separation of variables and integral transforms. Prerequisite: MAT 274† or 374†.

463 Transform Theory and Operational Methods. (3) A
Fourier, Laplace, and other transforms; applications to boundary value problems; generalized functions and modern operational mathematics. Prerequis te: approval of instructor.

464 Numerical Analysis I. (3) F
Theory and methods for· numerical so ution of algebraic and transcendental equat ons; iterative methods, approx mat on; quadrature; solution of differential equations. Those seeking a methods survey course should take MAT 466. Prerequisites. Fluency in computer programming (preferably Fortran), and MAT 342† and 371†, or approval of instructor.

465 Numerical Analysis II. (3) S
Continuation of MAT 464. Prerequisite. MAT 464†.

466 Applied Computational Methods. (3) F,S
Numerical methods for: quadrature, different al equations, roots of nonlinear equations, nterpolation,

approximation, l near equations, floating-point ar thmetic roundoff error. Prerequisites· Fluency in computer programming (preferably Fortran), and MAT 271† or equivalent, or approval of nstructor

467 Computer Arithmetic. (3) S
Number systems, hardware/software arithmetic overf ow, signif cance, round ng mult ple prec sion automatic error contro · mpact on anguages, arch tectures, robust programming, software development Prerequisites CSC 101†, or 200† or 383†, or MAT 464†, or 466†, or approval of nstructor.

472 Intermediate Real Analysis. (3) N
Introduction to the Lebesgue ntegral, metr c spaces, normed spaces, fixed point theorems, orthogonal bases, Four er ser es Prerequis tes. MAT 342† and 372†, or approval of instructor.

475 Differential Equations. (3) S
Asymptotic behav or of so utions of l near and non-inear ordinary different al equat ons stab l ty, Sturm L ouvi le problems boundary va ue problems, s ngu ar po nt behavior of autonomous systems Prerequis te MAT 374† or equivalent

480 Mathematics in the Upper-Elementary Grades I. (3) F
An introduct on to probabi ity and statistics nc ud ng open-ended data gather ng and processing count ng techn ques, samp ing strategies, est mat on and dec s on mak ng Prerequis te: MAT 381† or approva of instructor.

481 Mathematics in the Upper-Elementary Grades II. (3) S
E ementary funct ons and the r appl cations. A thorough nvestigation of some of the a gor thms of bas c arithmet c. Prerequisite. MAT 480† or approval of in structor

482 Methods of Teaching Mathematics in Secondary School. (3) F,SS
Examination of secondary schoo curricu ar material analys s of nstructional dev ces. Teaching strategies, evaluative techn ques diagnos s and remedi at on, and problem solving. Prerequis te: approval of nstructor.

483 Mathematics in the Secondary School. (3) S,SS
Topics n geometry, number theory algebra, and anal-ysis. Emphas s on unifying principles. Prerequ site MAT 310† or 412† or approval of instructor

485 History of Mathematics. (3) S
Topics from the history of the orig n and deve opment of mathematical deas Prerequisite MAT 272† or equ va ent

510, 511 Point Set Topology. (3 3) F S
Topological spaces, metr c spaces compactness, connectedness, loca propert es, product and decompo sition spaces, mapp ngs, cover ng properties, separation properties. Prerequ s te. MAT 371† or 410† or approval of nstructor.

543, 544 Abstract Algebra. 3-3) F,S
Groups, modu es r ngs and f e ds, Ga o s theory, homo ogica algebra representation theory Prerequis te MAT 444† or approva of instructor.

550, 551 Methods of Mathematical Physics. (3 3 F,S
Matrices, orthogona functions, integral equat ons cal culus of variations, e genvalue problems, perturbation methods boundary value problems Prerequisites MAT 342† and 372† or 461† or approva of instructor May be repeated for credit with approva of nstructor

564, 565 Advanced Numerical Analysis. (3 3) NR
Fin te d fference equations, orthogonal polynomials, quadrature, approx mat on and ntegrat on theory, numerical so ution of d fferentia equat ons, numerica l n-ear a gebra. Prerequis te MAT 464† or approva of in-structor May be repeated for cred t with approva of in-structor

569 Topics in Analysis. 3 N
Prerequis te approva of nstructor. May be repeated for credit with approva of nstructor

570, 571 Real Analysis. (3 3) F,S
Lebesgue ntegrat on, se ected funct on spaces, dif ferentiation abstract measure theory e ements of func-tional ana ys s. Prerequ site. MAT 372† or approval of instructor

572, 573 Complex Analysis. (3-3 F, S
Analytic functions, series and product representations, entire and meromorph c funct ons, norma fam ies, Riemann mapp ng theorem harmonic functions R emann surfaces Prerequ s te. MAT 371† or approval of nstructor.

574, 575 Theory of Ordinary Differential Equations. (3-3) N
Systems, ex stence proofs, s ngu ar ties, asymptot c behav or of solut ons, boundedness of so utions, eigenvalues and eigenfunctions, perturbation theory Prerequisite MAT 372† or approval of nstructor

576, 577 Theory of Partial Differential Equations. (3 3) N
Ex stence and un queness theorems, boundary va ue and initial value prob ems, character stcs, Green s func-tions, maximum pr nc ple, d stributions and weak solut ons. Prerequ site. know edge of Lebesgue n-tegration or approva of nstructor.

578, 579 Functional Analysis. (3 3) N
Locally convex, normed and Hilbert spaces. Linear operators, spectra theory and appl cation to classica ana ysis Prerequ s te· MAT 472†, or 571† or approval of nstructor.

582 Modern Mathematics for Teachers. (3) A
Theory of sets, rea number system transfinite numbers and other se ected top cs Prerequis te approval of instructor

583 Abstract Algebra for Teachers. 3) A
Postulational approach to algebra, e ementary math ematical systems including groups and fields. Prerequisite approva of nstructor

584 Teaching College Mathematics. (3) A
Methods and earning d ff cu ties n the teach ng of nstructional ower div s on co lege mathemat cs courses Prerequis te. approval of instructor

585 Modern Geometry for Teachers. (3) A
Euc dean, project ve and non Eucl dean geometr es Prerequ site· approva of nstructor.

587, 588 Analysis for Teachers. (3 3) N
Subject matter n mathemat cs appropriate for acce erated programs n secondary schoo s, includ ng ana yt c geometry and ca cu us Prerequ site approva of nstructor

591 Seminar. 1 3) N
Top cs may be se ected from the fol ow ng.

a) Ana ys s
b) App ed Mathemat cs
c Topology
(d) A gebra
(e) Mathematica Log c
f) Numer ca Ana ys s
(g) Mathemat cs Education
h) Comb nator al Mathemat cs

Special Courses. MAT 294 298, 492, 493, 494, 498, 499 590, 592, 594 598, 599 792, 799. (See pages 33-34)

STATISTICS AND PROBABILITY

STP 226 Elements of Statistics. (3) F, S, SS
Bas c concepts and methods of statistics, including descr ptive stat st cs, significance tests, estimation, samp ng and correlation. Not open to majors in mathematics or the physical sc ences. Prerequ site· three semesters of high schoo algebra or MAT 106†.

326 Intermediate Probability. (3) F S
Probab lity mode s and computat ons jo nt and cond - t ona d str but ons, moments fam l es of d stribut ons Top cs n stochast c processes, s mulation, and statis- t cs Prerequ s te: MAT 210† or equ valent.

420 Introductory Applied Statistics. (3) F,S
ntroductory probab lity, descriptive stat st cs, sampling d stribut ons parameter est mat on tests of hy potheses, ch -square tests, regression analys's, ana ys s of variance nonparametr c tests Prerequis te. MAT 115† or 117† or 141† or equ valent.

421 Probability. (3) F
Laws of probabil ty, comb nator al ana ys s, random var ables, probab lity d stribut ons expectation, mo ment generat ng functions transformat ons of random var ab es centra lim t theorem Prerequ sites. MAT 219† or STP 326†, and 371† or equivalent

425 Stochastic Processes. (3) S
Markov cha ns, stationary distr but ons, pure jump pro cesses second order processes and other top cs in stochast c processes. Prerequ sites. STP 421† and MAT 342†.

427 Mathematical Statistics. (3) S
L m ting distr butions, interva estimat on, po nt estimation suff c ent stat st cs tests of hypotheses. Prerequi s te: STP 421†

429 Experimental Statistics. (3) S
Stat stica nference for control ed experimentat on. Mu tip e regress on, correlat on, ana ys s of variance, mult p e compar sons, nonparametric procedures. Pre requ site STP 420 or equiva ent.

524, 525 Advanced Probability. (3 3) N
Measure theoret c foundations of probab lity, distr but on functions and characteristic funct ons, laws of arge numbers and central l mit theorems condit ona proba b l t ies mart ngales and topics n stochastic processes Prerequis tes STP 421† and MAT 571†, or approva of instructor.

526, 527 Theory of Statistical Linear Models. (3 3) F S
Mult normal distr bution distribution of quadrat c forms fu and non-fu rank mode s, general zed in verses unba anced data, variance components, large sample theory. Prerequis tes STP 427†, and knowledge of matrix algebra

528 Topics in Stochastic Processes. (3) N
Prerequ s te· approva of nstructor May be repeated for credit w th approval of instructor

529 Topics in Statistics. (3) N
Prerequis te approva of nstructor. May be repeated for cred t with approva of nstructor

530 Applied Regression Analysis. (3 F
Method of east squares simple and mu t ple l near regression po ynomia regress on ana ysis of residua s, dummy var ab es, model bu d ng. Prerequ s te STP 420† or equivalent.

531 Applied Analysis of Variance. (3) S
Factor al des gns balanced and unbalanced data, fixed and random effects, randomized blocks, latin squares, analysis of covariance, multiple comparisons Prerequis te STP 420† or equivalent.

532 Applied Nonparametric Statistics. (3) F
One sample tests, tests of two or more re ated or n dependent samples, measures of correlation, tests of trend and dependence. Prerequisite: STP 420† or equiva ent.

533 Applied Multivariate Analysis. (3) S
D scrim nant analysis, principa components, factor ana ys s, c uster analysis canon cal correlation. Prerequis te: STP 420† or equ valent

534 Applied Discrete Data Analysis. (3) N
Models for discrete and count data, measures of assoc ation log l near and regression models for cont ngency tables. Prerequis te: STP 420† or equivalent.

591 Seminar. (1 3) N
Topics may be selected from the following. (a) Statist cs, (b) Probabi ty

Special Courses: STP 294, 298, 492 493, 494, 498, 499, 590 592, 594, 598, 599 792, 799 (see pages 33-34

Military Science
(Army ROTC)

PROFESSOR:
MURCH SON (MAIN 240)

ASSISTANT PROFESSORS:
BURT, GREENE, HOPPER, LAPE, MORGAN, SCHWARTZ, VAN BREDERODE

Purpose. The Department of Military Science curriculum consists of the Basic Course (MIS 101, 102, 203, and 204) and the Advanced Course (MIS 301, 302, 401, and 402) The goa of this professional education is to prepare selected students with leadership potential to be commissioned Army officers within the national defense structure of the United States. Specific objectives include developing the leadership and managerial potential of the students; developing students' abilities to think creatively, to speak and write effectively; providing the student with an appreciation of the requirements for national security; and developing the students' understanding of the nature and functions of the U.S. Army. Upon successful completion of the advanced course, qualified students will receive commissions in the United States Army Reserve or Army National Guard. Active duty positions are available upon graduation from the University.

Appointments as Second Lieutenants in the Regular Army are available to outstanding students who desire a career in the military service.

General Qualifications. Male or female students entering Army ROTC must: (1) be a

citizen of the United States (noncitizens may enroll but must obtain citizenship prior to commissioning); (2) be of sound physical con dition; (3) be at least 17 years of age for entrance into the Advanced Course and be able to complete all commissioning requirements prior to age 30.

Four-Year Program. Students may enroll in Army ROTC during their freshman year. They take the Basic Course during the first two years, receiving a total of 8 semester hours credit for the four semesters of study. Upon satisfying the requirements stated above, they enter the Advanced Course where they will earn 10 semester hours of credit for the four semesters of study. In addition, students will attend a six week advanced summer camp at Ft. Lewis, Washington, between their junior and senior years. Upon successful completion of the Advanced Course and requirements for a degree, they are commissioned as Second Lieutenants in the United States Army Reserve or Army National Guard.

Two-Year Program. Students must have at least two academic years of college work re maining, either at the undergraduate or graduate level, or a combination of the two. This program is open to all students with the exception of three and four-year scholarship winners (see scholarships). Students seeking enroll ment in the two year program should make application dur ng the spring semester of the year in which they desire to enter the program. High school students should apply during their senior year of high school. They must pass the ROTC Qualifying Examination, and the Army physical examination. After successfully completing a six-week basic camp at an Army post (normally conducted during June and July) or completing the basic course classes during a Univers'ty Summer Session, students may enroll in the Advanced Course. Students with previous military experience, high school ROTC credit, or who are currently members of the National Guard or Reserves may be admitted directly into the two-year program. They then follow the same program and meet the same requirements as stated for Advanced Course students in the four-year program.

Qualifications for Admittance to the Advanced Course. (1) Successful completion of the Basic Course for the student in the four-year ROTC program. For the student in the two year program, selection for and successful completion of the six-week basic summer camp. (2) Passing of the ROTC Qualifying Examination. (3) Passing the Army physical examination. (4) Attainment of a minimum cumulative grade point average of 2.0 ("C") for the first two years of college work and maintenance of that minimum during the peri od while enrolled in the Advanced Course.

Pay and Allowances. Advanced Course students receive $100 per month for the 20 months of enrollment in the Advanced Course. The student also receives one half the pay of a second lieutenant during his attendance at the six-week advanced camp. Uniforms, housing and meals are provided at camp without cost to the students and they are reimbursed at the current mileage rate for trave to and from the camp. Students who attend basic camp receive the pay of an Army recruit during attendance at basic camp as well as the current mileage rate for travel to and from the camp.

Simultaneous Membership Program. Un der the program, ROTC students may simul taneously be a member of the Army Reserve or National Guard. The combination of advance course allowance and pay for Reserve Guard participation provides more than $1000 for each semester's involvement.

Scholarship Programs. The Army ROTC offers scholarship programs for outstanding young men and women who are motivated toward a career as professional officers in the Regular Army. These scholarships pay for all fees, tuition and books, and provide $100 per month subsistence allowance while the schol arship is in effect. A scholarship for four years is available to freshmen who will enter the four year program. Applications must be sub mitted in accordance with a schedule furnished high school counselors. Selection is made on a nation wide basis. Scholarships are available for three , two-, and one-year per'ods commencing with the sophomore, junior and senior year of ROTC, respectively. Applications are open to all students in good standing with the University; previous ROTC or mili tary exper'ence is not required for application for three and two year scholarships; selection is made by an interview board composed of University faculty members and Army officers in the ROTC detachment. Acceptance of any of the four scholarship programs requires a service commitment to serve in the active Army for a period of four years after commissioning and graduation.

Active Duty Requirements. Graduates of Army ROTC may serve as officers in the Army National Guard, Army Reserve or active Army. Active duty commitments may

vary from three years to as little as three months. Scholarship students have a four year active duty commitment.

Graduate and Professional Studies Programs. A delay from call to active duty for up to four years is available to outstanding students who desire to earn graduate or professional degrees. Special programs for graduate and professional studies are available to both Regular Army appointees and U.S. Army Reserve appointees in the following areas: medicine, osteopathy, and clinical psychology.

MILITARY SCIENCE

MIS 101 Introduction to Military Science. (2) F,SS
Organization and mission of the Army within American society; current issues in the military; military justice system; basic leadership skills.

102 Methods of Instruction. 2 S SS
Learning theories and principles of instruction; development of instructor knowledge, skills and characteristics; instructional aids, student presentations; evaluation techniques

203 Land Navigation and Survival. (2) F SS
Components of maps; use of map and compass; orienteering and and navigation exercises; military mapping; system; basic outdoor survival skills.

204 Leadership and Military Management. 2 S,SS
Interdisciplinary approach to leadership and management ethics; responsibility and conduct of military officers; effective decision making techniques; introduction to drill and ceremonies.

301 Advanced Military Science. (3 F
Theory and dynamics of the individual soldier and military units in offensive combat operations; Prerequisites: MIS 201† and 202†, or equivalent. Three lectures conferences, 1½ hours of Leadership Practica Application one three-day field trip one one-day field trip

302 Advanced Military Science. 3 S
Theory and dynamics of military units in defensive combat operations. Prerequisites: M S 201† and 202† or equivalent Three lectures-conferences 1½ hours Leadership Practical Application, one three day field trip; one one day field trip

401 Advanced Military Science. 2) F
The military legal system; evolution of the U S Army, selected campaigns and leaders through World War Prerequisites M S 301† and 302† Two lectures conferences, 1½ hours Leadership Practical Application, 3-day field trip.

402 Advanced Military Science. (2) S
Selected campaigns and leaders from 1941 to the present; career planning and personal affairs Prerequisites M S 301† and 302† Two lectures 1½ hours Leadership Practical Application, 3 day field trip

Philosophy

PROFESSORS:
MURPHY (PSA-521), ARNER, CARNEY, HUMPHREY, PASTIN

ASSOCIATE PROFESSORS:
BEATTY, FITCH, GIESCHEN, GULESERIAN, LIU, WHITE

ASSISTANT PROFESSORS:
CREATH, HOWELLS, MAIENSCHEIN

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Philosophy The major in philosophy consists of 45 semester hours of credit Thirty-six hours must be in philosophy, including 30 upper division hours, and 9 hours in related fields to be determined by the student in consultation with an advisor Required courses are PHI 113, 301, 302, 305; 312 or 314; 316 or 317; and at least two 400 level courses. Students planning to do graduate work in philosophy should consult an advisor in order to select appropriate 400 level courses. A minimum 2.0 grade average is necessary for all courses fulfilling the major requirements. (See Degree Requirements, page 40.)

Departmental Graduate Program

The Department of Philosophy offers programs leading to the degree of Master of Arts that will prepare one for either teaching in a community college or pursuing a Ph.D. in philosophy Consult the *Graduate Catalog* for requirements.

PHILOSOPHY

Philosophy majors who take crosslisted courses must register for these under the PHI prefix

PHI 101 Introduction to Philosophy. (3) F, S, SS
Exploration of some basic philosophical problems concerning people their values and the nature of ultimate reality Not open to students who have taken PHI 300

103 Principles of Sound Reasoning. (3) F S SS
Fallacies, traditional logic of the syllogism, elementary parts of symbolic logic inductive logic and other related topics

111 Introduction to Ethics. (3) F S, SS
Obligation goodness, justice, morality and their relations to utility moral reasoning punishment, and social structure.

113 Introduction to Mathematical Logic. (3) F S
Symbolic techniques emphasizing deductions and proofs in the propositional and first and second order predicate calculi. Either axiomatic or natural deduction systems may be used

201 Technology and Social Change. (2) F
Technology as related to soc al change, contemporary and possible future impacts of technology on society. (Also l sted as STE 201 and HUP 201.)

300 Existence, Knowledge and Value. (3) F, S, SS
A critical philosoph cal examination of people and society God, the foundations of know edge, and the na ture of mora ity. Not open to students who have taken PHI 101.

301 History of Ancient Philosophy. (3) F
History of western philosophy from ts beginnings through the He lenistic period

302 History of Modern Philosophy. (3) S
H story of western ph losophy from the Renaissance through Kant

303 Contemporary Analytic Philosophy. (3) F
Aims and methods of such 20th century phi osophers as Frege, Moore, Russe l, W ttgenstein, Carnap, Ayer W sdom, Ryle, Austin, Strawson, Quine and Se lars, with application to metaphys cs and ep stemology.

304 Existentialism and Phenomenology. (3) S
An introduction to this movement through a study of its major f gures, e g. Kierkegaard, Dostoevsky, Nietzsche Husserl, Heidegger Buber, Sartre, Camus, Merleau Ponty, Binswanger, May, Frankl, and Ricouer

305 Ethics. (3) F S
Investigat on of mora conduct focusing on such con cepts as goodness, rightness duty, and just ce· examination of theories such as deontologism, util tarianism formalism, relativism, and egoism n which these concepts occur

306 Applied Ethics. (3) F S, SS
Phi osophical techniques are used to elucidate such v tal moral issues as sexua pervers on, civ d sobed ence, abortion, pun shment, v o ence and pac fism, suicide, and euthanasia.

307 Philosophy of Law. (3) S
The nature and source of law and its re at on to moral ty Legal rights, legal enforcement of morals, c vil dis obedience, liability and respons bil ty, punishment, judic al reason ng, justice property differences between theories of natura and positive law

308 Philosophy of Art. (3) S
Central prob ems in philosophy of art, *e.g.*, the nature of a work of art, modern and trad'tional theor es of art esthet c perception and experience, objectiv ty and relativity in art criticism

309 Social and Political Philosophy. (3) F, S
Alternative principles and methods relevant to problems of human association and conf ict; justice and power, freedom and equality, autonomy and order are dis cussed.

310 Political Ideologies. (3) S
Principles underlying democracy, socialism, communism, anarchism and fascism Classical and modern authors consulted· *e.g.* P ato Aristotle, Machiavelli, Hobbes, Hegel, Locke, Mi Marx, Lenin, Bakun n, Sorel, and Marcuse.

311 Philosophy in Literature. (3) F S, SS
Se ected works of iterature introduce ph losophica problems such as the nature of moral goodness and people's relat on to the world and other peop e

312 Theory of Knowledge. (3) S, SS
The nature, sources, and l mits of human knowledge. Theories of truth· *a priori* concepts and knowledge; empirical concepts and knowledge, percept on, nduction knowledge of the external world.

313 Symbolic Logic. (3) S
Methods of elementary mathematical ogic. First-order predicate ca cu us, identity, descr pt ons relations, soundness and completeness wil be cons dered. Prerequisite: PHI 103 or 113 or equivalent.

314 Philosophy of Science. (3) S
The structure and just ficat on of sc ent fic theories, ex planation, and theory change. The roles of observation and laws, theoretica concepts and entities, reduction, probab l ty, confirmation, space and t me, and causa t on.

315 Philosophy of Language. (3) S
Problems pertaining to the nature of anguage· meaning reference, truth defin tion analyticity, trans atabil ty, synonomy, and contr butions of contemporary linguistics.

316 Metaphysics. (3) F, S
Investigat on nto the real· appearance *vs* real ty, per ception realism *vs* dea ism, materia ism *vs.* mental sm, the concepts of mind and person, substance, universals space and t me, causation.

317 Philosophy of Mind. (3) S
Nature of consc ousness The common sense v ew of mind and percept on, behav orism mater alism, dualism phenomena sm, self-knowledge, knowledge of other m nds

318 Philosophy of Religion. (3) F, S, SS
Nature and justification of re igious belief Arguments for the existence of God mysticism, theistic and panthe st c conceptions of God and creat on

319 Indian Philosophy. (3) F
Selections from the *Upanishads* and the *Gita* and of representat ve orthodox and heterodox Indian schools, nc uding the Carvaka, Ja n, Nyaya, Yoga and Vedanta.

320 Buddhist Philosophy. (3) S
The phi osophic express ons of the principal Southern and Northern Buddhist schoo s, beginning with Theravada and includ ng Madhyam ca Vajrayana and Zen

321 Man and Machine. (2) F
Impact of technology as it extends and lim'ts ndividual se f-determ nation Humanistic and mechanistic approaches to understand ng indiv dua identity (A so listed as STE 310 and HUP 310).

322,323 Science and Technology in History. (3 3) F, S
Development and appl cation of scientific knowledge and its effects on human asp rations and values from ancient times through the Industrial Revo ution to present. PHI 322 not a prerequ site for PHI 323. (Also isted as STE 311, 312 and HUP 311, 312)

325 Philosophy of Social Science. (3) F
Philosophical problems surrounding the aims, structure, and methods of theor es in the socia sciences.

330 Theory of Value. (3 4 per topic) F, S
Topics in eth cs, esthetics or soc al philosophy such as isted in PHI 305-310. In *Schedule of Classes,* t tle following course number indicates top c covered Descr p tion of course mater als is ava lable in the departmenta office May be repeated for cred t under d fferent tit es.

340 Topics in Metaphysics and Epistemology. (3 4 per top c) F, S
Metaphys cal, epistem c, logical, or h storical topics are examined such as listed in PHI 312-318, but more con centrated In *Schedule of Classes* tit e following course number ind cates topic covered. Descript on of course materials is availab e n the departmental office. May be repeated for credit under different t tles.

401 Rationalism. (3) F
Examinat on of Descartes, Sp noza, Malebranche Le bniz, Broad, Blanchard, and Ch sholm. Prerequ s te: one course from among PH 302 312, 315, 316, 317, 340 or any PH 400-level course

402 Empiricism. (3) S
Exam nes one or more philosophers such as Bacon Hobbes, Locke, Hutcheson, Shaftesbury, Butler Berkeley, Hume, Re d, M l, Carnap, Ayer Prerequ site. one course from among PH 302, 312, 315, 316, 317, 340 or any PHI 400 evel course

403 German Idealism. (3) F
Exam nes one or more ph losophers such as Kant, F chte, Schel ng, Hege Schopenhauer, and N etzsche. Prerequ site one course from among PH 302, 312, 315, 316 317, 340 or any PH 400-leve course.

404 Phenomenology. (3) S
Methodology of such philosophers as Brentano, Meinong Husserl, Heidegger, Sartre and Mer eau-Ponty. Prerequis te· one course from among PHI 303, 304, 312, 315, 316, 317 340 or any PH 400-leve course.

406 Philosophical Figures and Movements. (3) F, S
Detai ed study of one or two prom nent philosophers, *e g*, Kant or of a movement, *e.g.*, anc ent skept cism. See *Schedule of Classes* for name of philosopher or movement. May be repeated for cred t for d fferent phi osophers and movements. Prerequ s te approva of instructor

407 Technology, Society and Human Values. (3) F S, SS
Va ues which mot vate mankind to create techno ogy. Areas of conf ict and reso ution between bas c human va ues and techno og ca soc ety. Read ng and discuss on w th vis ting ecturers. Prerequ site junior stand ng or above One ecture, two discussion meet ngs per week. (A so l sted as STE 402 and HUP 402)

408 Social Effects of Invention. (3) S
The ro e of sc ence and nvent on pr vate sector and publ c sector n the deve opment of techno ogy Persona and pub c respons b lity of sc ent sts and en g neers. Prerequis te· un or stand ng. (Also sted as STE 411 and HUP 411)

494 Special Topics. (1-4) F S
n *Schedule of Classes,* tit e fo low ng course number in dicates top c covered Descr pt on of course materia s is ava able in the departmenta off ce Prerequ site ap proval of nstructor.

498 Pro-Seminar. (1 3) F, S
Concentrated ana ys s of phi osoph cal top cs or of the works of a particular author Prerequis te approval of instructor.

591 Seminar. (1 3) F, S
Topics may be se ected from the fo low ng:

(a) Graduate Ph osophy
(b) Theory of Knowledge
(c) Moral Ph losophy
(d) Metaphys cs and Log c
(e) H story of Ph losophy
(f) Epistemology
(g) Philosophy of Sc ence
(h) Phi osophy of Law
( ) Soc al and Pol tical Ph losophy
(j) Aesthetics

Special Courses: PHI 484, 492 493 497, 499, 590, 592, 598, 599. (See pages 33-34.)

Physics

PROFESSORS:
WALKER (PS F-470), COWLEY, HANSON, HESTENES, JACOB, KEVANE, KYRALA, LU, MUNCH, NIGAM, PAGE, RAWLS, ROY, STARRFIELD, STEARNS, STONER, STROJNIK, T LLERY, TSONG, WORK, WYCKOFF

ASSOCIATE PROFESSORS:
AANNESTAD, ACHARYA, AHMADZADEH, BENIN, COMFORT, KAUFMANN, LAWSON. MARZKE, SPENCE, VOSS

ASSISTANT PROFESSORS:
BURSTE N, LINDSAY, SANKEY

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Physics — *Option No. 1.* Designed for students who wish to pursue physics at the bachelor or graduate degree level, this option consists of 45 semester hours of credit. Required courses are PHY 115, 116, 117, 118, 321, 322, 331, 332, 333, 334, 362, 363, 441. Additional courses in physics and other related fields will be selected with the approval of the advisor. Supporting mathematics courses MAT 290†, 291 and either 274, 242 or 374, 342 are required in addition to the 45 semester hour major requirement. MAT 270†, 271, 272, may be substituted for MAT 290, 291. One year of credit in college level French, German or Russian is strongly recommended, particularly for the student who intends to pursue a graduate degree in physics.

Physics — *Option No. 2.* An interdisciplinary program designed for students who wish to obtain an undergraduate physics preparation for entry into other professions or graduate programs. Required are 54 semester hours of credit, including PHY 115†, 116, 117, 118, 321, 331, 333, 362 and 363. The remaining courses will be selected from physics and an area of concentration as approved by the student's advisor. Examples of possible areas of concentration are physical chemistry, applied mathematics, geophysics, biological physics, philosophy of science, scientific journalism, etc., as well as pre-medical and pre-law programs. Related courses will necessarily include MAT 290†, 291, and 274, 242 or 342, 374.

MAT 270, 271, 272 may be substituted for MAT 290, 291. One year of credit in a college level foreign language is strongly recommended for the student who wishes to pursue graduate studies in a discipline which has a foreign language requirement.

Astronomy. The astronomy faculty is a subgroup of the Physics Department. It offers General Studies courses in astronomy to the University community. Facilities of the Astronomy Group include a planetarium used for formal instruction and a roof-top observatory for student use.

Science Education. As a part of the Physics Department, the science education faculty has primary responsibility for activities related to the teaching of science at the elementary and secondary level, particularly those which cut across the boundaries of the individual sciences. Members of this group, with the coop eration of faculty members of the various science departments, in addition to offering for mal courses and supervising general science requirements in the various degree programs for teachers, maintain a science education ma terials center and the Arizona Portal School Program. Other facilities include a planetarium used both for formal instruction and as a resource for schools in the area.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

General Science Consists of 42 semester hours of credit. Required courses are CHM 113†, 231†; PHY 111†, 112†, 113†, 114†; BOT 100; ZOL 110; GLG 472; AST 321; PSE 460† or 480. Electives must be approved by the general science major advisor.

Physics—*Option No. 1.* Consists of 40 semester hours of credit. Required courses are PHY 115†, 116, 117, 118 (or 111†, 112, 113, 114), 321†, 331†; PHY 460† or 361†; PHY 463† (2 hours). An additional nine hours in upper division physics (PHY) or physical science (PHS) courses will be approved by the advisor in consultation with the student. Remaining courses to complete the major may be in physics and or closely related fields, subject to the approval of the advisor.

Physics—*Option No. 2.* A student may elect this option in conjunction with either mathematics or chemistry majors. The physics portion of this program consists of 30 semester hours, with the following courses required: PHY 115†, 116, 117, 118 (or 111†, 112, 113, 114), 321†, 331†; PHY 460† or 361†; PHY 463† (2 hours). The remaining courses to complete the 30 hours may be in physics and/or closely related fields, subject to the ap proval of the physics advisor.

Departmental Minor Teaching Field Requirements

Physics—Consists of 24 semester hours of credit. Required courses are PHY 115†, 116, 117, 118 (or 111†, 112, 113, 114); PHY 460 or 361†; one hour of PHY 463†. Remaining hours to complete the minor are selected from courses in physics, astronomy (upper division), and physical sciences (upper division) approved by the physics advisor.

General Science—Consists of 24 semester hours of credit. Required courses are MAT 117†; CHM 101 or 113†; PHY 101† (or 111†, 112†, 113†, 114†); AST 121 or 321; BOT 100; ZOL 110; GLG 100 or 472. Re maining hours are selected with the approval of the minor field advisor.

Physical Science Consists of 24 semester hours of credit. Required courses are MAT 117†; CHM 101 or 113†; PHY 101 (or 111†, 112, 113, 114); AST 121 (or 321, 322); GLG 100 or 472. Electives must be approved by the physical science minor advisor.

Departmental Graduate Programs

The Department of Physics offers programs leading to the degrees of Master of Science and Doctor of Philosophy. Consult the *Gradu ate Catalog* for requirements. The Department has administrative responsibility for the inter departmental program leading to the Master of Natural Sciences degree.

Physics Department General Studies Courses for Non-Majors

All PHY, AST and PHS courses satisfy the General Studies science and mathematics requirement. The following courses presume no prior background in mathematics beyond high school algebra and geometry.
Physics: PHY 101
Astronomy: AST 121, 125, 321, 322
Physical Science: PHS 110, 361, 362, 370, 375, 380, 410, 411, 412, 413

PHYSICS

PHY 101 Introduction to Physics. (4) F, S
Emphas zes appl cat ons of physics to ife in the modern world. Understand ng of elementary algebra is presumed. Three lectures, 1 recitat on, 2 hours laboratory.

105 Basic Physics. (4) F
One-semester survey of the princip es of physics Primari y for students who ntend to take PHY 115, 116

but have not taken h gh schoo phys cs. Prerequis tes· A gebra and tr gonometry. Three lectures 1 rec tat on, 2 hours laboratory

111, 112 General Physics. (3,3) F, S, SS
Noncalcu us treatment of the princip es of physics for nonphysics majors Students whose curr cu a requ re a aboratory course must also reg ster for PHY 113†, 114† Prerequis te trigonometry Three lectures, 1 rec tation

113, 114 General Physics Laboratory. (1,1) F S, SS
Elementary exper ments in phys cs May be taken concurrent y with, or subsequent to PHY 111†, 112†, respect vely Two hours aboratory. Outs de preparation for experiments and report wr ting are required.

115, 116 University Physics. (4,4) F, S, SS
Pr nciples of physics using ca cu us Prerequisite Con current enrollment n MAT 290†, 291†, respectively, or equiva ent. For physics laboratory at this evel, enrol in PHY 117†, 118† Four ectures 1 rec tat on.

117, 118 University Physics Laboratory. (1 1) F, S, SS
ntroductory exper ments, measurements and techn ques in phys cs. Prerequis te Cred t or concurrent en rollment n PHY 115†, 116†. Two hours laboratory Outside preparation for exper ments and report writ ng are requ red.

321 Newtonian Mechanics. (3) F
Vector calculus. Kinematics and dynamics of part c es. Conservat ve, res stive and central forces. Dynam cs of a charged partic e. Many particle systems. The two body prob em and co is ons. Rigid body dynamics. Mo tion in non nert al reference frames Prerequ sites· PHY 116†, MAT 291† or equivalent, concurrent enro ment in MAT 242† and MAT 274† or equ valent.

322 Analytical Mechanics. (3) S
Lagrange's and Hami ton's equations Constra nts. Coupled oscil ators. Elements of continuum mechan cs, e astic ty and hydrodynamics. Prerequ site· PHY 321†.

331 Electricity and Magnetism. (4) F
Vector fie ds and vector ca cu us. E ectrostatic fields. Conductors and capac tors. Currents of charge; Ohm's law, charge conservat on. Circuit theory Magnetic fields and the Lorentz force. E ectromagnetic induction Fie ds in matter D sp acement current. Maxwell's equat ons Prerequis tes· PHY 116†; MAT 242† and 274†, or equ v a ent.

332 Electromagnetic Fields. (4) S
Maxwell's equat ons. Sca ar and vector potentia s. Laplace's equat on and boundary value problems Magnetostatics. E ectromagnetic waves; propagation n med a reflection and refraction. Prerequisite· PHY 331†

333 Intermediate Physics Laboratory I. (3) F, S
Basic phys ca measurements techniques w th emphas s on modern e ectronca and electron c nstrumentat on Prerequ sites: PHY 117† 118†, 321† (or approval of instructor), MAT 274 (or equivalent) One hour ecture, 3 hours laboratory Equivalent effort outs de of the laboratory is required.

334 Intermediate Physics Laboratory II. (2) F S
Experiments selected in consultat on with instructors to su t the student s need and nterests Prerequ s tes PHY 331† 333† Three hours aboratory. Equivalent effort outside of the laboratory s requ red

351 Optics. (3) F
Matrix methods n geometr cal opt cs, interferometry, partia coherence, selective absorbers Fresnel and Fraunhofer d ffract on; Fourier transform spectroscopy. Prerequis tes· PHY 116†, MAT 291† or 272†

361 Introductory Modern Physics. (3) F, S
Special relativity and introductory quantum theory with app ications drawn from atomic, nuclear and solid state phys cs. Prerequisite: PHY 116†

362, 362 Modern Physics. (3, 3) F, S
Spec al relativ ty, foundat ons and theoretical concepts of quantum theory, introduction to atomic, molecular, so d state and subatom c physics Prerequis tes. PHY 116† and MAT 274†.

401, 402 Mathematical Methods in Physics. (3) S; Lu
Elements of vector ca cu us, complex var ables, ord nary and partia different al equations, integral transforms, specia functions determ nants, matr ces, proba b ity and stat st cs Prerequ site: PHY 321†.

441 Statistical and Thermal Physics I. (3) F
Statist cal and exper mental basis of heat, temperature and entropy Mechanical and statist ca basis of the laws of thermodynamics. Appl cations of macroscop c thermodynamics. Phase equ librium. Prerequisites: PHY 321†, 331†, 363†

442 Statistical and Thermal Physics II. 3) S
Pr nc ples and app ications of statistica mechan cs. Quantum stat st cs of ideal gases and simple solids. Equi ibr um of phases and chem cal spec es Transport theory. Irreversible processes and fluctuat on Prerequisite. PHY 441†.

452 Advanced Optics. (3) S; Acharya
Linear systems theory, coherent and ncoherent mag ng, spatia filtering, e ements of radio astronomy, antenna theory and heat flow problems; holography, coded apertures· reciproc ty and symmetry in X ray, electron and opt ca diffraction. Prerequ sites: PHY 331†, 351†; PHY 401†, 402† recommended

460 Elements of Atomic Physics. (3) F; Rawls
Electron and atomic phys cs. Designed for teachers and students not majoring in phys cs Prerequis te. one year of co lege physics.

462 Nuclear Physics. (3) F, Lu
Static properties of nuc ei, natural and induced rad oactivity, nuclear reactions, nuclear models and energy leve s, mesons and hyperons, interaction of photons and electrons with matter Prerequ site: PHY 461†.

463 Physical Measurements. (1) N
Experiments in mechanics and heat, electric ty and magnetism, optics and modern physics. Designed for teachers and students not major ng in physics. Prereq uisite PHY 112†. Three hours laboratory. May be repeated for a max mum of 3 hours credit.

465 Advanced Physics Laboratory I. (2) F, S; Stearns
Continuation of PHY 334† at a more advanced level. Prerequisites PHY 334†, concurrent enro ment in PHY 461† (or approva of nstructor) Three hours laboratory. Equiva ent effort outside of the laboratory s required.

466 Advanced Physics Laboratory II. (1-3) F, S, Stearns
Continuation of PHY 465. Prerequ sites· PHY 465†. May be repeated for credit.

471 Quantum Mechanics. (3) F
Wave mechan cs Schrodinger's equation, barrier problems operators and e genfunctions, harmonic oscil ator, one e ectron atoms. Prerequ sites: PHY 363†, MAT 274†, 242† or approval of instructor

472 Quantum Mechanics. (3) S
Matrix mechanics, angu ar momentum perturbation theory, scattering theory. Prerequisite· PHY 471† or approval of instructor

480 Methods of Teaching Physics. (3) S, Rawls
Eva uation of var ous approaches to the teaching of high schoo phys cs. Preparation of demonstrations and

experiments. Organization of a aboratory Des gned for secondary school physics teachers Prerequisite· approval of instructor

481 Solid State Physics. (3) S, Hanson
Structure, e astic propert es and dynamics of crystals; e ectron motions in crystals under applied f e ds. Pre requisite: PHY 363†.

495 Project Research. (1-3) F, S; Walker
Superv sed project in exper mental physics Prerequ site. four hours selected from PHY 333†, 334†, 453† and 465† May be repeated for credit *Note. approval of faculty member under whose direction the work is to be done must be obtained before registration*

501, 502 Methods of Theoretical Physics. (3,3) F, S
Provides mathemat cal foundatio for graduate students n bas c and appl ed phys cs Comp ex var ables, vector spaces, operators, matrices ordinary different al equa t ons, integral equat ons and transforms and spec al functions. May inc ude add tiona top cs Prerequ s tes· PHY 401†, 402† or approva of nstructor.

503 Physical Applications of Group Theory. (3) N
Fundamentals and appl cat ons of the theory of fin te and continuous groups as they occur in physics Atomic molecular, sol d state and elementary part cle physics Prerequ site· approval of nstructor

521 Classical Mechanics. (3) F
Var at ona pr nc p es Lagrange s and Hami ton s equa t ons, r gid body mot on, canon cal transformat ons; Hamilton Jacob theory. Prerequ site· PHY 321†

522 Advanced Topics in Classical Mechanics. (3) S
Continuum mechanics elements of hydrodynamics; elasticity theory; spec a relativ ty Prerequisite PHY 322†, 521†

523 Relativity. (3) N
Special and general theories of relativ ty Prerequ sites PHY 522† 532† or approval of instructor.

531 Advanced Electricity and Magnetism. (3) F
E ectrostatics and magnetostat cs Potent a theory theory of constitutive re at ons Maxwel s equat ons The wave equat on, plane e ectromagnet c waves cav t es and wave gu des Prerequ s te. PHY 331† or ap proval of nstructor

532 Electrodynamics. (3) S
Spec a theory of relativ ty covar ant formu at on of electromagnet c nteractions nhomogeneous wave equat ons L enard-Wiechert potentia s; rad at on f e ds Interactions of charged partic es and electromagnet c waves; scattering; d spers on Prerequ s tes. PHY 332†, 531† or approva of instructor

541 Statistical Physics. (3) F
Probabi ty theory and princ ples of stat st cal nference. Evaluat ng exper mental data; foundat ons of statist cal mechanics Genera laws of thermodynam cs from m croscop c theories. Ca culation of spec f c properties of bulk matter Prerequ s tes PHY 441†, 471† (442† des rab e)

542 Advanced Topics in Statistical and Thermal Physics. (3) S
Theory of rreversib e processes Onsager-rec procity laws, f uctuat on-d ssipat on theorem· relaxat on and transport processes n fluids and p asmas, Liouv lle equat on, the BBGKY hierarchy of d stribution funct ons, k netic theory, hydrodynam cs from many-body theory, phase changes and equ ibrium; ferromagnet sm Prerequisite. PHY 541†.

551 X-Ray and Electron Diffraction. (3) S
Fresnel and Fraunhofer diffraction n integral formula t on D ffraction of X rays and neutrons by crystal at t ces Structures of so ids, inc ud ng crystal structure ana ys s Theory and techniques of electron microscopy/diffraction of crysta line/noncrystal ine specimens. Prerequisites: PHY 451† 481† or approval of instructor.

561, 562 Nuclear Physics. (3,3) F, S
Two nuc eon interaction Clebsch Gordon coefficients, nternucleon forces, meson theory and high energy scattering, nuclear b nding energy, nuclear models, trans tion probab ity est mates, nuclear reactions, beta decay. Prerequ s tes PHY 462†, 576† or approval of instructor.

568 Elementary Particle Physics. (3) N
C assification of part c es· phenomenology of strong, electromagnet c and weak interact ons, cross sections, decay rates isotop c spin and higher symmetries; structure of react on amp itudes Prerequisite. PHY 577†

569 Elementary Particle Theory. (3) N
Theoretica mode s for strong, e ectromagnetic and weak interactions, ana ytic S-matr x, d spersion relat ons current algebras; med um and high energy mod e s Prerequ s te· PHY 568†.

576, 577 Quantum Theory. (3,3) F, S
Abstract approach to quantum mechan cs in Hi bert space, observab es and the r correspond ng operators, eigenstates and eigenvalues; quantum dynam cs, approximation methods systems of dent cal partic es, an gular momentum and group representation theory, colli s on processes; relativ st c quantum theory. Prerequi s tes PHY 471† 521†

578, 579 Relativistic Quantum Theory. (3 3) F S
Re at vistic one-part c e equations, K e n Gordon equa tion, D rac equation second quantization, theory of scattering S matr x, Feynman d agrams, quantum electrodynam cs renormal zat on procedures Prerequ site: PHY 577†

581 Solid State Physics. (3) F
Quantum theory of so ids includ ng phonons attice spec f c heats, band structure mode s Ferm surfaces thermal expans on, p asmons, electron-phonon nterac t ons and scattering by attice defects Prerequis tes PHY 481†, 472†, 576† (or concurrent enrol ment).

582 Solid State Physics. (3) S
E ements of transport theory, thermal conduct on, e ec tronic conduct on n metals, mob ity n semiconductors, Hall effect, magnetores stance and selected topics of current research. Prerequ s te PHY 581†

595 Current Physics Literature. 1) N
Weekly seminar to introduce the graduate student to current act vity n phys cs through the contemporary t erature (May be repeated for credit

ASTRONOMY

AST 121 20th Century Astronomy. (3) F, S, SS
Earth as a planet, the solar system, stars, galax es and cosmo ogy. ntended for nonsc ence majors. Three lec tures observatory and planetarium exper ence

125 Introduction to Observational Astronomy. (2) F, S
Telescope and nterpretation of astronomical observa tions Photograph c and p anetar um experience. Pre requisites Understand ng of elementary a gebra and credit or concurrent enro ment in AST 121 or 321 or 322 or approval of instructor. One hour lecture, 2 hours laboratory. Outside preparat on for exper ments and re port writ ng is requ red

321 Discovering the Solar System. (3) F, SS
H story of astronomy, astronomica nstruments, motions of the moon and planets the sun and planets, b rth and death of the solar system Prerequ site· high schoo algebra. Three lectures, observatory and planetarium experience Outs de preparation for experiments and report writ ng is required

322 Stars and the Universe. (3) S
D stances to stars, format on and evolut on of stars, galaxies and the universe. Prerequisite: high schoo algebra. Three lectures, observatory and planetar um exper ence

351 The Solar System. (3) N
Spher cal and grav tat ona astronomy planets, comets, or g n of the so ar system Prerequ sites: PHY 116†; MAT 242† and 274†.

352 Stellar Astronomy. (3) N
Stellar distance scales, photoelectr c photometry, n terstel ar matter, ste lar dynam cs binar es, variab e stars ga axies, and cosmology. Prerequis tes: PHY 116†; MAT 242† and 274†.

421 Stellar Astrophysics. (3) N
The phys cs of stellar atmospheres dent f cation of stellar spectra, stellar structure and evolution Prerequi s tes. PHY 321†· MAT 242† and 272†.

422 Interstellar Astrophysics. (3) N
Phys cs of the nterstel ar med um, gas and dust clouds, interste lar mo ecules, gaseous nebulae, magnetic fields, cosmic rays. Prerequ sites· PHY 321† MAT 242† and 274†.

PHYSICAL SCIENCE

PHS 110 Physical Universe. (4) S
The universe as a un t stars solar system earth, and atoms. Nature of matter and energy. Three ectures, 2 hours aboratory. Outside preparation for exper ments and report wr ting is required

361, 362 Science and Man. (2,2) F, S
Effects upon man of his technolog'ca civ ization and cons derat on of recent advances n both pure and app ied phys cal sc ences PHS 361. mechanics, e ec tromagnetic rad ations and astronomy PHS 362 geology chemistry and nuc ear energy. Courses may be taken n either order.

370 Ideas of Physics. (1 3) N
Re ationships of physical concepts to other areas of knowledge Recent offerings have been (1) bas c con cepts in phys cs; relativ ty, complementarity uncerta nty, etc ; (2) current topics of research and public nterest (3) methods for developing and assessing new ideas. See *Schedule of Classes* and consult Physics Department for current tit es and sectiona offer ngs. May be repeated for credit

375 The Energy Crisis. 2-3) F S
Current problems in energy resources production consumption and conservation No phys cs or mathematics prerequisites. Students reg stered for 3 hours w ll participate in a d scussion group as wel as attend ectures

380 Strategy and Tactics in Science. (2-3) N
Basic princip es and procedures for construct ng sc entific mode s. Conservat on, symmetry, and causality pr nc ples. so ation, contro , and est mation of varia bles. Examples from science and app cation to ev eryday s tuat ons.

410 Origins of the Physical Sciences. (3) N
Origins of astronomy, chemistry, physics and mathe matics n the cu tures of Mesopotam a, Egypt Ch na and nd a

411 Development of the Physical Sciences. (3) N
Hel enistic mathematics, physics, chem stry and as tronomy. Arabs and the phys cal sc ences their ro e n spread ng the phys cal sc ences to Europe The deve opment of the physica sciences in Europe unt the t me of Newton.

SCIENCE EDUCATION

PSE 220 Physical Science for the Elementary Teacher. (3) F, S, SS
Basic phys cal science concepts including those needed to teach modern elementary and midd e school science curricula with special emphasis on scientific reasoning and problem solv ng sk lls.

221 Biological Science for the Elementary Teacher. (3) F, S SS
Basic biolog cal science concepts includ ng those needed to teach modern elementary and middle schoo science curr cula with spec al emphasis on scient fic reasoning and problem-solving skil s

460 Science in the Junior High School. (3) S
Important sc ence areas suitable for the junior high school. Recent developments in curr cu a, laboratory techniques and processes of sc ence are stressed.

Special Courses: PHY, PHS, AST, PSE 294, 298, 484, 492, 493, 494, 497, 498, 499, 500 580, 584, 590, 591, 592 594, 598 599, 700 780, 783, 784, 790, 791, 792, 799. (See pages 33-34.)

Political Science

PROFESSORS:
McGOWAN (SS 410), ALISKY, BERMAN, HINK, JO, JONES, KAMINSKY, MASON, MILLER, RICE, SIMON, WELSH, WHITE

ASSOCIATE PROFESSORS:
ASHLEY, DALGLEISH, McGAW, MUSHKATEL, READER, STOOKEY, WALKER, WATSON, WILSON, WOLF, YOUNGBLOOD

ASSISTANT PROFESSORS:
DAGGER, DANTICO, KEATING, RASLER

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

Political Science—Consists of 45 semester hours of credit of which 30 must be in political science and 15 in closely related fields to be approved by the advisor in consultation with the student. At least 15 hours in political science must be in upper division courses. Required courses are POS 110 or 300; 150 or 160; 301; and one from among 440, 441, 442, 443, 445 or 446.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major. (See Foreign Language Requirement, page 77.)

Latin American Studies Combined Degree Program. (See Interdisciplinary Studies, page 55) Consists of the Bachelor of Arts degree requirements in political science. At least 30 upper division semester hours of the total program must be in Latin American content

courses including 15 hours in political science and 15 in other disciplines. A reading knowledge of Spanish or Portuguese is required. A reading knowledge of the other language is suggested. The program must be approved by the Center for Latin American Studies. Fulfillment of requirements is recognized on the transcript as a Bachelor of Arts degree with a major in Political Science Latin American Studies Emphasis.

Asian Studies Emphasis (see Interdisciplinary Studies, page 52) Consists of the Bachelor of Arts degree requirements in political science plus a minimum of two years of Chinese or Japanese. Thirty semester hours of the total degree program must consist of Asian Studies courses selected with the approval of the ad visor. Fulfillment of these requirements will be recognized by a Bachelor of Arts degree with a major in Political Science Asian Studies Emphasis.

Bachelor of Science Degree Curriculum

Political Science—Consists of 36 semester hours of credit in political science; 15 in closely related fields to be approved by the ad visor in consultation with the student; and 6-9 hours in a sequence of supporting courses. Required courses in political science are POS 110 or 300; 150 or 160; 301; 401; and one from among 440, 441, 442, 443, 445 or 446. The required supporting courses consist of a sequence from one of the three following groups: MAT 210, 242, 243, 270, or 290, together with its appropriate prerequisite; PHI 103 or 113, and one from among 313, 314, or 325; or CSC 100†, and one from among 181, 183, 304, or 305.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major. (See Degree Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Political Science—Consists of 45 semester hours of credit, 30 of which must be in political science and 15 in closely related fields. Six courses are required: POS 110 or 300; 150 or 160; 301; 417; one from among 440, 441, 442, 443, 445 or 446, and 480.

Students who major in political science must have a 2.0 average for all courses which count toward the major. Upper division courses which count toward the major must have "C" grades or better; no more than one "D" grade in a lower division course may be counted in the major.

Departmental Minor Teaching Field Requirements

Political Science—Consists of 24 semester hours of credit in political science courses. Six courses are required: POS 110 or 300; 150 or 160; 301; 417; one from among 440, 441, 442, 443, 445 or 446, and 480.

Students who minor in political science must have a 2.0 average for all courses which count toward the minor Upper division courses which count toward the minor must have "C" grades or better, no more than one "D" grade in a lower division course may be counted in the major.

Departmental Graduate Programs

The Department of Political Science offers programs leading to the degrees Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

POLITICAL SCIENCE

POS 101 Political Ideologies. (3) F S
Leading pol tica ideas and belief systems, *e.g.*, Marx sm, l beral sm, conservatism theor es of democracy and alternat ve futures.

110 Government and Politics. (3) F, S
Major institut ons of modern government and processes of ind vidual and group political activ ty with emphas s on the American experience Meets the federal govern ment requirement for teacher certif cation. Not open to students with credit for POS 100 or 300.

120 Political Issues and Public Policy. (3) F, S
Contemporary social problems and pol tica issues, part cularly deve opment of pub c pol cy.

150 Comparative Government. (3) F, S
Po it cal nst tutions and processes n selected foreign countries· or g ns, strengths and weaknesses of contemporary po it cal systems, pol tica deve opment.

160 Global Politics. (3) F, S
The nature of contemporary world pol tics through the study of both genera theoret cal topics and spec fic geograph cal areas.

170 American Legal System. (3) F, S
Concepts, institutions, c assif cations and functions of aw. The role of the courts and the impact of judic al dec s on mak ng on soc al change

300 American National Government. (3) F, S
Powers, functions and agents of American pol tica inst tut ons Meets the federa government requ rement for teacher certif cation. Not open to students with cred t for POS 110

301 Empirical Political Inquiry. 3) A
Logic of po it cal nquiry nc uding research problems, concepts hypotheses theor es, measurement, data col lection and analys s.

311 Arizona Constitution and Government. (2) A
Const tut on and government of the State of Arizona. Not open to students hav ng cred t for POS 316, 411 or 417 Meets the Arizona government requirement for teacher certificat on. May not be counted for the major, teaching major or m nor in pol tica science

313 The Congress. (3) A
Lawmaking process in the U.S. Congress

314 The American Presidency. (3) A
Office, role, and power of the American presidency n the Amer can political system.

315 The Supreme Court. (3)
Ro e of the Supreme Court n Amer can society and politics; exam nation of decision making process, impact of decis ons, restra nt versus activ sm.

316 State and Local Government. (3) A
Survey of the operat ons, problems and polic es of state and loca governments n the U S

320 Public Administration. (3) A
Role of the administrator n the po it ca process w th an examination of the basic concepts of bureaucracy

325 Public Policy Development. (3) A
Relationships between po icy deve opment and adm n s trat ve processes as affected by the var ous roles of e gislative bod es, execut ve and adm nistrat ve agenc es

330 Current Issues in National Politics. (3) A
Major issues facing nat ona governments n the domestic field. May not be counted for the major or the teaching major n political sc ence.

331 Public Opinion. (3) A
Formation, express on, and influence of nd vidual and organ zed opin on on pol tical nst tutions

332 American Political Parties. (3) A
Development of the American party system. Party or gan zation and functions.

333 Interest Groups. (3) A
Examines how minority, corporate abor, farm, con sumer, environmental, hea th, education, and publ c nterest groups, and single issue movements influence government

334 Comparative Politics. (3) A
Parties, pressure groups, legislators, and executives stud ed from a cross national perspective.

336 Electoral Behavior. (3) A
Voting behavior and the attitudes, percept ons, and ac tivities of the citizenry n the po itical process

349 The British Nations. (3) A
Exam nes such par iamentary systems as Great Britain, Ireland, Canada, Austra a, and New Zea and.

356 Western Europe. (3) A
Structures and behavior of governmental institutions and po tica processes in selected countr es of Western Europe

360 Current Issues in International Politics. (3) A
An ana ys s of major current problems n wor d pol t cs May not be counted for the major or the teaching major in pol tical science

361 American Foreign Policy. (3) A
Un ted States in wor d affa rs, fore gn policy s nce Wor d War I Techn ques in formulat ng Amer can fore gn po i cies

401 Political Statistics. (3) A
Basic concepts n stat st cs as they faci itate the de scription, explanation, and pred ction of socia and political phenomena

410 Urban Government and Politics. (3) A
Governmenta organizations, dec s on-mak ng struc tures, and prob ems of urban political systems.

413 Legislative Process. (3) A
Lawmaking process followed n selected eg slative bodies; compos tion of membership, organizat on, powers, impact of nternal and external forces on egisla tion.

417 The Arizona Political System. (3) F S
Contemporary political problems w th n the context of Ar zona's po t cal soc'al, and const tut onal frameworks Meets the Arizona Constitution requ rement for cert fication.

422 Politics of Bureaucracy. (3) A
Bureaucracy as a pol tical ent ty, internal dynamics of publ c agencies, the re at onship between pub ic agen c es and other po it cal entit es.

423 Politics of Budgeting. (3) A
The po icy process in budgeting strategies used to influence this process and recent reforms in publ c budget ng

424 Regulatory Politics. (3) A
Deve opment and mplementation of governmental policies regulating business act vity *e g.*, anti-trust consumer and env ronmenta protect on and labor relations

426 Elements of Public Policy. (3) A
Each section may cover one of the fol owing topics· consumer protect on, natural resources, cr mina justice, env ronmenta protection, sc ence and technology, or theories of public po cy May be repeated for cred t when topics vary

438 Revolution and the Social System. (3) A
Causes and consequences of revolut on Identification of system c structures and nstitutions conducive to radical and moderate patterns of conflict resolution.

439 Minority Group Politics in America. (3) A
Ro e of minority groups in Amer can politics

440 History of Political Philosophy I. (3) A
Western polit ca ph losophers and their theories to the 17th century

441 History of Political Philosophy II. (3) A
Western political philosophers and their theories from the 17th to the 20th century.

442 American Political Thought. (3) A
Po it ca theor es and movements from the colonial peri od to the present

443 Topics in Contemporary Political Theory. (3) A
Major problems and theor es n contemporary political thought

445 Asian Political Thought. (3) A
Contemporary polit cal ideas and theor es n selected As an countries nc uding the impact of Marx st and non-Marx st theor es on revolut onary processes.

446 Problems of Democracy. (3) A
ssues and problems n democratic theory: *e g.*, the nature of democracy major ty rule representation, equality and the value of po it cal participation.

448 China, Japan, and the Koreas. (3) A
A comparat ve analys s of the pol t ca modern zation exper ences of China, Japan, and the two Koreas, focus ng on their differing reactions to the West.

450 Soviet Union and Eastern Europe. (3) A
Description and analysis of pol tica institutions and practices in the Sov et Union, and the Communist governed nations of Eastern Europe.

452 China. (3) A
Background of the Communist revo ut on, pol tica processes and developmental problems in Ch na from a comparative perspective.

453 South America. (3) A
Governmental institutions, political processes and developmental problems of the South American states.

454 Mexico. (3) A
Mexican federal, state and local governmental institutions.

455 Central America and the Caribbean. (3) A
Governmental institutions, political processes and developmental problems of the nation-states and dependent areas of Central America and the Caribbean.

458 Southeast Asia. (3) A
Political background, governmental institutions, political dynamics and developmental problems of Southeast Asian nations.

459 Sub-Saharan Africa. (3) A
Governmental institutions and processes of politics south of the Sahara.

460 World Politics. (3) A
Theoretical examination of one or more aspects of international politics, *e.g.*, foreign policy, negotiations, alliances, crises, wars, international systems.

462 Soviet Foreign and Defense Policies. (3) A
Examination and analysis of foreign and defense policies of the Soviet Union.

463 Inter-American Relations. (3) A
Diplomatic relations among the Latin American states. Development of U.S. foreign policy toward Latin America.

464 American Defense Policy. (3) A
Problems and issues of the organization and control of the defense establishment of the U.S.

465 International Organization and Law. (3) A
History, practical political significance, and future of international institutions, transnational regimes, and international law.

467 Comparative Defense Policy. (3) A
Problems and issues of the organization and control of effective defense establishments within the context of various political systems.

468 Comparative Asian Foreign Policies. (3) A
Foreign policies of the Asian states emphasizing their security relations and movements toward regionalism.

470 Law and Society. (3) A
Nature, purposes and sanctions of law; sources of law; private and public law; common and civil law. Courts and administration of justice.

471 Constitutional Law I. (3) A
Development of the United States Constitution as reflected in decisions of the Supreme Court; jurisdiction and organization of the federal courts; judicial review; separation of powers; federalism; the commerce clause; national taxing and spending power; state police power.

472 Constitutional Law II. (3) A
Development of the United States Constitution as reflected in decisions of the Supreme Court: Due process; equal protection of laws; individual rights; civil liberties.

477 International Political Economy. (3) A
Contending approaches to historical and contemporary issues of international political economy, including global welfare, equality, ecology, and peace.

480 Methods of Teaching Government. (3) A
Methods of instruction, organization and presentation of subject matter in political science. Prerequisites: SED 311† or concurrently, and 15 hours in political science or approval of instructor.

484 Internship. (1-6) A

494 Special Topics in Political Science. (3) A
Chosen from the various fields of political science.

498 Pro-Seminar. (3) A
Small group study and research for advanced students within their major area. Prerequisite: major in the department or approval of instructor.

501 Foundations of Political Action. (2) F (8 weeks)
Examines the creation and expansion of political issues, mobilization of publics, and relationships among legislators, bureaucrats and lobbyists in various policy sectors. Prerequisite: approval of instructor.

502 Political Evaluation. (2) F (8 weeks)
Examines the political and philosophical bases for the assessment of political action. Prerequisite: approval of instructor.

503 Applied Political Inquiry. (3) S
Basic research design, methods, and statistics applied to problems in various policy sectors. Prerequisite: approval of instructor.

591 Seminar. (3) A

(a) American Politics	(c) Public Policy
(b) Global Politics	(d) Political Theory

598 Topics. (3) A; Staff

(a) American Politics	(c) Public Policy
(b) Global Politics	(d) Political Theory

601 Advanced Experimental Research. (3) F
The implementation of experimental and quasi-experimental research designs as models of inquiry and as applied in political research, including laboratory techniques and topics in the analysis of variance. Prerequisite: POS 401 or equivalent.

602 Advanced Survey Research. (3) S
Problems in the design and conduct of political surveys, including sampling, instrument design, scaling, and statistical and graphical analysis of survey data. Prerequisite: POS 401 or equivalent.

603 Polimetrics I. (3) F
Applications of the general linear model to topics in the estimation of single equation models of political phenomena including time-series analysis. Prerequisite: POS 401 or equivalent.

604 Polimetrics II. (3) S
Continuation of POS 603, including techniques of simultaneous equation estimation and other multi-variate statistical techniques such as factor and discriminant analysis. Prerequisite: POS 603.

792 Research. (3) F, S
Projects in various areas of political science. Required of all, and open only to, doctoral students.

Special Courses: POS 492, 493, 499, 590, 592, 599, 790, 792, 799. (See pages 33-34.)

Psychology

PROFESSORS:
PARKINSON (PSY B237C), BRAUN, CIALDINI, HAYGOOD, JONES, KAROLY, KILLEEN, LANYON, LINDER, MEYERSON, REICH, VESTRE

ASSOCIATE PROFESSORS:
BARRERA, BRAVER, CHARTIER, CHASSIN, EISENBERG, FEHR, GLANZMAN, HOMA, KENRICK, LESHOWITZ, LEVINE, LINDHOLM, ROSSI, SADALLA, SANDLER, SOMERVILLE, WEST, ZAUTRA

ASSISTANT PROFESSORS:
DAMOS, HARRIS, WOLCHIK

INSTRUCTOR:
RITCHIE

Departmental Major Requirements

The Department of Psychology maintains an Undergraduate Advisement Office staffed by trained personnel. All psychology majors are required to meet with an undergraduate advisor once each semester for approval of the student's choice of courses. Failure to do so may prevent graduation at the expected time. It is the responsibility of the student to make appointments with an undergraduate advisor.

Bachelor of Arts Degree Curriculum

Psychology—Consists of 45 semester hours of which 28 must be in psychology, including at least 15 upper division hours, and the remainder in related fields to be approved by an undergraduate advisor. Required courses, which must be passed with a minimum grade of "C", are PGS 100, PSY 230, PSY 290; one from among PSY 323, 324, 325; one from among PGS 315, 341, 350; and one additional upper division PSY course. The additional upper division courses to complete the 15 hour requirement may include no more than a total of 3 hours in PGS 399, PGS 499, and PSY 499 combined. Required related courses are MAT 117† and one from among CSC 100†, 180, 181, 183†; MAT 119 recommended. See page 77 for the Foreign Language Requirement.

Bachelor of Science Degree Curriculum

Psychology Consists of 53 semester hours of which 31 must be in psychology, including at least 15 in upper division courses, and the remainder in related courses approved by the undergraduate advisor. Required courses, which must be passed with a minimum grade of "C", are PGS 100, PSY 230, PSY 290; one from among PSY 323, 324, 325; one from among PGS 315, 341, 350; and one additional upper division PSY course. The additional upper division courses to complete the 15 hour requirement may include no more than a total of 3 hours in PGS 399, PGS 499, and PSY 499 combined. Required related courses are MAT 117† and 119, or MAT 115† and 270; one course from among CSC 100†, 180, 181, 183†; two semesters of physical sciences (physics, chemistry, geology, astronomy); and two semesters of life sciences (biology, zoology, physiology, microbiology).

Departmental Minor Teaching Field Requirements

(Secondary Education)

Consists of 24 semester hours of credit taken in consideration of the prerequisites listed for courses.

Departmental Graduate Programs

The Department of Psychology offers programs leading to the degree of Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

PSYCHOLOGY (PGS)

Courses which may be applied toward General Studies requirement in social and behavioral sciences.

PGS 100 Introduction to Psychology. (3) F, S, SS
Major areas of theory and research in psychology. Participation in department sponsored research or an educationally-equivalent alternative activity is required.

241 Adolescence Psychology. (3) N
Topics in both normal development (e.g., self-concept peer relationships) and disorders of adolescence (e.g., anorexia, suicidal behavior, substance abuse). Prerequisite: PGS 100.

270 Psychology of Adjustment. (3) F, S, SS
Principles of mental health, adjustment, conflict, stress and coping processes derived from clinical and experimental research. Intended for non-majors; cannot be used for major credit. Prerequisite: PGS 100

306 Environmental Psychology. (3) F, S, SS
Concepts and research strategies in the study of behavior in interaction with physical environment. Prerequisite: PGS 100.

315 Personality Theory and Research. (3) F, S, SS
Definition and description of personality in terms of theoretical and methodological approaches. Prerequisite: PGS 100

331 Sexual Identification. (3) N
Theories and research in the development of sexual identification; concepts of femininity and masculinity; social roles and attitudes. Prerequisite: PGS 100.

332 Human Sexual Behavior (3) F, S
Patterns of sexual behavior including variations and deviations, theories of sexual attraction, sex differences, and sexual dysfunction and treatment. Prerequisite: PGS 100.

341 Developmental Psychology. (3) F, S
Behavior development analyzed in terms of psychological principles. Current research in human development. Prerequisite: PGS 100.

350 Social Psychology. (3) F, S, SS
Human social behavior including such concepts as aggression, attraction, attribution, conformity, groups, helping, person perception, and persuasion. Prerequisite: PGS 100.

365 Community Psychology. (3) F, S
Mental health and psychological well-being in the community emphasizing current issues and related research. Prerequisite: PGS 315† or 350†.

399 Supervised Research. (1-3) F, S, SS
Experience within the context of current faculty research projects. Student is assigned responsibility depending on qualifications. Prerequisites: approval of faculty member prior to registration, "B" average in major, PSY 230† or equivalent (may be taken concurrently). Y grade only; may be repeated for a total of 6 hours.

414 History of Psychology. (3) F, S
Historical development of psychology from its philosophical beginnings to the present. Prerequisite: PGS 100.

427 Psychology of Aging. (3) N
Behavioral, experiential, and emotional phenomena associated with aging. Analysis of retained abilities and resources as well as losses and stresses. Prerequisite: PGS 315† or approval of instructor.

430 Industrial Psychology. (3) F,S,SS
Organizations and management systems; motivation and work performance; human factors in systems design and evaluation; personnel selection and testing. Prerequisite: PGS 100 or MGT 301.

441 Cognitive Development. (3) F,S
Experimental and theoretical literature in child development and behavior. Prerequisite: PGS 341† or approval of instructor.

442 Life Span Development. (3) N
Methods and findings of recent studies of the development, growth and problems of adolescents and adults with implications for education. Prerequisite: PGS 341†.

443 Abnormal Child Psychology. (3) F, S
The major disorders of childhood and adolescence, (e.g., autism, hyperactivity, phobias, delinquency) are covered including cause, diagnosis, treatment and prevention. Prerequisites: PGS 100 and one course from among PGS 310, 315, 341, 350 or approval of instructor.

444 Directed Child Study. (1-3) F, S, SS
Supervised experience with children in the pre-school program of the Child Study Laboratory. Prerequisites: CDE 232† or PGS 341† and approval of instructor. May be repeated for a total of 9 credits.

445 Child Language and Drawing. (3)
Language acquisition and developmental changes in drawing, considered in the context of cognitive developmental stages. Children's representation and communication of knowledge through language and drawing. Prerequisite: PGS 341.

458 Group Dynamics. (3) F
Theories and methods of group leadership, group effectiveness, communication within groups and relations between groups and individual members. Prerequisite: PGS 350†.

459 Attitudes and Attitude Change. (3) S
Concept of attitude. Review of theory and research including techniques of measurement. Analysis of attitude change at both mass and individual levels. Persuasive communication, balance models, cognitive, perceptual and motivational determinants. Prerequisite: PGS 350†.

466 Abnormal Psychology. (3) F, S, SS
Historical and current definitions, theory, and research concerning abnormal behavior. Major categories of psychopathology including related treatment approaches. Prerequisites: PGS 230† and PGS 315†.

471 Personnel Testing. (3) S
Methods and theory of psychological testing; various types of psychological tests; consideration of ethical, social, and legal aspects of testing. Prerequisites: PGS 100, one course in statistics, PGS 430† or MGT 311.

472 Clinical Psychology. (3) F, S
Clinical psychology as a science and profession. Historical development, methods of interviewing, assessment, and therapeutic intervention. Prerequisite: PGS 466†.

Special Courses: PGS 494, 498, 499. (See pages 33-34.)

PSYCHOLOGY (PSY)

Courses which may be applied toward the General Studies requirement in sciences and mathematics.

PSY 212 Experimental Analysis of Behavior. (4) F, S
Basic principles of behavior analysis, with emphasis on the control and modification of human behavior. Course is self-paced; includes a laboratory.

230 Introduction to Statistics. (3) F, S, SS
Basic concepts in descriptive and inferential statistics, emphasizing applications to psychology. Prerequisite: PGS 100; MAT 117† is recommended. The course has both self-paced (PSI) and lecture sections.

290 Experimental Psychology. (4) F, S
Planning, execution, analysis and reporting of experiments. Literature, procedures and instruments in representative areas of psychological research. Prerequisite: PSY 230† or equivalent. Three lectures, 3 hours laboratory.

323 Sensation and Perception. (3) F, S
Underlying processes of vision, audition and the other senses. Application of current research and theory in a laboratory environment. Prerequisite: PSY 290† or approval of the instructor.

324 Learning and Memory. (3) F, S, SS
Processes underlying information storage and retrieval, including different kinds of memory, forgetting, depth of processing, and control processes. Prerequisite: PSY 290† or approval of instructor.

325 Physiological Psychology. (3) F, S, SS
Relationships of physiological processes to behavior. Emphasis is on nervous system functioning. Prerequisites: PSY 290†, or two courses in biological science and approval of instructor.

330 Statistical Methods. (3) S
Advanced application of statistics to psychology. Highly recommended for students interested in attending graduate school. Prerequisite: PSY 230†. Three lectures, 1 hour laboratory.

399 Independent Study. (1-3) F, S, SS
Design and execution of original research projects under faculty supervision. Prerequisite: approval of instructor. May be repeated for a total of 6 hours.

420 Radical Behaviorism. (3) N
Research, applications, and philosophy of the control of human and animal behavior, from the Skinnerian perspective. Prerequisite: PSY 212 or 290†.

425 Biological Bases of Behavior. (3) N
Cr tical study of physiolog cal psycho ogy; brain mecha-nisms underlying motivation, learning, etc. Prerequis te: PSY 325†.

426 Neuroanatomy. (4) N
Structure and funct on of mamma an brain including sheep brain d ssection. Prerequisite: PSY 325† or equivalent Three lectures, 3 hours laboratory

432 Human Performance. (3) S
Analysis of human behavior in complex human-machine systems, includ ng track'ng, vigi ance, scanning and fai ure detect on Prerequ sites. PSY 290† and upper di v sion standing, or approval of instructor.

433 Human Psychophysiology. (3) S
Emphasis on human phys o og ca -behavioral relation-sh ps. Top cs nclude phys ological change associated w'th imagery, stress, attention, sk ll earning, lying, and b ofeedback Prerequ site. PSY 325†

434 Cognitive Psychology. (3) S
The human organ sm as a processor of informat on from percept on to cognition. Abstract concepts, se-mant c memory, attent on, and mental 'magery. Prereq uis te· PSY 323† or 324† or approva of nstructor

437 Human Factors. (3) F
Emphasis on human factors n h gh techno ogy systems Specific top cs include systems deve opment, systems ana ys s techniques displays and contro s Prerequ sites· PSY 290† and upper d vis on standing or ap prova of nstructor (Same as EE 437.)

470 Psychopharmacology. (3) F, S
Basis of drug action at physiolog ca and behaviora levels. Psycho ogica and medical app cat ons and lim tations of drugs used n the treatment of menta i ness Prerequ sites: One semester each of biology and chem-istry· or PSY 325†.

490 Course Programming. (2) F, S
Supervised exper ence in the development and adm nis-trat on of programmed instruct on Des gned for stu-dents who proctor se f-paced or personal zed courses. May be repeated for a total of 4 credits. Prerequis te. PSY 212 or 230† and approva of nstructor. May be re-peated for a total of 4 hours

501 Supervised Teaching. (4) F
Experience in and exam nat on of perspect ves on teaching undergraduate psycho ogy. Prerequ sites· graduate stand ng in Psycho ogy and approval of in structor

506 Survey of Research in Environmental Psychology. (3) F
Major top cs and parad gms in the study of man environment relationships

512 Advanced Learning. (3) N
Princip es and theories of learn ng, emphas zing re-search literature.

514 History of Psychology. (3) F
H stor cal deve opment of psychology as a science and a profess on from its ph osophical beginnings to con-temporary times ncluding current ssues. Prerequ site: PGS 100.

522 Methods and Instrumentation in Psychological Research. (3) N
Electron c and e ectromechan cal instrumentation in psycho og cal research, inc uding training n the pro-gramming and use of real time computers. Prerequ site. approval of instructor

524 Advanced Physiological Psychology. (3) N
Contributions of physiological processes and brain function to fundamental behav oral processes.

528 Sensation and Perception. (3) N
Principles of sensory and perceptual processes, empha-sizing research literature.

529 Correlation and Psychometric Theory. (3) S
Principles of correlational techniques, including regres-sion and multiple correlation. Psychometric theory, in-cluding re iability, and validity.

530 Intermediate Statistics. (3) F
Cont nuation of PSY 529 Psycholog cal statistics, em-phas z ng the analys s of variance and the des gn of ex-periments.

534 Information Processing. (3) N
Processes by which sensory input is transformed, re-duced, e aborated, stored, recovered, and used.

535 Cognitive Processes. (3) N
Theoretical/emp rica treatment of the human organism as a processor of nformation, nc uding abstract on, memory structure, problem solving, and thinking.

541 Research in Cognitive Development. (3) N
Theoretica and empir cal ssues in the study of chil-dren s knowledge and cogn tive processes Comparison of research in Piagetian and other traditions. Prerequi s te. Adm ss on to Psycho ogy Ph D. program or ap-proval of instructor

550, 551 Advanced Social Psychology. (3, 3) F, S
Theory and research concerning interpersonal percep-tion, dec sion making, attitude formation and change, group processes soc al mot vat on, and interact on pro-cesses Prerequis te· approval of instructor.

553 Social Influence. (3) N
Research l terature relevant to att tude formation and change conformity obedience, power, compliance and a tru sm. Prerequis tes PSY 550†, 551†, or approval of nstructor

555 Research Methods in Social Psychology. (3) S
Review of research techn ques. Laboratory and f e d re-search analyzed; appl cations to specif c topics. Prereq-uis te. PSY 550 or PSY 551.

556 Social Perception. (3) N
Theoret ca and empirical mp icat'ons of topics in social perception and cogn tion, e g , attr bution, attraction, impress on formation. Prerequ sites· PSY 550 and 551 or approval of instructor.

558 Interpersonal Processes. (3) N
One or more topics chosen from· empathy, model ng, v car ous processes, contag on, group phenomena, so-c'al communicat on, behav or exchange. Prerequisites: PSY 550†, 551†, or approva of instructor.

559 Applied Social Psychology. (3) N
Appl cations of social psycho ogica theory and research to one or more of the fol owing topic areas: Program evaluat on, health, cr m nal justice, drug abuse, mental hea th, human judgment. Prerequis te: approval of in-structor.

564, 565 Somatopsychology. (3, 3) N
Theory and research in the psycho og cal aspects of chron'c illness, phys cal d sab lity, and menta retarda-tion.

569 Advanced Study of Personality. (3) N
Personality as a theoret cal concept in psychology, in-c ud ng definitional problems, behavioral and trad't'ona approaches, the measurement of persona ity, and cur-rent research issues. Prerequisite: approva of in-structor.

572 Personality Assessment. (3) S
Theory and research on assessment of personality and psychopathology and construction of personality as-sessment instruments. Supervised practice in a self-paced instructional format. Prerequisite· adm ssion to clinical Ph.D program or approval of instructor.

573 Psychopathology. (3) F
Theory and research relating to the contribution of psychological, social, physiological, and genetic factors to the development and persistence of abnormal behavior Prerequisite: admission to Psychology Ph D program or approval of instructor

574 Psychotherapy. (3) S
A detailed survey of the theoretical and empirical literature relating to verbal psychotherapy and interviewing methods. Structured role playing practice in the major procedures. Prerequisite: admission to the clinical Ph D. program or approval of instructor.

575 Behavior Therapy. (3) F
Theory and research relating to the use of behavior therapy in modifying abnormal behavior. Structured practice. Prerequisite: admission to the clinical Ph.D. program or approval of instructor

576, 577 Clinical Practicum. (3, 3) F S
Supervised experience in development of professional skills in clinical psychology including the application of assessment procedures, psychotherapy, and behavior therapy techniques with children and adults, and consultation. Prerequisite: admission to clinical Ph.D. program

579, 580 Community Psychology Practicum. (3, 3) F, S
Supervised experience in conceptualizing, conducting and evaluating psychological interventions to promote well-being in community settings Advanced theory and research as relevant. Prerequisite PSY 582 and advanced standing in psychology Ph.D. program or approval of instructor

582 Community Psychology. (3) SS
Community systems, intervention techniques, consultation models, history and current status of community mental health movement, conceptualization of the roles of community psychologists in social system intervention. Prerequisite. advanced standing in Psychology Ph D program or approval of instructor.

583 Child Psychopathology. (3) N
Major theories and research related to the development of deviant behaviors in children, including some supervised experience in child assessment. Prerequisites: PSY 571†, 572† or approval of instructor

584 Advanced Treatment Methods. (3) N
Advanced theory research, and techniques of psychological treatment methods Prerequisites: PSY 576†, 577†, and approval of instructor.

588 Consultation Methods. (3) N
Several theories and strategies of organizational consultation The development of consultational skills through simulation and practical experience Prerequisite: advanced standing in Psychology Ph D program or approval of instructor

589 Social Learning Theory. (3) N
Social learning approach to the study of adaptive and maladaptive behavior patterns including theoretical and empirical research foundations of behavior therapy strategies Prerequisite: admission to Psychology Ph D program or approval of instructor

591 Seminar. (3) F, S, SS
Special Courses: PSY 494, 498, 499, 584, 590, 592 599, 700, 791 792, 799. (See pages 33 34)

Religious Studies

PROFESSORS:
BROWN (LL B-605), WENTZ
ASSOCIATE PROFESSORS:
GILL, MARTIN
ASSISTANT PROFESSORS:
FOARD, GEREBOFF, RADER

Departmental Major Requirements

Bachelor of Arts Degree Curriculum

The major in religious studies consists of 45 semester hours of credit. Thirty hours must be in religious studies, including 21 upper division hours, and 15 hours in related fields to be determined by the student in consultation with his or her advisor. The religious studies curriculum is divided into several subject fields: Near and Middle Eastern Religious Traditions; Western Religious Traditions; Eastern Religious Traditions; Religion in America; Contemporary Religious Thought; Native American Religious Traditions; Religious Literature (e.g., *Bible, Talmud);* History of Religions; Ethics, Society and Culture. For the major, 12 credits are required in one field and 18 credits in at least three other fields. A minimum grade point average of 2.5 is required in the 30 hours of religious studies courses. (See Foreign Language Requirement, page 77.)

Departmental Graduate Program

The Department of Religious Studies offers programs leading to the degree of Master of Arts for those who wish to seek the Ph.D. in the study of religions, or who wish to teach at the community college level, or for those in non academic careers who desire general competence in the academic study of religions. Consult the *Graduate Catalog* for requirements.

RELIGIOUS STUDIES

REL 121 Religions of the World. (3) F, S
An introduction to religious traditions of the world, including Buddhism, Hinduism, Islam, Judaism, Christianity and others

122 Ways of Being Religious. (3) A
Comparison of various religious expressions of mankind, focusing on such themes as encounter with the Holy, man's search for self and for community mystical illumination through spiritual freedom and discipline

211 Introduction to Judaism. (3) A
The beliefs, ceremonies, festivals and institutions of Judaism emphasizing the contemporary era The course presupposes no previous knowledge about Judaism

212 Introduction to Christianity. (3) A
The bel efs, ceremon es, fest vals and institutions of Chr st an ty emphasiz ng the contemporary era The course presupposes no prev ous know edge about Chr st an ty.

305 Ritual, Symbol and Myth. (3) A
Ritua symbo and myth as types of re gious express on w th examp es se ected from the religions of the wor d

311, 312. Western Religious Traditions. (3, 3) A
Rel g ous trad tions of anc ent Persia, Mesopotam a and Egypt and the r se of Judaism, Chr st anity and slam, nc uding the influence of such movements as Gnost - cism, the Mysteries and He enism

314 Formation of the Christian Tradition. (3) A
Or g ns, development and expans on of Chr st an ty, major themes and tensions from the New Testament wor d to the beg nn ng of the Midd e Ages.

316 Types of Early Judaism. 3 A
Developments n Judaism dur ng the nter testamenta per od

317 Introduction to Rabbinic Judaism. (3) A
An h storica analysis of the thought, l terature, and n- st tutions of rabbin c Juda sm

321 Religions in America. 3) F,S
The emergence of rel g ous p ura sm n America. The rise of denominat ona sm and of the var ety of rel g ous trad tions n the course of Amer can h story

322 Religion in American Life and Thought. 3) F,S
The ro e of rel g on in American history Funct ons, con- tr butions, tensions and perspect ves of re gion n Amer can cu ture

330, 331 Native American Religious Traditions. (3 3 A
Wor d v ews and rel g ous thought presented through the art, arch tecture l terature, mus c, mytho ogy ritua and fo klore of representat ve tr bes n North Amer ca

341 Contemporary Religious Thought. 3) A
ssues in current Western re g ous thought, such as theo ogy and revo ut on Judaism and Chr st an ty the mpact of science on re gion, the 'death of God' con troversy, the B ble and trad tion

351 Hinduism and Buddhism. (3 A
ntroduct on to H ndu sm through read ngs in the Vedas, Upanishads and Bhagavad Gita Buddh sm from ts ori gins in Ind a through the deve opment of the Mahayana in China and Japan

352 Confucianism and Taoism (3 A
ssues n c ass cal Ch nese religious thought Read ngs nclude Confuc us the *Tao Te Ching*, Menc us, Chuang Tzu, and the *I Ching*

365 Islamic Civilization. (3 A
An nterd scip inary survey of the art h story and rel - g on of slam c c vi zat on.

370 Hebrew Bible (Old Testament). (3) S
The nature content, background, histor ca s tuat on and message of the books of the Hebrew Bib e, n En- g ish trans ation

371 New Testament. (3) F
Or g ns and iterature of early Chr st an commun ties; historica invest gations of the types of ora and wr tten trad t on in the New Testament

374 Classics of Christian Literature. (3) N
The interaction of Christian thought and cu ture as seen in representat ve Christian iterature of various ages (early Chr st an to contemporary)

381 Religion and Moral Issues. (3) A
The manner n wh ch human re g ousness re ates to so c a concerns; e g , sexuality, the env ronment b o- eth ca issues, and v o ence.

390 Women and Religion (3) A
The ro e of women in several organ zed religions and/or rel g ous sects, nclud ng a study of myth and symbols as they are used to establish, mainta n, and enforce sex-ro es w thin specific religions.

405 Problems in the History of Religions. (3) A
An in depth consideration of selected problems in the history of relig ons, e g., r tua as creat ve process, in- terpretation of mythology, initiat on, cr sis cults.

411 Religion in the Middle Ages. (3) A
Re g ous aspects of medieval fe and thought, var ety of forms of d ssent heresy, and reform movements (4th to 13th centuries).

412 Reformation and Modern Christianity. (3) A
Protestant Reformat on to contemporary Chr st an movements; inc udes factors in the d ssolution of the Medieva Chr st an synthes s, var ety of reform move- ments and reformat on patterns, Catho c counter reform measures, format on of libera theo ogy, ecu- men ca movement, World Counc l of Churches

415 The Jewish Mystical Tradition. (3 A
Examinat on of some of the esoteric ore of Judaism Movements and terature such as Has dism and Ka- balah wi be stud ed.

425 American Sects and Cults. (3) N
The emergence of sectar an and cult c re igious l fe. The her tage of dissent. The ' new' re igions 'n the light of Amer can re igious h story Prerequ site. REL 321 or 322 recommended

426 American Preachers and Preaching: The Sermon in America. (3) N
The l fe and work of notab e American preachers The emergence of the preacher as representative of Amer - can rel g on. Prerequis te. REL 321 or 322 recom- mended

427 American Religious Thought. (3) N
The thought of representative Amer can re igious think- ers, i.e., Jonathon Edwards, W ll am E lery Channing Horace Bushnell, and Reinhold N ebuhr. Prerequisite REL 321 or 322 recommended

435 Problems in Native American Religions. (3) A
An n-depth consideration of selected problems in Na- t ve American relig ons.

441 Process Theology. (3) N
The mpact of modern process philosophies on current re igious thought. Emphas s on the use of A N. White- head s phi osophy in the rethink ng of trad tiona Chr s- t an concepts, Catholic and Protestant

442 Existentialist Theology. (3) N
The contribut on of ex stent al st thinkers, especially Kierkegaard, to the work of theo ogians such as Mart n Buber, Rudolf Bultmann and Paul T l ch.

445 Judaism in Modern Times. (3) A
Variety of expressions of Judaism and Jew shness in the modern per od Top cs may nc ude Amer can Juda ism or re gious responses to the Holocaust.

451 Religions of India. 3) A
The re igions of nd a through ts nst tut ons, iterature, fo klore art, and architecture

453 Zen. (3) A
History pract ces and cultura influence of Zen (Ch'an) Buddh sm n China and Japan

454 Hindu Religious Thought. (3) A
Read ngs n classica systems such as Samkhya and Vedanta, and n the works of modern Hindus such as Aurobindo and Gandhi Prerequisite REL 351 recom- mended

455 Religion in Japan. (3) A
Role of re gion n Japanese h story and culture Empha- sis on the mpact of Buddh sm and ts transformat on in

Japan, the vitality of folk religion, the intimacy of rel - g'on and the arts, the ideals of the samurai and relig on n modern Japan.

460 The Religious Tradition of Islam. (3) A
The slam c rel gious trad tion from the time of the Prophet down to the present day. Major relig ous figures, practices, institut ons and movements wi be ex amined.

464 The Sufi Way. (3) S
Ascetic sm, mystic sm, and il uminationism n Islam. Focus on representat ve Sufi sa nts, their systems and modes of express on.

494 Special Topics in Religious Studies. (3) N
Open to al students freshmen by approval of instructor on y Top cs may be se ected from var ous areas.

498 Pro-Seminar in Religious Studies. (3) N
For students w'th a major or minor emphasis in Rel - gious Studies.

522 Political Religion in America. (3) N
Investigation of the re at onship between Amer can re - gion and the po t cal process Such topics as c v rel gion, mi lenn a sm, and American destiny wil be ex am ned. Prerequisite· REL 322

591 Seminar. (3) S
Topics on methodo og cal ssues n the study of re ig on. Prerequisite: Rel g ous Studies graduate student or approva of instructor

598 Special Topics. (3) F, S Staff
May be repeated for credit Topics are selected from the fo lowing areas

(a) Rel g on n America
(b) Nat ve American Re igions
(c) H story of Chr st anity
(d) Juda c Stud es
(e) Contemporary Rel gious Thought
(f) Islamic Studies
(g) Rel g ous Traditions of India
(h) Rel gious Trad tions of the Far East
(i) Re igious Ethics
(j) H story of Relig ons

Special Courses: REL 294, 298, 492, 493 497, 499, 584, 590, 592, 594. (See pages 33 34).

Sociology

PROFESSORS:
GORDON (SS 321), AXELROD, FARBER, HOULT, HUDSON, LINDSTROM MAYER, OWEN, PFUHL, SEBALD

ASSOCIATE PROFESSORS:
COBAS, HARDERT, LANER, NAGASAWA, SNOW, WH TAM

ASSISTANT PROFESSORS:
BEN N, NIGG, SMITH, SULLIVAN, THOMAS, WEITZ

Departmental Major Requirements

Bachelor of Arts and Bachelor of Science Degree Curricula

Sociology Departmental requirements are the same for the Bachelor of Arts and for the Bachelor of Science degrees; see the College of Liberal Arts section of this catalog for the ad ditional requirements for B.A. and B.S. de grees. The departmental requirement for either degree consists of 45 semester hours of credit of which 30 must be in sociology and 15 in closely related fields to be approved by the advisor in consultation with the student. The 30 hours must include SOC 101 or 301, 390, 391, 483 or 485 or 486 and one course from at least three of the following five areas: institu tional forms and processes, demography and ecology, social problems, social organization and social psychology (details available in the department office). At least 18 semester hours must be in upper division courses. (See Degree Requirements, page 40.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Sociology Consists of 63 semester hours of credit of which 30 hours must be in sociology and are exactly those courses required for the Bachelor of Arts or Bachelor of Science degree in sociology. Of the remaining hours, two groups of 12 hours each and one of 6 hours are generally taken in related social sciences plus SED 480†.

Departmental Minor Teaching Field Requirements

(Secondary Education)

Sociology Consists of 24 semester hours of credit, at least six of which will be upper division. SOC 101 or 301 is required. The remaining 21 hours must be approved by the sociology advisor in consultation with the student, and must include at least one course from at least three of the following five areas: institutional forms and processes, demography and ecology, social problems, social organiza tion and social psychology (details available in the department office).

Special Emphasis Program

Public Safety Emphasis A public safety em phasis is available for law enforcement and fire fighting personnel in either the Bachelor of Arts or Bachelor of Science major in sociology. The 30 hours must cons'st of SOC 340†, 360, 440, 446, 449, and SWU 470† in addition to SOC 101, 390†, 391, 483 or 486 or 485. Applicable courses taken outside the Department of Sociology may be used to meet the requirement of 15 hours in closely related fields approved by the advisor in consultation with the student. Upon graduation, those suc

cessfully completing the program will receive recognition by a statement on the student's transcript.

Departmental Graduate Programs

The Department of Sociology offers programs leading to the degrees of Master of Arts and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements

SOCIOLOGY

SOC 101 Introductory Sociology. (3) F S, SS
Fundamentals of sociology, organization of human groups and society, processes of interaction and socia change. Not open to students who have credit for SOC 301. Two hours lecture, one hour discussion.

251 American Society. (3) S
Systematic analysis of the major institut ons of econom c activity, political structure, science, education and religion in contemporary America Prerequisite: SOC 101

301 Principles of Sociology. (3) F S, SS
Intensive and critical analysis of the concepts of soci ology Not open to students who have credit for SOC 101.

305 Courtship and Marriage. (3) F, S, SS
A functiona approach to marriage; courtsh p, engage ment, marital adjustment.

332 The Modern City. (3) F, S
Growth, character stics and problems of the modern city. Prerequisite. SOC 101 or 301

333 Population Problems. (3) F,S, SS
Theories of population change, births deaths m gration, population po icies Prerequ site· SOC 101 or 301

340 Sociology of Deviant Behavior. (3) F, S SS
Introduction to and analysis of deviant behav or De ineation of the sociolog cal and socia psycho ogical factors which give rise to deviant behav or such as sui cide, drug addiction, homosexua ty, prost tution etc Prerequisite· SOC 101 or 301

341 Modern Social Problems. (3) F, S, SS
Race relations, poverty, unemp oyment and other cur rent issues

348 Overview of Aging. (3) F
Mult disc pl nary introduction to gerontology Exp ores the character st cs, experiences problems, and needs of older persons

351 Industrial Sociology. (3) S
Social and cultura analysis of ndustry Occupat ona ro es, status and social participation of workers Pre requis te SOC 101 or 301

352 Social Change. (3) F S
Patterns of socia change, resistance to change and change-produc ng agenc es and processes Prerequi site. SOC 101 or 301.

360 The Social System and the Individual. (3) F, S
nteraction patterns between the sociocultura order and nd viduals, socia ization process norms, roles and statuses, co lective behavior Prerequis te SOC 101 or 301.

361 Variant Sexuality. (3) F
Sociolog cal research and theories dea ing with homosexuality, transvestism transsexualism and other variations in sexua orientat on and gender identity Prerequisite SOC 101 or 301.

362 Sociology of Adolescence. (3) F, S
Cultural values and the socia processes that help ex plain the development of the phenomenon of modern adolescence, including investigation of adolescent subcultures and cross-cultural references Prerequisite SOC 101 or 301

365 The Sociology of Mass Communication. (3) F, S
A sociological exploration of the major mass media as a communicative process in American society

390 Social Statistics. (3) F, S, SS
Application of descriptive and inferential statist cal methods to research problems in sociology. Prerequ sites· SOC 101 or 301 and passing a proficiency examination n basic algebra to be admin stered by the Department of Sociology, or approval of instructor MAT 106† recommended

391 Sociological Research. (3) F, S, SS
Methods of sociological research, ncluding the fundamental assumptions underlying research, and some practical experience in research des gn, data collection techniques and data ana ys s. Prerequisites: SOC 101 or 301, 390† or approval of instructor

392 Practicum in Survey Research I. (3) F
Prov des practical exper ence in conducting a sign f cant research project survey design, quest onnaire construction, sampling, data co lecting, coding and preiminary data processing Prerequisite: SOC 391† or approval of instructor.

393 Practicum in Survey Research II. (3) S
Continuation of SOC 392 Provides practical exper ence in analysis and report ng survey data Prerequis te· SOC 392†.

401 Comparative Sociology. (3) F; Cobas
Cross-cultural study of basic socia institutions; meth odology of cross cultural research; case stud es of three or four different soc eties, concentrat ng on one other than the United States Prerequisites. s x hours in soci ology includ ng SOC 101 or 301, or ASB 102, or ap prova of nstructor

410 Sociology of Religion. (3) S, Owen, Sm th nterrelationship of culture, soc ety and religion; rel gion and social stratif cation, rel g on and economic and pol tical nst tutions; soc al change and rel gion. Empha sis on Amer can soc ety and inst tutions Prerequ sites· six hours n soc ology ncluding SOC 101 or 301 or approval of instructor.

415 The Family. (3) F, S, SS Farber, Hudson
The family cons dered from the nst tut ona v ewpoint, its h stor ca development and its adaptation to a changing culture, the family system in many cultures Prerequis tes s x hours n soc ology nc ud ng SOC 101 or 301, or approval of instructor

416 Marriage Problems in Contemporary Society. (3) S Hudson
Mar ta and fami y problems in today's soc ety from the viewpo nt of persona and cultural adjustment. Prereq uis tes six hours n soc ology nc uding SOC 101 or 301, or approval of instructor

417 Family Violence. (3) F Laner
Current research and theory on ch ld abuse neg ect, sexua exp o tat on, and maltreatment also spousal abuse and violence, ntervent on, pol cies.

432 Human Ecology. (3) F, S; Sul ivan
Patterns and laws of societies' adjustments to the phys cal environment· distribution of communities and inst tut ons Prerequis tes· six hours in socio ogy n cluding SOC 101 or 301, or approval of instructor.

433 Demography. (3) S, Lindstrom, Sullivan
Science of population analysis; problems in measurements of the size, composition and changes n popula tion Prerequis tes six hours in soc o ogy including SOC 101 or 301, or approval of nstructor.

440 Racial and Ethnic Minorities. (3) F, S, SS; Gordon
Problems of minorities in the United States and in other racially and ethnically heterogeneous societies. Evaluation of theories of prejudice and of research dealing with discrimination, desegregation and assimilation. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor.

446 Sociology of Crime. (3) F; Pfuhl
The process of criminalization, exploring the behavior of the definers of crime and the behavior of those defined as criminals. Prerequisites: SOC 101 or 301 and 340†, or approval of instructor.

448 Sociology of Aging. (3) F,S; Laner
Social aspects of aging. Theoretical and methodological perspectives, problems of aging such as life satisfaction, retirement and adjustment to role loss. Prerequisite: SOC 101 or 301 or approval of instructor.

449 Sociology of Law. (3) S; Pfuhl
Examination of law as an institution; its origins, operations, and consequences. Emphasis on contemporary legal issues and problems. Prerequisite: SOC 446† or approval of instructor.

452 Sociology of Complex Organizations. (3) F
Sociological studies of government agencies, industrial firms, labor unions, military establishments and other large-scale organizations. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor.

453 Social Class and Stratification. (3) S; Staff
Social classes and the function of these groupings in a society. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor.

454 The Afro-American in Modern Society. (3) S; Staff
Social and cultural heritage of Black Americans; achievements and current trends. Prerequisite: approval of instructor.

455 Collective Behavior. (3) S; Gordon, Nigg
Social causes and consequences of such non-institutionalized forms of behavior as crowds, cults, publics, social movements and revolutions. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor.

456 Political Sociology. (3) S; Cobas, Thomas
Social factors associated with voting behavior; the nature and structure of the electorate and political parties, and the nature of national and international power structure.

457 Sociology of Health and Illness. (3) F; Weitz
Social aspects of physical and mental illness, and sociological analysis of the health care system and its practitioners. Prerequisite: SOC 101 or 301, or approval of instructor.

462 Social Control. (3) F; Staff
Significance of social control in society, and the various methods used by individuals and groups to control others. Prerequisite: SOC 360† or approval of instructor.

464 Women's Roles. (3) S; Weitz
Sociological analysis of the development, nature, and consequences of traditional and alternative roles of women in contemporary society. Prerequisite: SOC 101 or 301, or approval of instructor.

483 History of Social Thought. (3) S, SS; Owen
Social thought in human culture. Background of modern sociology. Prerequisites: six hours in sociology including SOC 101 or 301, or approval of instructor.

485 Sociology of Knowledge. (3) F; Snow
Relationship between social conditions and the development of knowledge in modern society. Prerequisite: SOC 101 or 301, or approval of instructor.

486 Contemporary Theory. (3) S
Contemporary issues and crises in social theory with major focus on particular theorists. Ideological factors in theory, philosophical issues, the nature of theory and its relationship with methodology. Prerequisite: SOC 101 or 301, or approval of instructor.

498 Pro-Seminar. (3) F, S; Staff
Topics to be selected.

501, 502 Practicum in Survey Research. (3, 3) F, S
A one-year research practicum in survey field work, analysis, and reporting in the Phoenix Area Study. Prerequisite: SOC 391†.

505 Social Statistics II-Multivariate Analysis. (3) F, SS
Analysis of variance, multiple regression, dummy variable regression, path analysis and related topics. Computer application to problem solving. Prerequisite SOC 390† or equivalent, and a proficiency examination. Enrollment in MAT 530 is encouraged.

507 Social Statistics III: Advanced Multivariate Analysis (3) S
Computer application in sociology. Topics such as discriminant function analysis, factor analysis, canonical correlation, advanced multiple regression, and structural equation models are studied through the application of computers. Prerequisite: SOC 505 or approval of the instructor. Enrollment in MAT 533 is encouraged.

515 Studies of the Family. (3) S
Current developments in the study of marriage and the family. Prerequisite: approval of instructor.

585 Development of Sociology. (3) F
Major sociological theorists, including Durkheim, Weber, Marx, Parsons, Merton, Dahrendorf, Homans, Mead. Prerequisite: approval of instructor.

586 Contemporary Sociological Theory. (3) S
Analysis of major theories, including structural-functional, conflict, social exchange, symbolic interaction, role theory. Prerequisite: approval of instructor.

587 Metasociology. (3) S
Nature of sociologial assumptions. Nature and form of sociological theories. Context of discovery-grounded theory. Context of justification. Prerequisite: approval of instructor.

591 Seminar. (1-3) F, S

595 Methodological Issues in Sociology. (3) S
Basic methodological issues in the application of scientific methods to the study of human social life. Emphasis on limited number of major works, with contrasting approaches to issues. Prerequisite: SOC 391† or approval of instructor.

Special Courses. SOC 298, 484, 492, 493, 494, 497, 499, 500, 590, 592, 599, 700, 780, 791, 799. (See pages 33-34.)

Speech and Hearing Science

PROFESSORS:
_____(LL A-129A), CLUFF, DORMAN, MOWRER
ASSOCIATE PROFESSORS:
CASE, CHUBRICH, PRATHER
ASSISTANT PROFESSOR:
HANNLEY, LEEK
LECTURER:
EHRET
CLINICAL DIRECTOR:
WHALEY

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Speech and Hearing Science—The Bachelor of Science degree consists of a minimum of 45 semester hours of credit emphasizing the developmental and scientific aspects of lan guage, speech and hearing. The following courses, or their approved equivalent, are required: SHS 105 or 305, 310, 311, 316, 320, 367, 375, 395, and 465. Remaining courses, to complete the 45-hour requirement, may be selected from a list of approved electives available through the department.

Departmental Graduate Program

The Department of Speech and Hearing Science offers a program leading to the degree of Master of Science and Master of Natural Sci ence. Consult the *Graduate Catalog* for re quirements.

SPEECH AND HEARING SCIENCE

SHS 105 Introduction to Speech and Hearing Science. (3) F, S
The normative and disordered processes of human communication

305 Survey of Communication Disorders. (3) F S
Ro e of the parent, teacher and others n support of evaluation and treatment of communicat on d sorders

310 Anatomy and Physiology of Speech. (3) F

311 Anatomy and Physiology of Hearing. (3) F S

316 Introduction to Hearing Impairment. (3) S

320 Hearing Science. (3) F, S
Neurophysiologica and psychoacoust c behavior of the auditory system. Prerequ site SHS 311

367 Language Acquisition in Early Childhood. (3) F, S
Process of anguage development n the normal ch ld from birth through preschool.

375 Speech Science. (3) S
Normat ve aspects of speech, hear ng, and language. Prerequisite· SHS 310, 311.

395 Modifying Communicative Behavior. (3) F
Principles and techniques of modifying speech and language behavior Prerequisites. PSY 212, SHS 105 or 305

396 Disorders of Phonology. (3) S
Detailed analysis of disorders of articulation. Prerequisites: SHS 105 or 305, 310 and 395.

400 Methods of Audiometry. (4) F
Techniques and instrumentation used n measuring auditory threshold and audiogram interpretation. Three lectures, 3 hours laboratory. Prerequisites· SHS 311, 316, 320.

425 Acoustic Phonetics. (3) F
Memory and perception of speech and language Prerequisites. SHS 310, 311, and 320.

430 Psychology of Hearing-Handicapped Children. (3) F
Effects of hearing impa rment on child language acquis tion, nte lectual development, persona ity development and educational placement

432 Aural Rehabilitation—Children. (3) S
Theories and pract ces n the education of hear ng-handicapped ch ldren.

435 Noise and Society. (3) S
Effects of noise on ndividuals and commun t es and practical so utions to no se problems Prerequisite: SHS 320

450 Observation. (1) F,S
Superv sed observat on of eva uat on and therapy representing the areas of language, speech, and hearing. Prerequis te. approval of instructor.

465 Child Language Acquisition. (3) F

490 Child Language Disorders (3) F
Introduction to the nature and treatment of language d sorders n ch dren Prerequis tes; SHS 310, 311; 367 or 465, 395

502 Advanced Audiology. (3) F
Procedures n differential diagnos s of auditory path-o og es. Prerequ site: SHS 400.

504 Aural Rehabilitation: Hearing Aids. (3) F
Operation and appl cation of ampl fying devices re at ve to the aura y hand capped. Prerequisite. SHS 400.

506 Physiological Measurements (3) S
Theory and applicat on of physiologica techniques for assess ng the aud tory system Three hours lecture, one hour laboratory Prerequ tes SHS 502 or 510.

508 Pediatric Audiology. (3) S
Audiolog c testing, and management of young children and infants Prerequisite SHS 400

510 Advanced Hearing Science. (3) F
Psychoacoust c and psychophysiological correlates of aud tion Prerequ s tes: SHS 311, 320

520 Disorders of Fluency. (3) F
History and nature of stuttering.

521 Treatment of Disorders of Fluency. (2) S
Prerequ sites. SHS 520 and approval of instructor.

527 Evaluation: Audiometric Measurement. (1 6) F, S
One staffing and two hours client contact per week per hour of credit May be repeated for credit Prerequisite: approval of instructor

531 Neurophysiology of Hearing. (3) S
The neurophys o og cal processes of hearing Prerequisites· SHS 311, 320.

540 Differential Diagnosis. (3) F, S
Procedures for assessing speech/language disorders in chi dren and adu ts Three hours lecture, 2 hour laboratory. Prerequis te· approva of the instructor.

541 Evaluation: Differential Diagnosis. (1-3) F, S
Two hours supervised client contact per week per hour of credit. May be repeated for credit. Prerequisite: approval of instructor.

545 Speech Perception and Production. (3) S
Current progress in production and perception of speech. Prerequisite: SHS 375 or approval of instructor.

551 Therapy: Practicum. (1-6) F, S
Supervised practicum in communication disorders. May be repeated for credit. Prerequisite: approval of instructor.

565 Child Language Development. (3) S
Recent advances in the study of child language development. Not open to students with credit in SHS 465.

566 Psychology of Language. (3) S
Language and thought in interaction.

575 Neurological Disorders of Speech—Aphasia. (3) F
Assessment of communication disorders related to brain injury.

576 Neurological Disorders of Speech—Cerebral Palsy. (3) S
Communication disorders related to cerebral palsy; asessment and treatment.

577 Orofacial Disorders of Communication—Cleft Palate. (3) S
Communication disorders related to anomalies of the orofacial structures. Prerequisite: SHS 310 or approval of instructor.

578 Disorders of Voice. (3) F
Communication disorders related to dysfunction of the phonatory and resonance systems of voice production, assessment and treatment. Prerequisite: SHS 310 or approval of instructor.

584 Internship in Communication Disorders. (1-6) F, S, SS
Off-campus directed experiences in speech pathology, language disorders, or hearing disorders. May be repeated for credit. Prerequisite: approval of department; student must reserve enrollment by early registration.

590 Reading and Conference. (3) F, S

591 Seminar. (3) F, S

592 Research. (3) F, S

Special Courses: SHS 294, 298, 484, 492, 493, 494, 497, 498, 500, 580, 584, 593, 598, 599.

Zoology

PROFESSORS:
CHURCH (LS C-226), ALCOCK, ALVARADO, DOANE, GERKING, HADLEY, McGAUGHEY, MINCKLEY, OHMART, PATTERSON, RASMUSSEN, WOOLF

ASSOCIATE PROFESSORS:
COLLINS, FISHER, FOUQUETTE, GOLDSTEIN, HAZEL, JUSTUS, RUTOWSKI

ASSISTANT PROFESSORS:
CHANDLER, FAETH, MARTIN, MOORE, RISSING, SATTERLIE, SMITH, WALSBERG

LECTURER:
MILSTEIN

PROFESSORS EMERITI:
BENDER, CASTLE, CAZIER, CLOTHIER, COLE, HASBROUCK, LANDERS, STAHNKE

Departmental Major Requirements
Bachelor of Science Degree Curriculum

Biological Sciences. See page 64.

Zoology—Consists of a minimum of 65 hours, of which 32 must be in the major. Required major courses are: BIO 101, 102, 320, 340, 445; ZOL 280, 360; BIO 430 or ZOL 330; ZOL 270 or ZOL 350 or ENT 300. Required supplementary courses are CHM 113†, 115 and either of the following chemistry sequences: CHM 331, 332, 335, 336; or 231, 261; MAT 115†; 210 or one of the following sequences: MAT 270, 271, 272, or MAT 290, 291; CSC 182†; PHY 111†, 112, 113, 114. One year of a foreign language or equivalent competence. (See Degree Requirements, page 40.)

Wildlife Biology—Two options are available:

The *Wildlife Management Option* consists of a minimum of 89 hours, of which 65 must be in the major. Required *major courses* are: BIO 101, 102, 217, 320, 340, 415; ZOL 270, 360, 411, 412; ENT 300; BOT 370, 420; ERA 360 or 370; plus a minimum of four courses from the following: ZOL 413, 414, 420, 424, 471, 472, 474; GLG 101; ERA 325, 326. Required *supplemental courses* are: CHM 113†; CHM 115 or 116; CHM 231; MAT 115†, 210; COM 300† or 311†; CSC 182†. Students planning to enter graduate school should substitute CHM 331, 332, 335, 336 for CHM 231 and should take PHY 111†, 112, 113, 114.

The *Fisheries Management Option* consists of a minimum of 72 hours, of which 45 must

be in the major. Required major courses are: BIO 101, 102, 217, 320, 340, 415, 426, 427; ZOL 270, 350, 360, 413, 473. Required *supplemental courses* are: CHM 113†; CHM 115 or 116; CHM 231; MAT 115†, 210; PHY 111†, 112, 113, 114. Students planning to enter graduate school should substitute CHM 331, 332, 335, 336 for CHM 231.

Entomology—Consists of a minimum of 37 hours in the major. Required courses are: BIO 101, 102, 320, 340, 445; ZOL 280, 360; ENT 300, 420, 430, 551. Required supplementary courses are: CHM 113†, 115, and either of the following chemistry sequences, CHM 331, 332, 335 and 336 *or* CHM 231 and 261; CSC 182†; MAT 115†, 210 or MAT 270, 271, 272 or 290†, 291; PHY 111†, 112, 113, 114; one year of a foreign language. (See Degree Requirements, page 40.)

Departmental Graduate Program

The Department of Zoology offers programs leading to the degrees of Master of Science, Master of Natural Science, and Doctor of Philosophy. Consult the *Graduate Catalog* for requirements.

BIOLOGY

BIO 100 The Living World. (4) F, S, SS
Principles of biology. Cannot be used for major credit in the biological sciences Three hours ecture, 3 hours aboratory.

101, 102 Biological Principles and Processes. (4, 4) F, S
Biological concepts emphasizing fundamental principles and the interp ay of structure and function at the molecular, cellular, organismal, and popu ation levels of organization For majors in biolog ca sciences and preprofessional students n health related sc ences. Secondary school chemistry strongly recommended (BIO 101 is a prerequ site for BIO 102). Three hours lecture, 3 hours laboratory.

217 Introduction to Fisheries and Wildlife Management. (3) F
Management of fisheries and terrestrial wild ife, emphasiz ng management of ecosystems Designed for prospect ve Wildlife biologists. Prerequis tes 8 hours of biology

218 History of Medicine. (1) F
Deve opment of med cal concepts

300 Natural History of Arizona. (3) F
Plant and an mal communities of Arizona Cannot be used for major cred t in the biological sciences Prereq u site. junior standing.

301 Field Natural History. (1) F, S
Organisms and their natural environment Two weekend fie d trips and a f eld project. Prerequ s te. B O 300 or concurrent enrollment Cannot be used for major credit n the bio og cal sciences

310 Special Problems and Techniques. (1-3) F, S
Qualif ed undergraduates may nvestigate a specific bio logical problem under the direction of a facu ty member Prerequisites: approval of the problem by the faculty member and departmental chair May be repeated for a total of 6 credits.

320 Fundamentals of Ecology. (3) F, S
Organization, functioning and development of ecological systems, energy flow, biogeochemical cycling, environmental relations, populat on dynamics. Prerequ - sites: BIO 102† or approval of instructor.

330 Ecology and Conservation. (3) F
Ecological and biological concepts of conservation used to understand man-made ecological problems. Cannot be used for major credit in the b ological sciences.

340 General Genetics. (4) F, S, SS
Science of heredity and variation. Prerequisite: BIO 102†. Three hours lecture, 1 hour recitation.

415 Biometry. (4) F
Statistical methods applied to biological prob ems, design of experiments, estimation, significance, analysis of variance, regression, correlation, chi square and bioassay; the use of computers. Does not satisfy laboratory requ rements for the Liberal Arts General Studies program. Prerequ sites. MAT 210† or equivalent. Three hours lecture, 3 hours laboratory.

424 Analysis of Ecosystems. (3) S
Ecosystems emphasizing production, respiration, and decomposition. Prerequisites. senior or graduate standing, BOT 420† and ZOL 425† or equivalents.

425 Laboratory Ecosystem Analysis. (1) S
Methods of analyzing energy flow and nutrient cycling. Prerequisites: BOT 424† and ZOL 425† or equivalents. Three hours laboratory.

426 Limnology. (4) S
Structure and function of aquatic ecosystems with emphasis on freshwater lakes and streams. Three lectures, 3 hours laboratory or field trip. Prerequisites: BIO 320† or approval of instructor.

428 Biogeography. (3) F
Environmental and historical processes determining distributiona patterns of animals and plants, emphasizing terrestrial life. Prerequis tes· BIO 102† or equivalent; junior stand ng.

429 Advanced Limnology. (3) S
Recent literature, developments, methods and limnological theory; field and laboratory application to some particular topic in limnology Prerequisite: BIO 426†.

430 Concepts in Developmental Biology. (3) S
Current concepts and experimental methods involving d fferentiation and biosynthetic activities of cells and organ'sms w th examples from micro-organisms, plants and animals. Prerequis te: BIO 102† or equivalent.

432 Biochemical Cytology. (3) S
Cellular functions and chemistry based on the macromolecular organization of cellular components, emphas zing the use of analytical procedures such as cell fractionation, ultrastructural radioautography, and cytochemistry. Prerequisites: BOT 360† or ZOL 360† or equ valent; CHM 231† or 331† or equivalent.

441 Cytogenetics. (3) F
Chromosomal basis of inheritance. Prerequisite. BIO 340†.

442 Cytogenetics Laboratory. (2) F
Microscopic analysis of meiosis, mitosis and aberrant cell division. Prerequisites or concurrently: BIO 441† and graduate status. Six hours laboratory.

443 Molecular Genetics. (3) F
Nature and function of the gene Prerequisites: BIO 340† and a course in organic chemistry

445 Organic Evolution. (3) F
Processes of adapt ve change and speciation in sexua populat ons. Prerequisite BIO 340† or ZOL 241

464 Photobiology. (3) S
Principles underlying the effects of ight on growth, de- ve opment and behavior of p ants anima s, and micro organisms Prerequis tes· 12 hours of courses n ife sc ences CHM 231† or 331†

480 Methods of Teaching Biology. (3) S
Methods of instruct on, experimentation, organization and presentat on of appropr ate content in b o ogy Pre requisites: e ther SED 311† or concurrent enro ment n SED 311† and 20 hours in the biological sciences. Two hours lecture, 3 hours aboratory

512 Transmission Electron Microscopy. (4) F S
Theory, use, and methods of preparing b o og cal mate r a s for transmiss on electron microscopy. Prerequis te approval of instructor Material fee. Two lectures 6 hours aboratory.

515 Scanning Electron Microscopy. (2) N, SS
Theory and use of scanning e ectron microscope for b ological materia s. Intensive five-week m ni course. Prerequisite· approva of instructor Materia s fee Three hours ecture, 6 hours laboratory.

520 Biology of the Desert. (2) N
Factors affecting p ant and an ma l fe n the desert re g ons and adaptat ons of the organ sms to these fac- tors. Prerequ s te 10 hours of biologica sc ences or ap proval of nstructor

526 Quantitative Ecology. (3) N
Sampl ng strategies, spatia pattern analys s species di- vers ty, classif cat on and app cat ons of mu t var ate techniques to ecology. Prerequisites· one course n eco ogy; B O 415† or equ valent. Two hours lecture, 3 hours laboratory.

Special Courses: BIO 492, 493 494 497 498 499 500, 590, 591 592, 598, 599. (See pages 33 34.)

ENTOMOLOGY

ENT 300 General Entomology. (4) F, S
Form, act vities and c assif cation of insects. Prerequ sites. BIO 102† Three hours ecture 3 hours labo ratory

400 Aquatic Insects. (3) F
Systemat cs and eco ogy of aquat c insects Prerequ - s te: ENT 300†

420 Insect Ecology. (3) N
nterre ations of insects and their environments Prereq u sites. B O 320†

430 Insect Morphology. (4) N
Morphology of typica nsects nclud ng both externa and nternal structure. Prerequisite ENT 300† Two hours ecture, 6 hours laboratory.

551 Systematic Entomology. (4) N
C assif cat on of insects, taxonom c categories and pro cedures, bibliographica methods· nomenc ature mu seum practices. Prerequ s te ENT 300† Two hours lec ture 6 hours laboratory.

Special Courses: ENT 590, 592 599 (See pages 33 34.)

ZOOLOGY

ZOL 110 Contemporary Zoology. (4) F, S
Topics emphasiz ng soc al y relevant prob ems Cannot be used for major credit in the biological sc ences. Three hours lecture, 3 hours laboratory

201 Human Anatomy-Physiology. (4) F, S SS
Structure and dynam cs of the human mechan sm Cannot be used for major credit in the Department of Zoology Three hours ecture, 3 hours aboratory

202 Human Anatomy-Physiology. (4) F S, SS
Continuation of ZOL 201 Cannot be used for major credit in the Department of Zoology Prerequ s te· ZOL 201 or approva of nstructor. Three hours lecture, 3 hours aboratory

241 Human Genetics. (3) F, S, SS
Human hered ty and var at on emphas zing medica and population genetics

270 Vertebrate Zoology. (4) F S
Character st cs, c assif cat on, evo ut on and natura h story of the major groups of vertebrate animals Pre- requ s te. B O 102† Three hours lecture, 3 hours labo ratory

280 Introductory Animal Behavior. 3) F
Evo ut onary, genet c, phys o og cal and ecologica bases of anima behavior Prerequ site Four hours of B O, or ZOL, or approval of nstructor.

300 Bioconcepts. (2 4) F, S, SS
Contemporary top cs as related to human affa rs Can not be used for major cred t n the b o og cal sc ences May be repeated for cred t by us ng different sect ons

(a) Genes and Evolution (4)
(b) Soc ob o ogy (3).
(c) The Ecocr s s (3)
(d) Parasites (3).
(e) Blood (2) F One ecture 3 hours aboratory
(f) Guts (2) S One ecture, 3 hours aboratory.
(g) Histor ca Perspect ves (3)

311 Animal Microtechnique. 2) N
Zoo og cal m crotechn que nc ud ng the preparation for microscop c examination of anima structures, t ssues, ce s and whole mounts. Prerequis te BIO 102† Six hours laboratory.

330 Vertebrate Developmental Anatomy. (5) F
Ontogenetic sequence of morphology comparat ve anatomy and evolutionary trends of organ systems of vertebrates Prerequis tes· B O 102† or equ va ent. Three hours ecture, two 3 hour aborator es

350 Comparative Invertebrate Zoology. (4) F
Character st cs, l fe cyc es, adaptat onal b o ogy and evo ution of invertebrate an ma s Prerequ s tes B O 102† or approval of ntructor Three hours lecture 3 hours aboratory

360 Basic Physiology. (4 F, S
Physiologica mechanisms of the h gher vertebrates Prerequ s tes BIO 102† CHM 115† MAT 115 Three hours lecture, 3 hours aboratory

411, 412 Wildlife Management I, II. (4 4) F S
Pr nc p es, practices and techn ques of wi dl fe manage ment Prerequ sites for ZOL 411 BIO 217†, 320†, ZOL 471†, 472†; or approva of nstructor. Prerequ s te for ZOL 412 ZOL 411† Three hours ecture 3 hours labo ratory or field tr ps weekend fie d tr ps.

413 Fisheries Management I. (4) F
Pr ncip es and theory of f sher es management Prereq uis te 10 hours of b o ogy Three hours ecture, 3 hours laboratory or f e d trips, weekend fie d tr ps

414 Fisheries Management II. (4) S
Practices and techniques of f sher es management. Pre requ s te ZOL 413† Two hours lecture 6 hours abo ratory or fie d tr ps weekend f e d trips

420 Field Zoology. (3) F SS
F eld techn ques and experience n col ect on and prep- aration of zoological specimens and data. F One hour ecture, about 6 weekend f eld trips. SS One week

preparation, then at least 14 days of next 4 weeks in the field. Prerequisites: 20 hours in biological sciences and approval of instructor.

424 Parasitology. (4) N
Morphology, physiology and life histories of animal parasites, therapeutics, control and host-parasite relationships. Prerequisite: BIO 102†. Three hours lecture, 3 hours laboratory.

425 Animal Ecology. (3) F
Interrelations of animals and their environments. Prerequisite: BIO 320†.

427 Laboratory in Animal Ecology. (3) F
Laboratory and field studies; quantification and analysis of ecological relations. Prerequisite: BIO 320† or approval of instructor. Nine hours laboratory or field. Weekend field trips.

432 Animal Cytology. (3) F
Structure and function of the cell, based on modern methods in cell biology. Prerequisite: BIO 102†.

433 Animal Histology. (4) N
Microscopic study of animal tissues. Prerequisites: BIO 102† or approval of instructor. Three hours lecture, 3 hours laboratory.

440 The Nucleus. (3) S '84
Experimental studies in chromatin and chromosome structure. Molecular mechanisms of chromosome movement and mechanics, cell population kinetics, the nucleolus and the nuclear envelope. Prerequisites: CHM 261† or 335†, and BIO 340†.

453 Protozoology. (3) N
Systematics and biology of protozoa. Prerequisite: BIO 102†. Two hours lecture, 3 hours laboratory.

460 Comparative Physiology. (4) F, '83
The analysis of function in invertebrates and vertebrates, emphasizing evolutionary trends in physiological systems. Prerequisite: ZOL 360† or equivalent. Three hours lecture, 3 hours laboratory.

468 Mammalian Physiology. (4) S '85
Detailed treatment of mammalian organ system functions emphasizing integrative mechanisms. Prerequisite: ZOL 360† or equivalent. Three hours lecture, 3 hours laboratory.

469 Cellular Physiology. (4) F '84
Emphasizing the molecular basis for cell structure and function. Prerequisites: ZOL 360†, organic chemistry. Three hours lecture, 3 hours laboratory.

471 Ornithology. (3) S
Natural history and field study of birds, emphasizing Arizona species. Prerequisite: ZOL 270† or approval of instructor. Two hours lecture, 3 hours laboratory. Weekend field trips.

472 Mammalogy. (4) F
Classification, structure, habits, ecology and distribution of mammals, emphasizing North American forms. Prerequisite: ZOL 270† or approval of instructor. Three hours lecture, 3 hours laboratory or field trip. Weekend field trips.

473 Ichthyology. (3) S '85
Systematics and biology of recent and extinct fishes. Prerequisites: ZOL 270†, 425† or approval of instructor. Two hours lecture, 3 hours laboratory or field trip. Weekend field trips required.

474 Herpetology. (3) S '84
Systematics and biology of recent and extinct reptiles and amphibians. Prerequisite: ZOL 270†. Two hours lecture, 3 hours laboratory or field trip.

481 Laboratory in Animal Behavior. (3) S
Experimental and field studies of animal behavior; description and quantification of animal behavior, interpretation of behavior within an evolutionary framework. Prerequisite: ZOL 280. One hour lecture, 6 hours laboratory.

515 Populations: Evolutionary Genetics. (3) F
Mathematical models in the description and analysis of the genetics of populations. Prerequisites: BIO 320†, 415†, and 445†, or approval of instructor.

516 Populations: Evolutionary Ecology. (3) S
Principles of population biology and community ecology within an evolutionary framework. Prerequisites: MAT 210† or BIO 415†, 320†, ZOL 515†. Two hours lecture, 2 hours recitation.

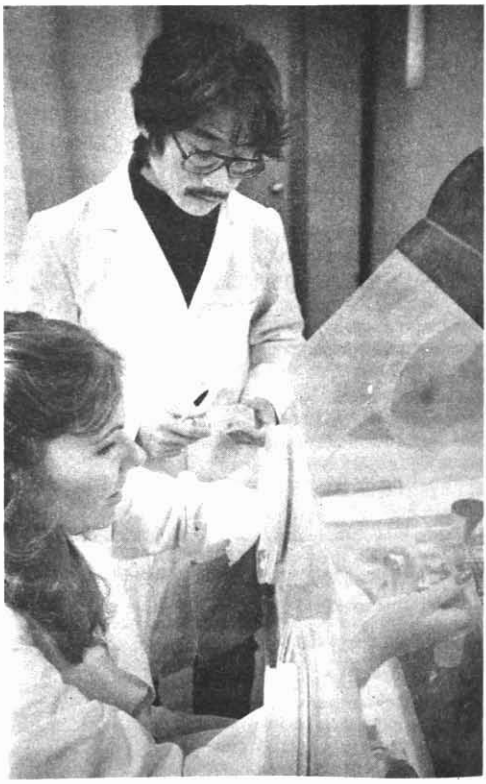
532 Developmental Genetics. (3) S '84
Genetic approaches to the analysis of development during the life cycle of eukaryotic organisms; role of genes in the unfolding of the differentiated phenotype. Prerequisite: BIO 443†.

565 Advanced Parasitology. (3) N
Historical and analytical approach to the treatment of selected areas in the body of knowledge relating to parasites and parasitism. Prerequisite: ZOL 424†.

566 Environmental Physiology. (3) S '84
Physiological responses and adaptations of animals to various aspects of the physical environment. Prerequisites: ZOL 360†; BIO 320†.

591 Seminar. (1-3) F, S, SS
Topics such as the following will be offered: a) Behavior, b) Development, c) Ecology, d) Genetics, e) Physiology, f) Evolution, g) Adaptations, h) Genetic Engineering. May be repeated for credit.

Special Courses: ZOL 294, 484, 492, 493, 494, 497, 498, 499, 590, 592, 594, 598, 599, 790, 791, 792, 799. (See pages 33-34.)



College of Architecture

Gerald R. McSheffrey
Dean

Purpose

The central function of the College of Architecture is to educate students at the pre-professional, professional and graduate levels for architecture, planning and design science careers, and to provide leadership to these professions through the development and dissemination of new knowledge resulting from both faculty and graduate research studies. The College also contributes to community efforts to conserve and improve the quality of our natural and built environments.

Organization

The College is composed of three academic units: the Department of Architecture, the Department of Design Sciences and the Department of Planning, each administered by a chair. The general administration of the College is the responsibility of the Dean, who in turn is responsible to the President through the Vice President for Academic Affairs.

Affiliations

The College of Architecture maintains active affiliations with the Arizona Society of Architects; the Central Arizona and the Rio Salado Chapters of the American Institute of Architects; the Associated Student Chapters of the American Institute of Architects; the Association of Collegiate Schools of Architecture; the American Planning Association; the Association of Collegiate Schools of Planning; the American Society of Landscape Architects; the Council of Educators in Landscape Architecture; the Society of Automotive Engineers; the American Society of Interior Designers; the Industrial Designers Society of America; the Institute of Business Designers; the Interior Design Educators Council; the National Student Council of the American Society of Interior Designers; and the Society of Automotive Engineers.

Accreditation

The professional program in architecture is accredited by the National Architectural Accrediting Board and recognized by the Arizona State Board of Technical Registration and the National Council of Architectural Registration Boards. The degree in industrial design is approved by the Industrial Designers Society of America. Approval or accreditation of programs in interior architecture, landscape architecture, and urban and regional planning is pending.

Facilities

The College of Architecture provides lecture and seminar rooms, design and technology laboratories, and student, faculty and administrative offices. The College contains photographic, environmental, structural, and computer laboratories, a media center with an extensive audiovisual collection, materials exhi bition spaces, and the Gallery of Design.

The Howe Library, a branch library for ar chitecture, planning, and design sciences, serves the academic needs within the College of Architecture as a regional resource library for the general University community and for practicing professionals.

The Computer Graphics Lab provides data processing services to architects, designers, and planners. These services include: energy modelling and analysis, comprehensive 3-D imaging (perspective, axonometric and isomet ric), space planning, land use analysis for urban and regional planning and illumination and acoustics analysis and design. In addition, the computer lab offers short courses and workshops in computer applications for both the college and professional communities.

The Gallery of Design provides an exhibit area for works and projects related to ar chitecture, design and planning.

The College of Architecture maintains an outdoor laboratory adjacent to the College for solar, structural and materials testing.

The College of Architecture Research and Service Foundation Office is a non profit organization which receives and administers tax deductible contributions and contracts from private or public sources, as approved by Ari zona State University, to provide for the enrichment of the programs and services it administers. These are environmental research, continuing education, and publication of research-related books, pamphlets and docu ments. An energy efficient facility demonstration unit is available for experimentation and research related to energy technology.

Degrees

Bachelor of Science in Design. The College of Architecture awards the Bachelor of Sci ence in Design degree upon successful comple tion of a four year curriculum. Students may select one of the following majors and/or areas of concentration within their respective department:

Department of Architecture
- Architectural Studies

Department of Design Sciences
- Design Science
- Industrial Design
- Interior Architecture

Department of Planning
- Housing and Urban Development
- Urban Planning
- City Planning (concentration)
- Landscape Architecture (concentration)

Master of Architecture. A professional pro gram in Architecture leading to the Master of Architecture degree (M. Arch.) is offered by the Department of Architecture. Prospective students should consult the *Graduate College Catalog* and the Department of Architecture for additional information.

Master of Environmental Planning. The faculty in the College of Architecture offer a program leading to the Master of Environ mental Planning degree (M.E.P.) with a major in Environmental Plann ng. Prospective stu dents should consu t the *Graduate College Catalog* and the appropriate department for additiona informat on.

Curriculum

Students seeking the Bachelor of Science in Design degree must satisfactorily complete a curriculum of a minimum of 134 hours as in dicated below:

	Semester Hours
English Proficiency Requirements	6
General Studies requirements	36
Major field of study	92
Minimum total semester hours	134

General Studies Requirements. All College of Architecture undergraduate students are required to complete a minimum of 36 semester hours in General Studies. The minimum re quirements for each area of General Studies are as follows:

	Semester Hours
Humanities and Fine Arts	6
Behavioral and Social Sciences	6
Science and Mathematics	11
General Studies electives	13
Minimum total semester hours	36

College Core Requirements. To obtain an understanding of the fundamentals of Architecture, Design Sciences, and Planning, all students seeking a Bachelor of Science in De sign degree must complete the following courses:

			Semester Hours
DES	100	Introduction to Architecture, Design Sciences, and Planning I	2
DES	101	Introduction to Architecture, Design Sciences, and Planning II	2
DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
DES	161	Sketching and Rendering II	2
DES	221	Des'gn Fundamentals I	3
		Minimum total semester hours	13

Admission

Students are admitted to the College of Architecture upon approval of admission to Arizona State University. A separate admission procedure may be required for entry to all professional and graduate programs sponsored by the departments of Architecture, Design Science, and Planning. Students are advised to consult the appropriate department for details. Students are normally admitted to a professional level program in classes starting each fall semester only.

Transfer Students. It is the policy of the College of Architecture to accept, on a space available basis, transfers from the professional programs of other accredited institutions. A student who has completed the first or second year of a professional program with a substan

tially better than average grade point at an accredited institution may be permitted to transfer into the ASU College of Architecture with advanced standing. A transfer applicant is considered, however, only to the extent that vacancies exist in the relevant professional programs. All conditions for transfer shall be set forth by the respective department at the time of admittance. The amount of credit to be allowed for academic work shall also be set forth at the time of admittance. At a state in stitution, residency may be a factor for admission.

No transfer credit is granted for courses with less than "C" grades. The College reserves the right to deny or reduce credit for particular courses. Grades received in another professional level program are not counted in determining a student's cumulative grade-point average in a College of Architecture pro fessional program.

Graduate Program. For admission to the graduate programs in the College of Architec ture, see requirements and procedures under the respective departments and the *Graduate Catalog*. The general requirements are:

1. Completion of all admission requirements and procedures set forth by the Graduate College and additional requirements of the respective department.
2. Completion of baccalaureate degree and acceptance by the Admissions Committee.
3. Submission and approval of a proposed course of study in a specialization offered by the respective department.

Retention Standards

General. To be eligible to continue in the undergraduate programs in the College of Architecture, a student must successfully com plete each semester according to the standards established for each program.

Code of Professional Student Responsibility. The purpose of this code is to promulgate standards of conduct for students of the College of Architecture, and to establish pro cedures for dealing with violations. As environmental designers, all professional level students are expected to support and maintain the highest professional standards with regard to their individual conduct and their personal and common environments of the College of Architecture during their tenure at this institution. (Code adopted Fall, 1974.)

Undergraduate Professional Studies General Information

The following information pertains to all undergraduate professional programs of the College. Students not currently enrolled in Arizona State University who are interested in pursuing professional studies in Architecture, Design Sciences, or Planning, should contact the Director of Admissions, Arizona State University, Tempe, Arizona 85287. If qualified for University admission, students may apply to the appropriate department of the College of Architecture, requesting acceptance to one of its programs.

Students residing in states other than Arizona, or in foreign countries, are encouraged to consider completing the preparatory requirements at their local institutions. Residency at Arizona State University for this preparatory course work does not alter the separate and selective admission requirements to undergraduate or graduate professional studies in the College's programs, nor does attendance at ASU for preparatory studies guarantee admittance to any of the undergraduate or graduate professional level programs of the College.

General Information

Special Honors at Graduation. At the time of graduation, students with academic distinc tion in the professional programs of the College may be awarded by the University the respective designation *cum laude, magna cum laude,* or *summa cum laude*. Recipients of these awards are selected by the respective department on the basis of graded performance in all college and professional level courses for the length of the particular program.

Special college recognition is also awarded to those students selected by the respective department on the basis of graded performance in required professional level courses only in their particular program.

Employment. It is difficult for professional level students to carry part-time employment while in school. Acceptance of admission to undergraduate studies in the College carries a commitment on the part of the student to an eight-hour day in the College in order that the necessary time will be available for professional studies. However, if there is no other solution to the financial problem, then it is strongly recommended that employment not exceed 10 hours per week, and the department chair be informed.

Financial Aids. A wide variety of financial aids and loan programs are available to students with demonstrated need without regard to race, creed, color, national origin, or sex. For further details consult the University Fi nancial Aids Office.

Advisement. When students initially enter the College of Architecture, advisement is provided through the College academic advisor. Professional level and graduate student re cords are maintained by the respective depart ment chair. Appointments may be made with the academic advisor or the respective depart ment chair to discuss academic records, com pletion of requirements, certification for grad uation, and evaluation of long-term goals. It is, however, the ultimate responsibility of each student to register for and to comp ete all academic requirements of pre professional, professional and graduate level programs, and maintain the minimum scholastic standards set by the respective department and the College. Day-to-day career advisement is available on an unofficial basis from all faculty members; however, all official decisions re garding academic standards and requirements are the responsibility of the appropriate department chair, or Dean of the College.

Advanced Credit Examinations. Advanced credit exams may be taken by persons who be lieve they have already taken courses required in the program. See the University require ments for "Comprehensive Examinations" on page 24 of this catalog. After a review of the student's previous work or experience and if the department's standards and appeals com m'ttee waives the course, then the student shall select as a substitute an advanced professional emphasis elective approved by the chair of the respective department. This must be done in order to complete the total semester hours for graduation. Students must carry the full semester load required for all students in the professional level programs, or file a peti tion for approval by the department chair for a reduced load. In either case, students must maintain a minimum of 12 semester credit hours in order to continue in a professional program.

All advanced credit examinations must be taken before comp etion of the drop-add peri od of the semester in which the course is scheduled to be taken.

Clinical Internships. All students in the pro fessional programs of the College of Architecture are required to participate in a clinical in ternship program during the summer between the first and second professional levels by enrolling in the ASU Summer Sessions program.

A full-time clinical internship earns 3 cred its. Although a student may enroll in more than one internship (subject to the availability of positions), the maximum credit permitted toward graduation is 4 credits unless the Dean of the College individually approves a special honors internship program.

Foreign Study

The College of Architecture maintains active communications with several foreign institu tions offering similar professional course work related to the various programs of this Col lege This opportunity is available for students who wish to pursue professional studies at a foreign institution in lieu of resident course work for up to a maximum of one academic year. Interested students are encouraged to inform their department chair at the earliest possible date of any intentions for foreign study that may be available.

In cooperation with the University Institute of Foreign Study, current exchange programs exist with the Universitat Stuttgart, Kaplerstrasse, West Germany, and the Univer sidad Autonoma de Guadalajara, Guadalajara, Mexico. Other programs for foreign study and foreign exchange are currently being reviewed. Students should consult their respective department chair regarding any new affiliations. Students also may complete the clinical internship requirement in foreign architectural, planning or design sciences offices, upon the approval of the department chair and Dean.

All students are encouraged to consider foreign travel and study for either a semester or an entire academic year. The individual de partments reserve the right to evaluate the content and the student's competency in each of the courses completed at foreign institu tions. Students may be advanced to the next level of a professional program and complete professional degrees without added years of academic work providing complete documentation of work accomplished is received ac cording to a plan of study approved by the department chair and Dean prior to commencing any foreign study.

Grading

Grading policies are in accordance with the University grading system as described on page 34 of this catalog.

Mark of Incomplete (I). A mark of "I" - Incomplete may be given in required courses

only when a student, who is otherwise earning a passing grade, is unable to complete all of the course work because of illness or other serious personal conditions beyond the control of the student. It is the student's responsibility to contact the instructor or the chair of the department in the instructor's absence regarding the completion requirements as set by the instructor.

The instructor of record shall submit to the department chair a "request for incomplete" form at the time the "I" mark is submitted to the registrar on the grade report. If the designated work is in a professional program and is not thus completed within one calendar year, or within such shorter period as may be required by the instructor, the instructor shall change the mark of "Incomplete" to a fai ing grade. If the instructor is no longer available, the Dean may act in his place.

All incompletes in modular and sequential course work in professional programs must be removed prior to the first day of classes for the next semester, or the student will be administratively withdrawn from the required professional courses in which he she may be enrolled. Readmission to these required courses will not be considered until the next time the course(s) is offered and requires petition to and approval of the respective department chair.

Students contemplating graduation should remove an incomplete grade no later than the graduation application date in order to qualify for certification of candidacy.

Withdrawal. The professional programs are modular and sequential. Therefore, a student may not withdraw from one or more required professional courses without being administratively withdrawn from all required professional courses. All required course work at each level must be completed in sequence. Students may withdraw from the College of Architecture or Arizona State University by proper University procedures as stated on page 39 of this catalog. A mark of "W" in all professional level courses in the College of Architecture will be given if passing at the time of withdrawal and if all University procedures have been followed. Otherwise, a failing grade will be submitted to the Registrar's Office.

Examinations. A student may be excused from taking an examination only for health reasons or other serious personal conditions beyond the control of the student. Any excuse shall be submitted in writing and reviewed by the chair, in consultation with the appropriate faculty member, for approval. In unusual cases, and with the instructor's approval, a student may be a owed to take a late or special examination

Retention Standards

To be eligible to continue in any of the College of Architecture's programs, a student must successfully complete each required course in the sequence designated and maintain a grade average (for the professional courses only) of 2.0 or better for each semester completed Any student is automatically designated as being on academic probation by the respective department under the following conditions:

a. failure in (or to complete) any single required professional level course.

b. semester grade average below 2.0.

c. design laboratory grade of D or E.

d. violation of the Code of Professiona Student Responsibility, admission agreement or College or departmental policies or regulations.

Continuation of enrollment shall be contingent upon such terms and conditions as determined for each individual by the respective Department Standards and Appeals Committee.

Any professional student on a probationary status must correct all deficiencies and be eligible for removal from probation by the end of the Summer Session preceding the next level of advancement, or be subject to dismissal from the program by the department. Dismissed students may petition the Standards and Appeals Committee. If granted, continuation in the department will be conditioned on achieving a level of performance higher than the minimum academic standards, as stipulated by the Standards and Appeals Committee, until all terms and conditions determined for each individual case have been satisfied and probationary status is removed.

Any failed course must be successfully completed by a student, in addition to the full course schedule, at the next time the course is offered, including Summer Sessions if available. Any fai ed course must be passed on the second attempt. Failure to do so will result in dismissal from the department program No course in the College of Architecture may be repeated by any student more than once, including replacement or substitute courses

Attendance. Required attendance at classes, laboratories, and seminars is a vital part of professional studies and is an essential element in determining whether a student is in residence for purposes satisfying requirements for

graduation. Admission to the College implies a commitment by the student to an eight hour day in the College. If absences are noted in a particular course, the student will be asked to confer with the department chair; continued absence after such notification may result in a student being administratively withdrawn from the program.

Leave of Absence. Students may request a leave of absence from the College by written petition to the appropriate department chair for periods of one year increments. Leave may be approved for personal reasons, travel, work, or additional study in other disciplines. Students on leave must make written request to the appropriate department chair for readmis sion prior to July 1 for the Fall Semester of the year of return to the program or December 1 for the Spring Semester, in order that a space may be reserved.

Student Projects. The College of Architecture reserves the right to retain any or all student projects for the College's future use.

Resources

Research and Service Foundation Office. The Foundation was established in June, 1958 to provide for enrichment of the programs of the College of Architecture. It supports pro grams relating to environmental research, community service, publications, and continu ing education.

College of Architecture Alumni Association. This association was formed on Septem ber 4, 1974, with the recognition that gradu ates can and should bring to the College a special contribution by acting as liaisons with the College, community, students, and the practicing rofession.

Student Professional Associations. The purpose of the student associations is to assist students with the transition into professional life and to acquaint them with the profession relating to their program of study.

College of Architecture Lecture and Laboratory Courses

The lecture courses numbered DES 100, 101, 200, 201, 313, 314 in design history and theory, and the laboratory courses numbered DES 141, 142, 160, 161, 221, 222 in design fundamentals constitute a block of instruction offered by the College of Architecture to augment other required course work in general and liberal studies. The design fundamentals courses provide preparatory instruction for basic visual design theory and technique necessary for all professional level studies.

DESIGN HISTORY AND THEORY
(Open to all University students)

DES 100 Introduction to Architecture, Design Sciences and Planning I. (2) F, S
Understanding our physical environment through the forms, functions and determinants of society, its continuity with the past and its relation to the developing present.

101 Introduction to Architecture, Design Sciences and Planning II. (2) F, S
Career preparation for the related design professions

200 History of Human Environments I. (3) F
Representative works of western and eastern designed environments, including artifacts, products, technological dev ces, furnishings, buildings, and the development of the city through the medieval period.

201 History of Human Environments II. (3) S
Designed human environments, including their technology and components from the Renaissance to the present day, as represented by western and eastern cu tures.

313 History of Western Architecture I. (3) F, S
Representative works of western architecture, ancient through medieval See APH 313.

314 History of Western Architecture II. (3) S
Architecture of the Renaissance to the end of the 19th century.

348 Theory of Built Environment. (3) N
Intensive study of built environmental forms, their theoretical foundation and relations to social processes. Prerequis te: Advanced undergraduate or professional leve students n the college, or approval of the instructor.

DESIGN FUNDAMENTALS
(Restricted to students admitted to the College of Architecture)

DES 141 Design Graphics. (2) F, S, SS
Elements of orthographic and axonometric projection, perspective, shades and shadows, charts and graphs; photographic theory, graphical mathematics; introduction to basic descript ve geometry for designers.

142 Design Graphics Lab. (1) F, S, SS
Application of photography relating to graphical presentation Two nine-week sessions per semester.

160 Sketching and Rendering. (2) F, S, SS
Free-hand sketching and rendering, light and shade; two po nt perspective. Quick visual presentations of objects and concepts. Lecture/Lab.

161 Sketching and Rendering II. (2) F, S, SS
Re nforcement of quick rendering, fundamentals of perspective, color in various media applied to rendering techniques, and line drawing. Lecture/Lab. Prerequisite: DES 160.

221 Design Fundamentals I. (3) F
Laboratory experiments in spatial organizational systems, 2 D and 3-D composition, human scale and motion, form and color; leading to an understanding of the esthetic, technical and human objectives of the environmental, design professions.

222 Design Fundamentals II. (3) S
Continuat on of DES 221. Discuss on section. Prerequ s te· DES 221

Department of Architecture

PROFESSIONAL PROGRAM

Roger L. Schluntz, Chair

General Information

The professional program in architecture cul minates in the degree, Master of Architecture, normally completed through required courses and approved electives after a minimum of six years of full-time university level studies Ad mission to the professional level is possible either (a) after the completion of two years of a required pre professional studies (minimum of 63 credit hours) at the undergraduate level or, (2) after receipt of a four year degree, Bachelor of Science in Design (with a major in Architectural Studies), or equivalent degree from another school which offers an accredited professional degree in architecture. Transfer or entry into the architecture program cannot be accommodated at other times.

The architecture program at ASU offers an exceedingly high quality and integrated curric ulum of professional studies focused on the de sign laboratory. In addition, it is the presump tion of the faculty that future leaders in the architecture profess'on will successfully combine specialized skills with a broad scope of re lated studies, including course work in the humanities and social sciences

Upper division students are expected to de velop a particular specialization or emphasis in one or more areas including solar and energy conscious design, computer-aided architecture, architectural administration, housing, and building technology.

The professional program reflects an aware ness of the diverse, complex factors affecting the built environment. It attempts to foster the understanding, knowledge, and problem solving skills necessary to meet th's complexity through a systematic as well as scholarly ap proach to understanding technical limitations and state of-the-art developments.

Degree Requirements. The degree, Bachelor of Science in Design with a major in Architec tural Studies, requires a minimum of 134 hours of required and approved course work. Most students will pursue Option A; however. those who intend to eventually seek an advanced degree in either Engineering or Building Technology should fulfill the require ments outlined in Option B

The professional degree, Master of Ar chitecture, requires an additional 60 hours of approved graduate level course work. For detailed information consult the *Graduate Col lege Catalog*

The listed Option A or Option B pre-architecture requirements are normally completed in the first two years of university study. Formal application and acceptance is necessary before admission to the professional level, normally commencing at the third year See application procedures for detailed in formation. Completion of pre-architecture studies does not insure acceptance at the pro fessional level, at which point admission s limited to the space available.

Pre-Architecture and Core Requirements
Department of Architecture
(Option A)

			Semester Hours
		English	
ENG	01	and 102 Freshman Composition	
		OR	
ENG	105	Advanced Freshman Composition AND approved Humanit es and F'ne Arts elective	6
		Humanities and Fine Arts	
DES	100	Intro. to Arch tecture, Design, and Planning I	2
DES	101	Intro. to Arch tecture Des gn, and Planning II.	2
Electives·		Art History, Foreign Languages, Dance History, Engl sh, Humanities, Mus c History, Ph'losophy, Religious Studies .. .	6
History		Theory of Architecture, Design, or Planning.	3
		Social and Behavioral Sciences	
COM	311	Publ c Speak ng OR other approved communication elective	3
ECN	201	or 202 Principles of Econom cs OR approved business course	3
Electives·		Anthropo ogy (ASB , Cultural Geography, H'story, Journalism, Economics, Political Science, Business, Psychology (PGS), Public Affairs, Study of Just ce, Soci ogy.	6
		Science and Mathematics	
MAT	260	Techn cal Calcu us I* ..	3
MAT	261	Technica Ca cu us II OR approved math or statist cs e ective	3

PHY	111	& 113 General Physics I (Recitation and Lab)	4
PHY	112	& 114 General Physics II (Recitation and Lab)	4
CSC	183	Programming in FORTRAN (or other approved programming language)	3
Electives. Anthropology (ASM), Botany, Chemistry, Computer Science, Engineering, Geology, Mathematics, Physical Geography, Physics, Psychology (PSY), Statistics, Zoology			3

Core

DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
DES	161	Sketching and Rendering II	2
DES	221	Design Fundamentals I	3
DES	222	Design Fundamentals II	3
			63

*Requires MAT 115 or equivalent as prerequisite.

Pre-Architecture and Core Requirements
Department of Architecture
(Option B)

			Semester Hours
		English	
ENG	101	and 101 Freshman Composition OR	
ENG	105	Advanced Freshman Composition AND approved Humanities and Fine Arts elective	6
		Humanities and Fine Arts	
DES	100	Intro. to Architecture, Design, and Planning I	2
DES	101	Intro. to Architecture, Design, and Planning II	2
Electives. Art History, Foreign Languages, Dance History, English, Humanities, Music History, Philosophy, Religious Studies			6
History/Theory of Architecture, Design, or Planning			3
		Social and Behavioral Sciences	
COM	311	Public Speaking OR other approved communication elective	3
ECN	201	or 202 Principles of Economics OR approved business course.	3
		Science and Mathematics	
MAT	290	Calculus I	5
MAT	291	Calculus II	5
MAT	274	Differential Equations	3
ECE	383	Probability and Statistics*	(2)
ECE	102	Introduction to Engineering	2
PHY	115	University Physics	4
PHY	117	University Physics Lab	1
PHY	116	University Physics	4
PHY	118	University Physics Lab	1
ECE	210	Engineering Mechanics I/Statics	3
ECE	312	Engineering Mechanics II/Dynamics*	(3)
ECE	313	Introduction to Deformable Solids*	(3)
CSC	183	Programming in FORTRAN	3
		Core	
DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
DES	161	Sketching and Rendering II	2
DES	221	Design Fundamentals I	3
DES	222	Design Fundamentals II	3
			68

*These courses may be taken at the professional level as professional electives; and are not required for application to the Professional Program.

Undergraduate Architectural Studies/ Professional Program

(Pre-Architecture Requirements—a minimum of 63 selected credit hours—must be fulfilled prior to admission of the professional level.)

			Semester Hours
		Third Year	
Fall			
ADE	321	Architectural Design/Process Determinants	3
ATE	361	Building Structures I[2]	3
APH	313	History of Western Architecture I[3]	3
ANP	331	Environmental Analysis and Programming	3
ATE	351	Environmental Control Systems I	3
AVC	301	Architectural Communication I	2
			17
Spring			
ADE	322	Architectural Design/Environmental Determinants	5
ANP	431	Facility Programming and Methods	3
APH	314	History of Western Architecture II[3]	3
ATE	362	Building Structures II	3
		Approved Elective[1]	3
			17
Summer			
ARP	484	Internship	3

Fourth Year

Fall			
ADE	421	Architectural Design/Human & Behavioral Determinants	5
ATE	461	Building Structures III[2]	3
APH	416	20th Century Architecture I	3
ATE	352	Environmental Control Systems II	3
ATE	353	Architectural Construction I	3
			17
Spring			
ADE	422	Architectural Design/Social Determinants	5
ATE	462	Building Structures IV[2]	3
APH	417	20th Century Architecture II	3
ATE	451	Architectural Construction II	3
		Approved Elective[1]	3
			17

Bachelor of Science in Design Major in Architectural Studies *Minimum* 134

[1]Upper division courses with department approval.
[2]Approved substitute courses are accepted from the College of Engineering and Applied Sciences for Option "B" students.
[3]These courses may be completed prior to admission to the professional program.

Admission to the Professional Program: To be eligible for consideration for admission to the professional program at the undergraduate level, the following is required:

1. Completion of all specified pre-architecture studies requirements (a minimum of 63 hours) or equivalents approved by the academic advisor or department faculty.
2. A certificate of admission to Arizona State University. (Note: application to the professional program is separate from and in addition to the required admission to Arizona State University.)
3. A minimum University cumulative grade index (GPA) of 3.0, as well as a 3.0 index based only on the required pre-architecture courses.

In an unusual circumstance, when the admission standard deficiency is slight, written evidence of extenuating circumstances is convincing, and promise for success is evidenced, a student may be granted admission on a provisional basis.

The limited number of spaces available each year will be awarded to applicants evidencing the highest promise for professional success, including evidence of ability and prospect for significant public service. At a state institution, residency may be a factor for admission.

Application Procedures. Those intending to apply to the *professional* program in architecture (at the undergraduate level) should write the academic advisor for the application form well in advance of the application deadline. The following items (all in addition to the documents submitted to the ASU Director of Admissions) are required for the application submission.

These documents must be submitted at one time, bound together in an 8½ x 11" Ful-Vu CB 10 portfolio or an equivalent size presentation binder with plastic sleeves. Items must appear in the following order:

Page 1 - Department application form, completely filled out with page 1 visible.

Page 2 - Department application with page 2 visible.

Page 3 - High school transcripts from all schools attended.

Page 4 - Certificate of ACT, SAT, GRE, or TOEFL test scores, as applicable.

Page 5 - College transcripts from all schools attended showing completion of Pre-Architecture requirements.
(Note: *Final transcripts including the spring semester must be received by the Department* before June 15.)

Page 6 - Copy of Arizona State University Certificate of Admission.

Pages following - Examples showing the level of development of the applicant's graphic skills and creative ability: a) four or five examples of sketches and drawings, b) four or five examples of two or three dimensional designs, c) two or three examples of basic graphic or drafting skills, and d) one or two examples of organizational or creative endeavors. These are minimum requirements.

Additional examples of self-directed skills and creative endeavors that the applicant believes may best represent his or her aptitude also may be included as desired.

When any work is not completely original, the source must be given. When work is of a team nature, the applicant's role in the project should be clearly indicated.

The portfolio will be returned after final admission procedures are completed; provided the applicant encloses a self-addressed return mailer with sufficient prepaid postage, or in person if claimed within one year of submis sion. The College assumes no liability for lost or damaged materials.

Because of space limitations, not all quali fied applicants can be accommodated and the admission process is necessarily selective. While individual interviews cannot be accommodated, applicants are encouraged to submit any additional information which they feel may advance their cause.

All applicants can expect to be informed by letter of final admission no later than July 1. A signed receipt of admission conditions is to be returned to the department within two weeks of acceptance notification.

For the students intending to apply at the graduate level, consult the *Graduate College Catalog* for specific requirements

Application Deadline: The deadline for all completed applications to the professional pro gram, both undergraduate and graduate, is May 1 for the following fall term

Organization and Instruction

The Department of Architecture's professional level program is organized by the faculty un der the direction and administration of the chair. Subject matter within the department is categorized in the following instructional areas.

Architectural Administration and Management. (AAD) develops the organization and manage rial aspects of arch'tectural practice. These studies examine the overall processes relative to management coordination, administraiton procedures, ethics, legal constraints, and the economics of architectura practice.

Architectural Design and Technology Laboratories (ADE) encourage synthesis of the knowledge and understanding the student has gained from previous and parallel course work and from other sources toward the com prehensive design development of architectural projects. The laboratories integrate the needs, limitations and determinants of design prob lems; applying analytical methods and techni cal skills in seeking and comparing alternative solutions for assigned problems.

Architectural Philosophy and History (APH) develops an understanding of architecture as both a determinant and a consequence of man's culture, technology, needs and behavior in the past and present These studies are con cerned with the rationale for the methods and results of design and construction

Architectural Technology (ATE) develops knowledge of the technical determinants, re sources and processes of architecture. These studies are concerned primarily with the sci ence and technology of design and construc tion, including materials, building systems, acoustics, lighting, structural systems, environmental control systems, and both passive and active solar systems.

Environmental Analysis and Programming (ANP) develops capabilities to analyze and program environmental and human factors as preconditions for architectural design. These studies are concerned with the existing and emerging evaluation and analytical methods used by the profession.

Architectural Communications (AVC) provides the student with an opportunity to develop and reinforce visual communication methods in special areas, such as graphics, communications and design.

Architecture Professional Studies (ARP) provides students with residency and off-campus opportunities and educational experience in group and individual studies relative to specific student interest and faculty expertise.

A summer clinical internship in an architect's office under the direction of an approved preceptor and licensed practitioner is required and provides a distinct educational experience. A special honors internship with nat'onally and internationa ly distinguished firms is also available for professional empha sis credit. This requires a separate application to and selection by the College.

The program also provides various required and optional field trips. (Supplemental fees are assessed for these offerings.) In addit'on, sev eral foreign study opportunities are available for honor students

Professional Emphasis Elective Course Work

Each student must complete the required professional elective course work from the fol lowing or approved emphasis areas:

Architectural Office Management
(Also courses in the College of Business Administration.)

Construction Technology and Administration
(Also courses in the Division of Construc tion)

Landscape Architecture
(Also courses in the Departments of Planning, Botany Microbiology and Division of Agriculture.)

Structural Systems Design
(Also courses in the College of Engineering and Applied Sciences.)

Architectural History and Preservation
(Also courses in art history, College of Fine Arts.)

Environmental Research, Analysis and Programming
(Also courses in the Department of Psychology.)
Solar Design and Technology
(Courses in the Department of Planning and in the College of Engineering and Applied Sciences.)
Energy Conservation/Adaptive Reuse
(Also courses in the Department of Planning.)
Housing and Urban Development
(Also courses in the Department of Planning.)
Urban and Regional Planning
Environmental Psychology and Sociology
Interior Architecture
Computer Aided Design
Architectural History and Theory
Advanced Architectural Communications

Architecture

PROFESSIONAL PROGRAM

PROFESSORS:
SCHLUNTZ (ARCH 140), ELLNER, HERSHBERGER, OLIVER, PETERSON, RAPP, WHIFFEN

ASSOCIATE PROFESSORS:
HINSHAW, JAKOB, RUMMELL, SCHEATZLE, SHEYDAYI

ASSISTANT PROFESSORS:
BERTELSEN, CHRISTENSEN, PERRELL

LECTURER:
IKEGAMI

VISITING ASSISTANT PROFESSOR:
BRENTRUP

PROFESSOR EMERITUS:
LOWENSTEIN, STRAUB

ARCHITECTURAL ADMINISTRATION AND MANAGEMENT

AAD 551 Architectural Management I. (3) F
Advanced profess onal management methodology and techniques, including organizationa , egal and economic aspects of professiona practice. Off ce organization, personnel policies, organiz ng and manag ng the production team, scheduling, product on budgeting and control. Prerequis te. approval of nstructor

552 Architectural Management II. (3) S
Advanced production and professional management, including bookkeep ng and cost accounting, record keeping, "fast track" production methods, com prehensive services, advanced production techniques. Selection, negotiations and contracts with outside consultants and cl ents, cost based compensat on and techniques of liab lity loss prevent on Prerequis te. approval of instructor.

553, 554 Construction Administration I, II. (3) F S
See PUD 441 and 442.

555 Architect as Developer. (3) F, S
Development bui ding, rea estate, construction fund ng, and acqu sition and the sources for cap ta . Prerequi site. approval of instructor.

560 Professional Practice I. (3) F
Econom c and contractual aspects of professional prac tice includ ng finance sources, project fund ng, partner sh ps, corporate practice, insurance and adm n stration of building contracts. Prerequ site. ARP 484

562 Professional Practice II. (3) S
Lega and management aspects relating to professional practice, including legal respons b l ties and l abi it es, management of time and people, and account ng and market ng serv ces Prerequis te· AAD 560

ARCHITECTURAL DESIGN AND TECHNOLOGY LABORATORIES

ADE 321 Architectural Design/Process Determinants. (3) F
Fundamentals of arch tectural design, problem solv ng techniques and the design process nvestigation analys s, synthesis and development of des gn projects Lecture, ab and field trips Prerequisite approval of instructor

322 Architectural Design/Environmental Determinants. (5) S
Application of comprehensive env ronmenta determinants toward reso ving human hab tation needs Em phasis on site, climate and other external factors Lecture, lab and f eld trips Prerequisite· ADE 321.

421 Architectural Design/Human and Behavioral Determinants. (5) F
Emphasis on the design of community fac lities, user needs and activ ties. Man and his behavior as a primary architectural determinant Lecture lab and field tr ps. Prerequis tes ADE 322, ARP 484

422 Architectural Design/Social Determinants. (5) S
Programmat c and comprehens ve development of multi bu ld ng complexes re ating to community, cu tural and urban services. Emphasis on societal needs and expectat ons Lecture, ab and field trips Prerequisite ADE 421.

521 Architectural Design/Urban and Spatial Determinants. (5) F
Comprehens ve design with emphasis on med um rise structures n the urban context. Form as a des gn deter minant Lecture, lab and field trips Prerequisite ADE 422

522 Architectural Design/Building Systems. (5) S
Comprehensive design of mu ti story structures Ana y sis of bu ld ng systems as form determinants Econom c feasibility studies of commercial bu ldings Lecture ab and fie d tr ps Prerequisite. ADE 521

621 Architectural Design: Advanced Specialization I. (5) F
Se ected des gn opt ons offered by each section of this course to nc ude comprehensive architectural design and technology of var ous complex bui ding types. Pre requ site. approval of nstructor and cha r.

622 Architectural Design: Advanced Specialization II. (5) S
Comprehens ve design program options in var ous course sections emphasiz ng areas of specia ization, n tegrating major architectura design determ nants Laboratory/ ecture Prerequisite ADE 621

ENVIRONMENTAL ANALYSIS AND PROGRAMMING

ANP 331 Environmental Analysis and Programming. (3) F
Ana ys s of the natural and human environmental deter m nants as the bas s of the programming and des gn of the bu t environment Emphasis on s te and c imate analys s and andscape/space theory Prerequ site pro fessiona leve standing

431 Facility Programming and Methods. 3) S
Programming and des gn methodo og es, including problem seek ng, goa dentificat on, code search ob servat on quest oning descriptive statistics, re at on ship diagrams bra nstorm ng, space al ocat on, and s mu at on as techn ques for process ng nformation for bui d ng design Prerequ s te. profess ona eve standing

433 Building Codes and Ordinances. 3) F, S
See PUD 433

442 Site Planning Principles and Analysis. (3) S
Effects of topography cl mate, energy, zon ng and and scaping upon design deve opment of external spaces Programm ng and anlysis and ntegrat on of architectural des gn to the s te and s te to the region

475 Computer Programming in Architecture. (3) F, S
Computer programm ng with FORTRAN for arch tectura prob ems and appl cations. Lecture ab Prerequi s te· CSC 183 or equiva ent.

477 Computer Applications to Environmental Design Problems. (3) F, S
Use of existing computer programs to solve environ menta and design prob ems Top cs include graph cs, mapp ng, structures reg ona ana ys s, t me management and energy analysis. Prerequisite· approva of nstructor

535 Building Programming. (3) F
Des gn problem def n tion nc uding client interv ews, lit erature rev ew, user needs ana ys s ex st ng bu ding eva uat on, and program preparation. Prerequ site· Th rd Professional Leve in Architecture or approva of nstructor

576 Community Housing. 3) F
H story, pract ces, trends and forms of housing, nc udes growth of publ c programs, national and oca programs, zoning aw, housing d stribut on, p ann ng princ p es and pol c es, design review, standards and private deve opment practice.

577 Housing Environments. (3) S
Contemporary hous ng environments, hous ng types and fe styles as determined by user preference dens ty, deve opment and property standards, cost, commun ty and privacy, secur ty, identity movement and the need for open space

581 Urban Structure and Design. 3) F
The nature and dynam cs of urban zation and its rela t onsh p to architecture and urban des gn; includ ng growth decay, soc al zat on plann ng processes, and visual percept on. Case studies. Prerequis te. professional eve standing.

681 Professional Seminar: Societal Influences of Architectural Practice. 2) F
Exam nation of ega moral, and ethica issues con front ng the pract ce of architecture Alternative approaches n pract ce Assessment of potent al changes n the profession Prerequis te. approval of nstructor.

682 Architectural Theory and Criticism. (2) S
Att tudes of evaluat on of the bu t environment. The philosoph cal basis for aesthet c judgements. Methods and styles of cr ticism and arch tectura journal sm on a comparative basis. Prerequ s te: approval of instructor

ARCHITECTURAL PHILOSOPHY AND HISTORY

APH 300 World Architecture. (3) F S
Exploration of h storica and contemporary built en- v ronments of world civil zat ons as manifestations of cu tura history and responses to env ronmental deter minants

304 American Architecture. (3) N
Arch tecture in the U S. from ear est colonia t mes to present.

305 Contemporary Architecture. (3) N
Europe and America from the foundat ons of the mod ern movement to the present

311 Survey of Mexican Architecture. (2) N
Overview of historical through contemporary example of Mex can architecture, landscape, and urban des gn

313 History of Western Architecture I. (3) F, S
See DES 313

314 History of Western Architecture II. (3) S
See DES 314

441 Ancient Architecture. (3) N
The ancient Mediterranean world, with se ect ve empha sis on major historical comp exes and monumental styles Prerequ site. DES 313 or APH 313

443 Renaissance Architecture. (3) N
Europe and America n the 15th and 16th centuries. Prerequ site DES 313 or APH 313 or DES 314 or APH 314.

444 Baroque Architecture. (3) N
Europe and America from the ate 16th to the m ddle 18th century Prerequisite· DES 314 or APH 314

445 19th Century Architecture. (3) N
Europe and America from neoclassicism to art nouveau. Prerequis te: DES 314 or APH 314

446 20th Century Architecture I. (3) F
Arch tecture n Europe and Amer ca from the foundations of the modern movement to the cu mination of the internat onal sty e Prerequis te. majors only.

447 20th Century Architecture II. (3) S
Deve opments in arch tecture s nce the international style Prerequis te. APH 446.

ARCHITECTURAL TECHNOLOGIES

ATE 351 Environmental Control Systems I. (3) F
Arch tectural des gn mpl cations of so ar radiation, heat and mo sture transfer Trends in env ronmental control and energy consc ous des gn. Passive techn ques to heat, coo and ght Prerequ site: profess ona level stand ng.

352 Environmental Control Systems II. (3) S
Architectura design imp ication ons of HVAC systems. Heating and cool ng loads psychrometrics, the refr geration cyc e, air/water distribution, control systems, energy performance standards and ut lity rates. Two hours ecture, 3 hours laboratory and f eld trips. Prerequisite: ATE 351

353 Architectural Construction I. (3) F
Basic mater als and methods of architectura construction for residentia scaled systems Includes effect of zon ng and code requirements. Prerequisite: profess ona level stand ng.

361 Building Structures I. (3) F
Statics, dynamics and strength of materials. Elasticity of structural materials, properties of sections, elastic stress analysis of determinate structures, computer applications. Preliminary des gn of simple structural systems. Prerequisite: professional level standing.

362 Building Structures II. (3) S
Analys s and design of wood and masonry structural systems and connect ons. Lateral analys s and design, util zing shear wal s and diaphragms n smal structures. Prerequ site· ATE 361

451 Architectural Construction II. (3) F
Select on and employment of materia s and systems ac cording to their nature and the techn ques of the r use, and bas c construction cost estimat ng procedures for arch tects Prerequ s te: ATE 354

456 Architectural Construction III. (3) S
Se ection and employment of appropriate mater als and systems for commercia sca ed facil ties Inc udes effect of zon ng and code considerat ons Basic construct on cost estimat ng procedures. Prerequisite· ATE 451.

461 Building Structures III. (3) F
Analysis, design and deta ling of steel bu ld ngs and frames. Lateral analysis of small r g d and braced frame systems. Prerequisite ATE 362

462 Building Structures IV. (3) S
Analysis, design and detail ng of concrete systems, cons der ng continuity, mu ti-story frames and shear wa ls, and latera ana ysis Computer application of existing programs. Prerequ s te. ATE 461

488 Building Structures V. (3) F
New developments in h gh r se structura systems Effects of wind and seismic forces. Pre im nary analys s, design and deta ling of tall buildings using code require ments and computer app cat ons Lecture/lab Prereq u'site· ATE 462

551 Advanced Building Systems. (3) F
Techniques of analysis for determ ning appropr ate pas s ve and active methods of year around environmental control Case studies and economic ana ysis of energy-effic ent bui dings Prerequisite. ATE 352.

553 Building Systems I. (3) F
Introduction to l ghting, e ectrical, communicat on, plumbing, and acoust cal systems. Prerequis te· ATE 352.

557 Construction Documents I. (3) F
Production of arch tectural working drawings, legal sta tus organization, layout, s te survey plans, sect ons elevat ons, deta s, schedu es, and coordination. Lab oratory/lecture

558 Construction Documents II/Specifications and Cost Analysis. (3) S
Coordination of working drawings with preparat on of construction spec fica ons and cost estimates. Empha s s on alternat ve methods and office procedures Contract conditions, bonds, and bidding procedures. Prerequisite: ATE 557.

563 Soil Mechanics and Foundations. (3) S
Soi character stics, elementary so l mechanics, survey of s te explorat on and lab testing bearing foundations and retaining structures. Prerequ s te ATE 361 or approva of instructor.

582 Building Systems II. (3) S
Continuation of prev ous work with technica problems w th emphasis on mechanical and e ectr cal systems. Prerequ s te: ATE 553

587 Building Systems III. (3) F
Pr nciples of planning and des gn of appropriate env ronmental contro , structura vert cal transportat on and fire protection systems for h gh rise and large bu ld ng complexes. Prerequisites: ATE 352, 582.

ARCHITECTURAL COMMUNICATION

AVC 301 Architectural Communication I. (2) F
Basic graphic skills, drawing conventions, values, graphic symbols and letter ng, sketching and presentat on vocabulary. Two afternoons n aboratory per week. Lecture and f eld trip Prerequisite: profess ona level stand ng

302 Architectural Communication II. (2) S
Cont nuat on of AVC 301. Introduction to theory and ef fects of color Prerequisite AVC 301.

410 Architectural Presentation Techniques. (3) F, S
Spec al techniques of graph c commun cat ons as pre- im nary presentat on tools for the design profess onal. Prerequisite. AVC 301 or approval of instructor.

411 Architectural Watercolor Presentation Techniques. (2) N
ntroduct on of arch tectura presentat on techn ques us ng watercolor as a primary media. Emphas s on color, composition and technique Prerequisite: AVC 301 or approva of nstructor.

444 Architectural Photography. (2-3) N
Use of photography as a means of arch tectural study, evaluation and record. Exper ence with both 35mm camera and darkroom techniques. Lecture/Laboratory. Prerequ s te: approval of nstructor

PROFESSIONAL STUDIES

ARP 451 Architecture Field Studies. (1-6) F, S, SS
Organized fie d study of architecture n specif ed na t onal and international ocations May be repeated with approval of cha r

484 Clinical Internship. (3) SS
Ful -time internship under the superv s on of pract - tioners in the Phoenix area or other oca es.

684 Professional Internship. (2-6) S
F eld exper ence n an architectural f rm specia izing n an area d rect y related to the student's advanced study. ntegrat on of theory and state-of-the-art prac t ces By approval of nstructor only.

Special Courses: APH, ANP, ATE, ADE, AAD, ARP, AVC 294, 484, 494, 498, 499, 500, 580 584 590, 591, 592, 593 594 598, 599 See pages 33 34 Also consu t Univers ty Continuing Education brochures for spec al course offer ngs.

Department of Design Sciences

PROFESSIONAL PROGRAMS

Tom Witt, Chair

Purpose

Professional designers work within areas requiring an understanding of systems, func tions, scientific and technical processes including human factors. They must also in tegrate esthetic considerations into the prod ucts and spaces for which they design.

The Department of Design Sciences serves professional programs of study in industrial design, interior architecture, and design science.

The professional design curricula concentrate and combine fully-integrated lecture, laboratory, and studio course work involving

both individual and team experiences. The curricula are further directed at providing students the skills and facilities required for the practice of design or design-related careers.

All programs assume each student will acquire a broad foundational education and provides for applications of this education. The program thrust is toward acquiring competency in professional skills in a rapidly changing and increasingly competitive technological society.

One summer of clinical internship in design-related activities under the direction of an approved preceptor is required and provides a distinct educational experience.

Organization

The professional programs within the Department of Design Sciences are organized under the direction of the chair. The following majors are offered:

Industrial Design

Interior Architecture

Design Science

Admission. Students are admitted to the Department of Design Sciences upon approval of admission to Arizona State University and the College of Architecture.

Retention Standards. To be eligible to continue in professional programs in the Department of Design Sciences, a student must remain in good standing as established by the university for purposes of retention (see page 36).

Entry into Upper Division Studio Courses. Prior to enrolling in studio courses at the 300 level or above, a student must be in good academic standing and must secure the approval of the faculty in the chosen major.

Application to upper division studio courses within the Department of Design Sciences is a separate process in addition to admission to Arizona State University and the College of Architecture. Students not currently admitted must contact the Director of Admissions to obtain university application forms and procedures. Transfer students admitted by the application deadline of May 1 may apply. All students must have completed the prerequisities for the upper division studio courses as well as all program major requirements for the first two years of the major. Application documents must be submitted to the Department office by May 1, the deadline for application for admission to the fall semester. There are no spring admissions to the upper division studio sequence.

All of the following items must be submitted by the applicant at one time, bound together in an 8½"x11" portfolio binder with plastic sleeves. Items must appear in the following order:

Page 1: Department of Design Sciences application to Upper Division Studio form completely filled out and visible (these are available in the department office or from the academic advisor).

Page 2: Copies of College transcripts from all schools attended, showing completion of all prerequisites and requirements as stipulated for the respective program. (Final transcripts including the spring semester must be received by June 15 for all applicants).

Pages following - Examples showing the level of development of the applicant's graphic skills and creative ability relative to the intended major: a) sketches and drawings, b) two or three dimensional designs, c) basic graphic or drafting skills, and d) organizational or other creative endeavors. The total must not exceed 20 examples and must represent all four areas listed above.

Original examples or slides must not be submitted. All examples shall be photographs or other reproduction graphic media of original work by the applicant.

Application documents remain the property of the department. However, graphic examples may be returned after final admission provided the applicant encloses a self-addressed, return mailer with sufficient prepaid postage or personally signs for return of the examples following the selection date. Examples not so returned will be discarded by the department after one year. The College or the respective department assumes no liability for lost, damaged or discarded materials.

All applicants can expect to be informed of final admission or non-admission on or about July 1. A signed receipt of admission conditions must be returned by the successful applicant and received prior to July 15 to reserve the position in the studio. Alternates will be notified on July 16 of their admission status.

Non-admission to upper-division studio courses does not constitute dismissal from the program. Any student not so admitted may apply in subsequent years without prejudice.

Professional Curricula

Bachelor of Science in Design

A student seeking the Bachelor of Science in Design degree within the Department of De-

sign Sciences must satisfactorily complete a minimum planned curriculum of 134 semester hours.

The program provides various required and optional field trips. (Supplemental fees are assessed for these offerings). In addition, several foreign study opportunities are available for honor students.

Industrial Design

Industrial design is primarily concerned with how humans perceive and use man-made objects, and has been defined as the professional service of creating and developing concepts and specifications that optimize the appearance, function, and value of products and systems for the mutual benefit of both the user and the manufacturer.

This service is often provided in the context of a cooperative working relationship with other members of a development group. The industrial designer's contribution places special emphasis on human characteristics, needs, and interests which require particular understanding of visual, tactile, safety, and convenience criteria. Industrial designers combine these considerations with practical concern for technical processes and requirements for manufacture; marketing opportunities and economic constraints; and distribution, sales, and servicing arrangements.

Structure and Purpose. The Industrial Design program is structured so that students divide each day between the design studio and supportive courses in esthetics, human factors, mechanical and materia technologies. The design studio is taught by a faculty team and allows each student to experience a professional environment. Studio projects anticipate and promote an interdisciplinary approach to solving design problems. Students begin by developing an intellectual base which is concerned with the history, philosophy and direction of industrial design. Studio problems proceed from small consumer products with simple task functions to larger and more complex forms and systems.

Student designers progress through the total product design process which includes: problem analysis and statement, concept ideation, final product development, presentation and packaging.

Former graduates have accepted entry level positions for product design and packaging in the following areas consumer products, transportation, electronics, medical devices and health products, recreational products, and materials application.

Professional Studies—Required Courses

Industrial Design

		First Year	Semester Hours
Fall			
ENG	101	Freshman Composition	3
COM	110	Personal Communication	3
MAT	115	College Algebra and Trigonometry	4
DES	100	Introduction to Architecture, Design Science and Planning I	2
DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
			16
Spring			
ENG	102	Freshman Composition	3
PHY	111	General Physics	3
PHY	113	Laboratory	1
CSC	181	Basic	3
DES	101	Introduction to Architecture, Design Science and Planning II	2
DES	161	Sketching and Rendering II	2
		Approved Program Elective	2
			16

Second Year

Fall			
DSC	222	Color Sketching	3
DSC	224	Color	3
DSC	316	20th Century Design I	3
DSC	342	Materials	3
DES	221	Design Fundamentals	3
PSY	100	Introduction to Psychology	3
			18
Spring			
DSC	317	20th Century Design II	3
DSC	343	Material Processes	3
ECN	202	Principles of Economics	3
		Approved Program Elective	3
		General Studies Elective	3
			15

Third Year

Fall			
DSC	344	Human Factors in Design	3
DSC	354	Mechanics of Materials	4
DSC	360	Design Methodology and Techniques	5
		Approved Program Elective	3
		General Studies Elective	3
			18

Spring

DSC	323	Imaging and Presentation for Visual Designers	3
DSC	361	Concept Development	5
DSC	440	Plactics Design	3
DSC	443	Value Analysis	2
		General Studies Elective	3
			16

Summer

DSC	484	Internship	3

Fourth Year

Fall

DSC	420	Graphic Design	3
DSC	460	Unit Analysis and Design	5
DSC	470	Professional Practice for Industrial Design	3
DSC	474	Design Project	3
		General Studies Elective	3
			17

Spring

DSC	431	Package Design	3
DSC	441	Product Liability	2
DSC	461	Systems Synthesis and Design	5
DSC	475	Design Project	3
		Approved Program Elective	3
			16
		Total Credit Hours	135

General Studies Requirements for Industrial Design

Humanities and Fine Arts

COM	110	Personal Communication	3
DES and	100 101	Introduction to Architecture, Design Science and Planning I, II	4

Social and Behavioral Science

PSY	100	Introduction to Psychology	3
ECN	202	Principles of Economics	3

Science and Mathematics

MAT	115	College Algebra and Trigonometry	4
PHY	111	General Physics	3
PHY	113	Laboratory	1
CSC		Basic	3
		General Studies Electives	12
		Total	36

Interior Architecture

The professional activities of the interior architecture graduate have expanded during the last two decades to address more complex and dynamically changing social-environmental situations.

In collaboration with allied professions, interior architects and designers are now in the unique position to respond to the needs of people. As a young and dynamic profession, it is assuming an increasingly broader commitment to society in humanizing man's leisure, living and working spaces.

The program is structured with the primary mission to educate designers who will be qualified to assume responsible leadership roles in the continuing growth of the profession, and in improving the quality of man's immediate environment by constructively relating the design process to the life process.

Graduates from the program are qualified to practice interior architecture and design in a variety of specialized areas. These include institutions, corporations, sales, space planning, architecture offices, industry and government. Students expecting to pursue graduate studies will also be prepared to develop advanced specializations in related professional areas.

Professional Studies—Required Courses

Interior Architecture

First Year

			Semester Hours
Fall			
ENG	101	Freshman Composition	3
COM	110	Personal Communication	3
MAT	115	College Algebra and Trigonometry	4
DES	100	Introduction to Architecture, Design Science and Planning I	2
DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
			16
Spring			
ENG	102	Freshman Composition	3
PHY	111	General Physics	3
PHY	113	Laboratory	1
CSC	183	Programming in FORTRAN	3
DES	101	Introduction to Architecture, Design Science and Planning II	2
DES	161	Sketching and Rendering II	2
		Approved Program Elective	2
			16

Second Year

Fall			
DSC	246	Interior Architectural Programming	3

DES	221	Design Fundamentals I	3
DSC	316	20th Century Design I	3
DSC	344	Human Factors in Design	3
		Approved Program Electives	3
		General Studies Elective	3
			18

Spring

DSC	220	Interior Architectural Rendering	3
DSC	224	Color	3
DSC	317	20th Century Design II	3
		Approved Program Electives	3
		General Studies Elective	3
			15

Third Year

Fall

DSC	340	Interior Materials Performance Criteria I	3
DSC	346	Interior Architectural Material	3
DSC	364	Human Habitation Space Design	5
DSC	416	History of Interior Architecture I	3
ATE	353	Architectural Construction I	3
			17

Spring

DSC	321	Interior Architectural Documents	3
DSC	341	Interior Materials Performance Criteria II	3
DSC	365	Community Space Design	5
DSC	417	History of Interior Architecture II	3
DSC	458	Interior Architectural Lighting	3
			17

Summer

DSC	484	Internship	3

Fourth Year

Fall

DSC	457	Interior Architectural Acoustics	3
DSC	464	Commercial Space Design	5
DSC	472	Professional Practice for Interior Architecture	3
PGS	306	Environment Psychology	3
		Social and Behavioral Science Elective	3
			17

Spring

DSC	455	Environment Control Systems	3
DSC	465	Institutional Space Design	5
		Approved Program Electives	3
		Social and Behavioral Science Elective	3
		General Studies Elective	3
			17

Total Credit Hours....135

General Studies Requirements for Interior Architecture

Humanities and Fine Arts

COM	110	Personal Communication	3
DES and	100 101	Introduction to Architecture, Design Science and Planning I, II	4

Social and Behavioral Science

PGS	306	Environmental Psychology	3
Elective			6

Science and Mathematics

MAT	115	College Algebra and Trigonometry	4
PHY	111	General Physics	3
PHY	113	Laboratory	1
CSC	183	Programming in Fortran	3
		General Studies Electives	9
		Total	36

Design Science

Design Science as a primary program of study combines those areas of concentrations in de sign studies that are generally more interdisciplinary in program construction and have a stronger technical and science bias. Depending upon the concentration area followed, additional course work is substituted in place of the professional level laboratory requirement. Otherwise the program requirements, including the total number of hours required for graduation, is the same as in all other programs within the department. Specific require ments are to be determined and approved in consultation with the chair of Design Sciences and a faculty member representing the proposed related area of concentration.

The design science program has developed certain distinct concentration areas which are typical but not intended to be exclusive: tech nical management, computer-aided design and human factors in design.

Technical Management Concentration. The primary objectives of the technical management field of specialization are: 1) preparation for entry level positions leading to policy level management in manufacturing/produc tion enterprises, and 2) satisfactory completion of Master of Business Administration entrance requirements. This field requires a basic background in mathematics, applied science and production design; basic business tools and skills, and an understanding of business procedures; and an area of emphasis in design,

value analysis, management or marketing. Other areas of concentration may be elected with the approval of the Department of Design Sciences. The management concentration will consist of 24 semester hours structured to attain entry level capability in such areas as design, product planning, product value analysis, industrial sales, product service, industrial purchasing, budget administration, production management, etc. The specialization is constructed with approximately 20 percent each in business, design, mathematics and applied sciences, communication and general studies, and an elected area of emphasis. Technical management will be of interest to students seeking management in a product producing industry where understanding of the technical aspects of product or production is essential.

Human Factors Concentration: In recent decades man-made products and systems have reflected a significant emphasis on placing greater reliance upon systematic research as the basis for developing principles and data to be applied in human factors design. As a result, there is a growing need for design practitioners who possess in-depth knowledge of human factors process and application. The independent study program allows the qualified student to develop a program of study which anticipates and supports the various components that provide a basis and structure for human factors design. These would include: industrial design, statistical analysis, bio-mechanics, behavioral psychology and other selected subjects.

Computer Graphics Concentration: The computer graphics emphasis will provide the student with a working knowledge of computer-aided design (CAD) as it applies to industrial design. Plans and evaluations of products may be digitized into the graphics system. Perspectives, rotations, stacking and scaling routines enable the designer to see the proposed product from many viewpoints instantly.

Design Sciences

PROFESSIONAL PROGRAMS

PROFESSOR:
REZNIKOFF
ASSOCIATE PROFESSORS:
WITT (Arch 141), BENZINGER, BUSH, KNIGHT, KROELINGER, NIELSEN
ASSISTANT PROFESSORS:
QUESADA, SADLER
VISITING PROFESSOR:
SHIPLEY

DESIGN SCIENCES

DSC 220 Interior Architectural Rendering. (3) F
Graphic representation methods used to describe and analyze space, emphasis on quick presentation techniques. Prerequisites: DES 161, 221; six hours studio.

222 Color Sketching. (3) F, S
Felt markers; quick representational and concept communication sketching. Forms in space; light and shade; material reflectance properties. Prerequisite: DES 161; six hours studio.

224 Color. (3) F, S
Theory and practice of basic color concepts, color systems, color relationships, psychology of color, color in industry. Prerequisite: DES 161; six hours studio.

246 Interior Architectural Programming. (3) F
Design programming and methodologies for interior architecture; emphasis on user needs and behavior as a basis for design. Three hours lecture, field trips.

316 20th Century Design I. (3) F
Modern European and American design from 1900 to 1940. Emphasis on transportation, product, furniture, exhibition and graphic design.

317 20th Century Design II. (3) S
Modern European, Asian and American design since 1940. Emphasis on transportation, product, furniture, exhibition and graphic design.

321 Interior Architectural Documents. (3) S
Contract documents, specifications, schedules and bidding procedures. Prerequisite: DES 221.

323 Imaging and Presentation for Visual Designers. (3) S
Technique of product presentation for portfolio and corporate communication. Methods include advanced technology for concept, information dissemination, including computer imaging. Prerequisites: DSC 221, CSC 181.

340 Interior Materials Performance Criteria I. (3) F
General analysis of interior architectural materials and performance criteria. Prerequisite: DES 221.

341 Interior Materials Performance Criteria II. (3) S
Codes and regulations as performance criteria for interior architecture. Prerequisite: DSC 340.

342 Materials. (3) N
Materials application in design. Characteristics and properties of ferrous and nonferrous metals, plastics and elastomers.

343 Material Processes. (3) S
Industrial processing as applied to low, medium and high volume manufacturing. Basic and secondary pro-

cessing, fastening and joining, coding, quality control. (also listed as MET 343) Prerequisite: DSC 342.

344 Human Factors in Design. (3) N
Man machine environment systems, human characteris tics and behavior applied to des gn of products, sys tems and their operating environment.

346 Interior Architectural Materiel. (3) S
Installation procedures, measurement and cost estimating.

354 Mechanics of Materials. (4) F
Vectors, force systems, frict on, equilibrium, centroids and moment of inertia. Concepts of stress, stra n, and stress analysis appl ed to beams, columns, and com bined loading (also l sted at MET 354) Prerequisites PHY III, MAT 115.

355 Mechanical Design I. (4) S
Linkages; cams; dimensions determ nation, stress concentration, fasteners, springs, screws

356 Mechanical Design II. (4) F
Couplings, clutches, brakes, gears, bearing; lubr cat on Prerequisite· DSC 355

360 Design Methodology and Techniques. (5) F
Acquaints the student with methods of visual th nking, conceptualization, and ideat on while building ski l leve s in professional design presentation techniques Prereq uisite. departmental approval. Ten hour studio

361 Concept Development. (5) S
Emphasis on developing ideas into a complete func tional product, including survey and app ication of esthetics, human factors, materia s and manufacturing Prerequ site DSC 360. Ten hour studio

363 Interior Plant Materials. (3) N
Use of plant materials to enhance the qua ity of human spaces; use of exterior spaces as extension of inter or spaces. One hour lecture, 4 hour stud o.

364 Human Habitation Space Design. (5) F
Studio problems in inter or architecture related to behavioral response in personal and sma l group spaces for static and mobile situations. Prerequ site· departmental approval. Ten hour stud o.

365 Community Space Design. (5) S
Studio problems in 'nterior architecture related to human privacy; emphasis on issues of public and pri vate use of interior spaces. Prerequisite. DSC 364 Ten hour studio.

367 Electronic Packaging. (3) F
Industrial design problems in packaging e ectronic devices. Emphasis is placed on packaging, displays, and controls. Prerequisite· approval of instructor

416 History of Interior Architecture I. (3) F
Historic design to 1700 as it affects interior architectural space: adaptation, restoration, preservat on for res dential, commercial, and institutional inter'ors

417 History of Interior Architecture II. (3) S
Continuation of DSC 416 with emphasis on historic design from 1700 to the present. Prerequisite. DSC 416 or equivalent.

420 Graphic Design. (3) F
Visual design relating to products, packag ng, disp ay and s gnage. Mixed media. Prerequ site· DSC 323. Six hour studio.

431 Package Design. (3) S
Esting consideration of conta ning, protecting and promoting a product through packaging. Prerequisite· DSC 420. Six hour studio

440 Plastics Design. (3) S
Mold design for part requirements; molded holes, threads; inserts; fastening and joining, decorating; extrusion design, re nforced plastics. Prerequis te· DSC 224.

441 Product Liability. (2) N
Manufacturer s liabil ty. Statutes, regulations and com mon law rules. role of expert w tnesses; insurance and product safety programs.

443 Value Analysis. (2) N
Critica invest gation of funct ons, cost and des gn manufacturing interface in component development. Case h stories

447 Programming for Public Health and Safety. (3) N
Analysis of publ c health and safety requirements for the bu lt environment. Code requ rements, legal procedures, research findings

455 Environmental Control Systems. (3) S.
Methods of spec fying and constructing systems wh ch control the sensory input from the ambient environ ment Prerequis tes. MAT 115, PHY 111, 113 and senior status

457 Interior Architectural Acoustics. (3) S
Physical properties of sound Ref ect on, absorpt on and d ffraction of sound waves. Sound-absorption mater als and constructions. Room acoust cs and resonance dif fus on and decay of sound. Optimum reverberation time. Acoustical defects and how to avoid them. No se transmission. Prerequis tes MAT 115, PHY 111 113, and senior status

458 Interior Architectural Lighting. (3) F
L ght as an aspect of nterior architectura design Developing br ghtness relationsh ps in interna spaces, ap pra sa of a ternat ves Day ght and electric l ght as a single system Evaluation of light sources for d str bu tion, co or and cost Prerequis te senior status

460 Unit Analysis and Design. (5) F
Complete analysis of the product un t as an element of mass production emphasizing market ng, packag ng, cost development, esthet cs and detail ng Special at tention to professional presentation. Prerequis te DSC 361 Ten hours stud o

461 System Synthesis and Design. (5) S
Product des gn w th emphasis n systems nteract on Culmination of des gn process and techn que ndiv dual project direct on is encouraged. Prerequ site DSC 460 Ten hours stud o.

464 Commercial Space Design. (5) F
Studio problems in nterior architecture re ated to com merc al spaces such as restaurants, stores, bus ness off ces, banks and hotels Prerequis tes. DSC 365 Ten hours stud o

465 Institutional Space Design. (5) S
Studio problems in interior architecture related to inst - tutional spaces such as schools, hosp ta s, and health care faci it es. Prerequ site. DSC 464 Ten hours stud o

470 Professional Practice for Industrial Design. (3) F
Business procedures, management techn ques, ac counting systems eth cal and lega respons bil ties of the design professions Prerequis te. senior status. May be repeated for credit

472 Professional Practice for Interior Architecture. (3) F
Bus ness procedures, project control, fee structures, professional product liabilities Prerequis tes, sen or sta tus.

474 Design Project. (3) F
Large-scale nterdisc pl nary class project involving project p anning and control, design, prototype devel opment, feasibility study and report ng. Prerequisites· senior status and approval of instructor

475 Design Project. (3) S
Design final zat on, mode f na techn ca and summary reports, graph cs, oral presentat on of results. Prerequ - site DSC 474

484 Internship. (3) SS
Fu -t me summer nternsh p under superv sion of pract tioners n the Phoen x area or other ocales. Prerequ s'te· approval of instructor

518 Interior Architecture Adaptive Re-use. (3) S
Se ected case stud es of spec f c techn ques and pro cesses used n the renovation of nterior spaces of ex- st ng structures for cont nued use or adaptive re-use. Prerequisite DSC 416 417.

519 Historic Restoration in Interior Architecture. (3) F
Se ected case studies of spec f c techniques and pro cesses used n the restoration of h storical y s gn f cant nterior spaces. Prerequisites· DSC 416, 417

552 Computer Applications for Interior Architecture. (3) F
Conferences and workshops directed toward the use of computer technology in the design process for space p anning.

553 Computer Applications for Industrial Design. (3) F
Conferences and workshops directed toward the use of computer technology n the deve opment of products for mass product on

554 Computer Applications for Design Science. (3) S
Conferences and workshops d rected toward the use of computer technology in the students area of specia ization.

558 Daylighting. (3) SS
Day ighting as a des gn determ nant; concepts, tech- niques methodology, experiments and case stud es.

Special Courses: DSC 294, 484 494, 498, 499, 500, 580, 584, 590 591, 592, 593, 594, 598, 599. See pages 33-34. Also consult Un vers ty Cont nu ng Educat on brochures for specia course offering

Department of Planning

James W. Elmore, Chair

Purpose

The Planning Department provides educa tional preparation for careers relating to urban and regional planning, landscape architecture, housing and urban development and energy planning and technology.

Three undergraduate programs lead to the four year degree Bachelor of Science in De- sign (B.S.D.) with majors and concentrations as described below. Each seeks to prepare its graduates for 1) employment in the area of its focus, and 2) entrance into a professional graduate program at ASU or elsewhere. Two graduate programs lead to the two-year degree Master of Environmental Planning (M.E.P.).

Organization

The programs are organized under the direc- tion of the chair and are administered by fac ulty coordinators responsible for each ma- jor concentration.

Bachelor of Science in Design

Each of the Bachelor of Science in Design programs has two two year segments. The pre professional requirements of the first two years are common for all three programs. They are listed immediately below and these are fol lowed by the separate professional level re quirements of each major concentration of the degree program.

Pre-professional and Core Requirements

			Seme ter Hours
		English	
ENG	101	& 102 Freshman Composition OR	
ENG	105	Advanced Freshman Composition and approved Humanities and Fine Arts electives.	6
		Humanities and Fine Arts	
DES	100	Intro to Arch'tecture, Design and Planning I	2
DES	101	Intro to Architecture, Design and Planning II.....	2
		Electives: Art History, Foreign Languages, Dance History, English, Human ties, Music H'story, Philosophy, Religious Studies.....	6
		Social and Behavioral Sciences	
COM	311	Public Speaking OR other approved communication elective	3
ECN	202	Principles of Economics OR approved business course	3
		Electives: Anthropology (ASB), Cultural Geography, History, Journalism, Economics, Political Science, Business, Psychology (PGS), Public Affairs, Study of Justice, Sociology...	6
		Science and Mathematics	
MAT	115	College Algebra and Trigonometry	4
PHY	111	& 113 General Physics I (Recitation & Lab) OR other approved laboratory science..	4
CSC	183	Programming in FORTRAN (or other approved programming language)	3

E ectives: Anthropology (ASM), Botany, Chemistry, Computer Science, Engineering, Geology, Mathematics, Physical Geography, Physics, Psychology (PSY), Statistics, Zoo ogy 6

Other General Studies

Electives Selected from the electives listed above for Humanities and Fine Arts, Social and Behavioral Sciences, Science and Mathematics 8

Core

DES	141	Design Graphics	2
DES	160	Sketching and Rendering I	2
DES	161	Sketching and Rendering II. ..	2
DES	221	Design Fundamentals I	3
DES	222	Design Fundamentals II	3
		Total..	65

Major: Urban Planning

Concentration: Landscape Architecture (PLA)

Explores the reasons for and the techniques in volved in the analysis, planning and design of the exterior environment, both natural and man-made. Focusing on a series of studio courses, the program also provides various re quired and optional field trip experiences and a summer internship. The required courses are:

Junior Year

			Semester Hours
Fall			
AVC	410	Architectural Presentat on Techniques...	3
CEE	341	Surveying..	3
PLA	301	Introduct on to Landscape Architecture..	3
PLA	361	Landscape Design I.....	6
PUP	301	Introduction to Urban Planning OR.....	3
PUP	403	Interdisciplinary Urban Planning	18
Spring			
ENG	301	Writing for the Professions.....	3
GPH	372	Air Photo Interpretation	3
PLA	362	Landscape Design II	6
PLA	431	Landscape Construction and Materials.....	3
PLA	432	Plant Materials	3
			18
Summer			
PLA	484	Clinical Internship.....	3

Senior Year

			Semester Hours
Fall			
AAD	560	Professional Practice I	3
PLA	411	History of Landscape Architecture	3
PLA	461	Landscape Design III	6
PLA	463	Landscape Construction Documents I	3
			15
Spring			
ERA	325	Soils.....	3
PLA	462	Landscape Design IV.....	6
PLA	464	Landscape Construction Documents II....	3
		Approved Elective	3
			15

Total Semester Hours

Pre-professional Studies.....	65
Professional Level Program	69
	134

Major: Urban Planning

Concentration: City Planning (PUP)

Exposes the student to the theories, methods and interdisciplinary concerns of the urban planning profession and the related area of urban design. Including a summer internship, the required courses are:

Junior Year

			Semester H urs
Fall			
GLG	300	Geology of Arizona	3
GPH	371	Cartography.	3
PLA	301	Introduction to Landscape Architecture....	3
PUP	301	Introduction to Urban Planning	3
SOC	332	The Modern City.....	3
ENG	301	Writing for Professions	3
			18
Spring			
ECN	401	Intermediate Price Analysis.... .	3
TRA	405	Urban Transportation	3
GCU	361	Urban Geography	3
GPH	372	Air Photo Interpretation.	3
HIS	420	American Urban H story	3
REA	441	Real Estate Land Development...	3
			18
Summer			
PUP	484	Clinical Internship..... ..	3

Senior Year

Fall			
MAT	420	Introductory Applied Statistics	3
POS	410	Urban Government and Politics	3
PUP	403	Interdisciplinary Urban Planning	3
PUP	412	Urban Planning Theory	3
PUP	494	Planning, Society and the Law	3
			15
Spring			
DEH	472	Housing and Society	3
PUP	401	Urban Design	3
PUP	414	History of the City	3
PUP	421	Quantitative Methods	3
PUP	474	Urban Development Planning Applications	3
			15

Total Semester Hours

Pre-professional Studies	65
Professional Level Program	69
	134

Major: Housing and Urban Development (HUD)

Provides familiarity with housing technology, planning and development in both the public and private sectors. (Optional concentrations in Housing Development, Commercial Development and Tourism and Resort Development are being considered.) A summer internship is optional. The required courses are:

Junior Year

			Semester Hours
Fall			
ACC	211	Elementary Accounting	3
ATE	353	Architectural Construction I	3
MGT	301	Principles of Management	3
PLA	301	Introduction to Landscape Architecture	3
PUP	403	Interdisciplinary Urban Planning	3
REA	251	Real Estate Principles	3
			18
Spring			
ACC	212	Elementary Accounting	3
ATE	451	Architectural Construction II	3
ECN	202	Principles of Economics	3
FIN	300	Fundamentals of Finance	3
MKT	300	Principles of Marketing	3
REA	331	Real Estate Finance	3
			18
Summer (Optional)			
PUD	484	Clinical Internship	3

Senior Year

Fall			
ADS	305	Business Law	3
CON	383	Building Construction Estimating	3
PUD	355	Housing Systems I	3
PUD	433	Building Codes and Ordinances	3
PUD	441	Construction Administration I: Housing	3
			15
Spring			
DEH	472	Housing and Society II	3
PUD	356	Commercial and Housing Systems II	3
PUD	442	Construction Administration II: Commercial	3
PUP	494	Planning, Society and the Law	3
REA	441	Real Estate Land Development	3
			15

Total Semester Hours

Pre-professional Studies	65
Professional Level Program	66
	131

Advisement

Information and advisement on all programs is offered by the College through the academic advisor as well as by the department through its chair and faculty. It is advisable to call in advance for information and appointments.

Application and Admission

Admission to any of the programs of the department requires the completion of certain requirements and procedures as follows:

To the University: See requirements and pro cedures given in the section titled "Undergraduate Admission" beginning on page 18.

To the College of Architecture, the Department of Planning and its pre-professional program: Admission is automatic if it is requested on the application and admission to the University is granted.

To the studio course DES 221 Design Fundamentals in the second year of the pre-professional program: Admission requires a cumulative GPA of 2.50.

To any of the B.S. in Design programs at the third year level: Admission is granted by a departmental selection committee based on availability of facilities and on the number and qualifications of applicants as determined by completed applications on hand by May 1 for fall admission. A GPA of 3.0 may be required in the 65 semester hour pre-professional program.

Application Documents

Forms for admission to any of the professional programs of the department may be obtained from the Planning Department or from the academic advisor's office.

Along with other information as described below, they are to be submitted to the de partmenta office bound together in an 8 "xll" Ful Vu CB-10 portfolio or an equiv- a ent presentation binder. Items must appear in the following order:

Page 1 Application form for undergraduate professional level programs, completely filled out with page 1 visible.

Page 2 Application form with page 2 visible

Page 3 High school transcripts from all schools attended.

Page 4 Certificates of ACT, SAT or GRE test scores, whichever are applicable.

Page 5 - College transcripts from all schools attended, showing completion of pre-professional requirements. *Final transcripts including the Spring Semester must be sub mitted and accepted by June 15* for all ap plicants.

Page 6 Names and addresses of persons who are supplying letters of recommendation for their app ication. These letters of recommen dation are to be sent directly to the depart ment cha'r to arrive by June 1.

Page 7 Blank for letters when received.

Page 8 - Copy of Arizona State University Certificate of Admission.

Pages following - Examples showing the level of development of the applicant's graphic skills and creative ability. a) four or five examples of sketches and drawings, b) four or five exam ples of two or three dimensional designs, c) two or three examples of basic graphic or drafting skills, and d) one or two examples of organizational or creative endeavors.

Additional examples of self directed skills and creative endeavors that the applicant be lieves may best represent his her aptitude also may be included as desired. Original examples or slides *must not be submitted.* All examples shall be photographs or other reproduction graphic media of *original* work by the ap- plicant. Application documents remain the property of the department. However, graphic examples may be returned after final admis- sion provided the applicant encloses a self addressed, return mailer with sufficient pre- paid postage or personally signs for return of the examples following the selection date. Ex amples not so returned will be discarded after retention for one year. The department as sumes no liability for lost or damaged mate rials.

Application Deadlines

Admission occurs only in the fall. Application documents must be received in the Depart- ment of Planning office by these dates·

May 1	- Portfolio as described above
June 1	Letters of recommendation
June 15	All transcripts including Spring Semester just completed

Inquiries

For further information on both pre-professional and professional level studies offered by the department contact· Academic Advisor, College of Architecture, Arizona State University, Tempe, Arizona 85287. For further information on admissions to Arizona State University, contact: Office of the Di- rector of Admissions, Arizona State Universi ty, Tempe, Arizona 85287.

Master of Environmental Planning

Two distinct areas of concentration are provid- ed in programs for the Master of Environ mental Planning (M.E.P.) degree· 1) Building Design, and 2) Human Settlement in Arid Re gions. Each of these two year programs has these minimum requirements.

	Semester Hours
Basic Program	24
Advanced Program	
Required courses	18
Approved electives	6 12*
Research Project or Thesis	6
	30 36
Total	54 60

*6 semester hours additional course work required with research project opt'on

The 24 semester hour basic program, or por tions of it, may be waived for students having completed equivalent work in their bac- culaureate or other programs For further in formation, see the *Graduate College Catalog.*

Courses on the following pages designated with an asterisk are General Studies courses open to any student of the University meeting the stated pre/corequisites and may be recog- nized in other colleges' programs of General Studies.

Planning

PROFESSIONAL LEVEL PROGRAMS

PROFESSORS:
ELMORE (Arch 135), BOYLE, BURGESS, COOK, MUMMA

ASSOCIATE PROFESSOR:
LAI, LARSON, SCALISE

ASSISTANT PROFESSORS:
FELLOWS, KIM

PROFESSOR EMERITUS:
YELLOTT

URBAN PLANNING

PUP 300 The Planned Environment (3) F, S
Esthetic, social, economic, pol tical and other factors n-fluenc ng urban development in the 20th century.

301 Introduction to Urban Planning. (3) F SS
Theoret cal and practical aspects of city p ann ng, em phasizing urban des'gn nterre at onsh ps between physica p anning government and soc ety See CEE 371

401 Urban Design. (3) F
Ana ys s of the v sua and cultura aspects of urban design. Theor es and techn ques applied to selected study models.

403 Interdisciplinary Urban Planning. (3) F
Basic theories and methods of urban planning w th introduction to substant ve ssues of concern to urban planners V s ting lecturers

414 History of the City. (3) S
The c ty from its ancient or g ns to the present day emphasiz ng the c ties of Europe and Amer ca dur ng the last f ve centur es.

421 Quantitative Methods. (3) F S
Too s usefu for urban plann ng research; emphasis on demographic ana ys s and survey methods, nc ud ng samp ing questionna re construction, research des gn and data ana ys s.

442 Preservation Planning. (3) S
Pr ncip es and practices in p anning for preservat on conservation and ne ghborhood redevelopment Em phas s on evaluation of h stor c resources Off campus fie d pract cum required Prerequ s te approva of n-structor.

451 Field Studies. 1 6 F, S SS
Organized field study in spec f ed national and nterna-tiona ocations. May be repeated for cred t

474 Urban Development Planning Applications. (3) S
Applied methods and processes in and deve opment plann ng Feasibi ity research, env ronmental des gn, engineer ng, hous ng, and transportat on planning. Field tr ps.

484 Clinical Internship. (3) SS
Ful -t me internship under the supervis on of practi tioners n the Phoen x area or other locale

511 Planning, Society, and the Law. (3) F
Law as a determinant of urban planning and deve op ment both in h story and n the context of present laws on po ice power, eminent doma n, tax po icy, and governmenta programs.

546 Planning and Development Control Law. (3) S
Case studies of the law affecting land development and public planning. Police power and eminent domain, zoning, subdivision contro s, official mapping, urban renewal, housing, design controls, historic preservation, and exclusionary practices.

572 Interdisciplinary Urban Planning Practicum I. (3) S
Comprehensive planning workshop dealing with actual problems in an Arizona community. Data gathering and analysis, formulation and recommendation of alternative plans, policies, and strategies. Inclus ve of inter related social, economic, phys cal, and governmental considerations Field trips Interdisciplinary, open to upper class and graduate students with approval of the nstructor

574 Interdisciplinary Urban Planning Practicum II. (3) N
Interdisc plinary workshop emphasizing arge-scale, phys ca project plann ng n an urban, new community, regional context, with deve opment by either a pub ic agency or private enterprise. Development feasibility, urban and landscape design, hous ng, transportation, engineering, ecology, and regional p anning Field trips. Open to upperc ass graduate students with approval of the instructor.

671 Urban Statistical Analysis. (3) F
Quantitative analysis in the urban context, demographic ana ys s, data process ng, planning appl cation and urban systems

672 Land Economics. (3) S
Economic determinants for urban and regional plan n ng; analytical techniques, elementary market analysis and feasibi ity stud es; economic incentives in urban planning

HOUSING AND URBAN DEVELOPMENT

PUD 355 Housing Systems I. (3) F
H stor cal development of preassembled, pre-coord nated, machine-produced building technologies; future trends n ndustria ized bu lding technology Field trips

356 Commercial and Housing Systems II. (3) S
Pr nc ples and uses of performance specificat ons; prefabrication, transportation, coordinat on; cost-estimating and activity scheduling techn ques for ndustrialized housing systems Field trips. Prerequisite: PUD 355

357 Housing Design for Mass Marketing. (3) F
Fundamental concepts and problems of marketing housing design w thin present economic, egal and so-c al environments, consumer ana ys s, functional analy-s s, housing nstitutions.

358 Tourist Facility Design and Maintenance. (3) S
Concepts of the developer s role in architectural des'gn, eng neer ng and ma ntenance problems in hotels and resorts, includ ng food service facil ties.

359 Tourist Resort Design. (3) F
nterre ationships of socia , economic and phys cal aspects of tota tourist resort design; emphas s on phys ca development of tourist centers and resort areas

433 Building Codes and Ordinances. (3) F
Analysis of national, state and oca building codes and ordinances re at ve to their impact n arch tectural programm ng des gn and construct on documentation See ANP 433

441 Construction Administration I: Housing. (3) F
Responsibilities during the construction phases of architectural services; includes preparation of bidding documents, issuance of addenda, bid evaluation, negotia

tion of construction contracts. Field office organization, legal responsibilit es, construction contract agreements; use of Critical Path Method (CPM)

442 Construction Administration II: Commercial. (3) S
Continuance of PUD 441 w th emphas s on field observation of construct on, shop drawings, reports and materials testing Meet ngs, records, field orders, schedu es, arb tration of disputes, architect s respons - b lities to cl ent during construct on, appl cations for payment and project closeout

484 Clinical Internship. (3) SS
Full-time internsh p under the supervis on of practitioners in the Phoenix area or other locales

LANDSCAPE ARCHITECTURE

***PLA 301 Introduction to Landscape Architecture.** (3) F
The relevance of andscape arch tecture to the creation of human zed env ronments, w th emphasis on natura factors.

361 Landscape Design I. (6) F
Landscape design, graphic sk lls and princip es of or der applied to util zat on of natural forms and mater als F eld trips.

362 Landscape Design II. (6) S
Cont nuat on of PLA 361 pr nc ples of landscape de sign, ana ys s and p anning of andscape projects Field tr ps

***411 History of Landscape Architecture.** (3) F
Physical record of man s attitude toward the land Ancient through contemporary landscape planning and design.

431 Landscape Construction and Materials. (3) S
Design construct on, materia s and site eng neering as pects of landscape arch tecture Field tr ps

432 Plant Materials. (3) S
Natural components of landscape design· character s t cs, app cat ons, se ection and use Fie d trips.

451 Field Studies. (1 6) F S, SS
Organized f eld study n specified national and nterna tiona locat ons. May be repeated for credit

461 Landscape Design III. (6) F
Theory and methods of arge-scale landscape design and plann ng Field tr ps

462 Landscape Design IV. (6) S
Cont nuat on of PLA 461, des gn of andscape projects in arid reg ons Field tr ps

463 Landscape Construction Documents I. (3) F
Preparat on of andscape construction drawings legal status organizat on, layout s te survey p ans, sections, elevations, deta s, schedules and coord nation

464 Landscape Construction Documents II. (3) S
Continuation of PLA 463.

484 Clinical Internship. (3) SS
Fu l time nternsh p under the superv sion of pract tioners in the Phoen x area or other ocales.

SOLAR ARCHITECTURE AND TECHNOLOGY

EDE 532 Earth Sheltering Techniques. (3) S
Principles of earth shelter ng for energy consc ous bu d ng, inc uding or entat on structure, insulation moisture proofing and bui ding codes. Prerequ s te· ETE 551

661 Climatic and Solar Design. 3) F
Laboratory and f e d experience n arch tectural syn thes s emphas zing cl mat c cr ter a and ana ysis with emphas s on appropr ate technology and pass ve therma systems. Prerequ site. F rst professional degree or approval of nstructor.

662 Energy Efficient Design and Planning. (3) S
Laboratory and f e d experience n energy eff cient de- s gn emphas z ng solar energy and related renewables n urban and inst tut ona complexes for comfort prototypes. Prerequ site EDE 661.

ETE 501 Introduction to Solar Energy. (3) S
Introduct on to theoretica and pract cal aspects of use of solar radiation and nocturna cool ng for contro of bu ld ng environments

511 Energy Environment Theory. (3) F
Historical, contemporary and practical nf uences of so lar and other resource systems on the des gned en- v ronment; arch tectura , andscape, urban and regiona mpl cations of resource strategies, other renewable re sources.

512 Energy Policy Planning. (3) S
Energy conservation issues and strategies at the neigh borhood to metropol tan sca e. Prerequisite ETE 521 or approval of instructor.

521 Solar Energy Technology. (3) F
Uti izat on of so ar radiation and nocturnal cooling for heating and coo ng build ngs in arid and other reg ons Prerequisite MAT 115.

522 Desert Habitation Technology. (3) F
Analysis of habitation approaches in nontechno ogica and technological soc eties ar sing from the nature of desert areas Prerequ s tes ATE 351 352.

541 Experimental Energy Efficient Systems. (3 6) F
Des gn ca cu at ons and testing of exper mental or advanced bu d ng systems and structures for energy effi c ency and solar energy appl cations Prerequisites. MAT 290, MET 380 ETE 521.

542 Building Thermal System Simulation and Optimization. 3)
Mathematica models of bu d ng envelope and comfort condition ng systems wil be deve oped to simu ate build ng energy systems; opt mizat on techniques are also presented Prerequ site ETE 541.

551 Passive Building Performance I. (3) F
Current handbook and hand-held ca cu ator eva uation techniques w l be emphas zed to determ ne env ronmenta influence on comfort n sma l pass ve heated and coo ed bu ld ngs. Prerequ s tes· MAT 115, ATE 352

552 Passive Building Performance II. (3) S
Advanced computer-aided evaluation techniques w l be emphasized to determ ne env ronmenta influence on comfort in large passive heated and cooled bui dings Prerequ sites CSC 183, ETE 551

553 Energy Conservation in Buildings. (3) S
mpact of natura forces on the design of bu d ngs, em phasizing pre des gn decisions and post construction pract ces eading to minimum energy consumpt on n- vest gation of new energy sources Prerequ site ATE 352.

562 Energy Efficient Systems Research. (3 6) S
Empirica analysis of bu ld ng mater als and systems for energy efficiency Ind vidua or team research Prerequ s tes ETE 521 551

Special Courses: EDE, ETE, PLA, PUD, PUP 294 484 494, 498, 499, 500, 580, 584 590 591, 592, 593, 594 598 599 See pages 33 34 A so consu t Un versity Continu ng Education brochures for spec al course offerings

GRADUATE PROFESSIONAL PROGRAMS

Purpose

The purpose of the graduate program of the College of Architecture is to produce professionals who are equipped to deal with the problems of building design and human settlements. It leads to the Master of Environmental Planning degree, under which various course work concentrations may be pursued within the above two areas.

The Department of Architecture offers an M. Arch. degree. Prospective students should consult the Graduate College and the Department of Architecture for more information.

Goals

The explicit goals of the graduate program are:

a) To advance the student's ability to conduct research relevant to the architecture, design sciences, and planning professions.
b) To enable students to develop their capabilities to fill specific professional planning roles of individual interest.
c) To render service to the university, profession, community, state and region by pursuing research and planning projects directly related to them.
d) To expand the store of knowledge about architecture, design sciences, and planning.

Organization

The College of Architecture is organized under the direction of the dean, and administered by department chairs responsible for the various course work concentrations. Course subject matter is organized as follows: energy, design, planning, and technology laboratories, energy technologies and planning, urban/regional planning, architectural administration and management; computer applications, environmental programming and analysis; historical preservation and adaptive use; industrial design and interior architecture.

Master of Environmental Planning Degree Program

The Master of Environmental Planning degree curriculum consists of two segments—a basic program of 24 hours and an advanced program of 30 hours—for a total of 54 semester hours of credit for those students not admitted directly into the advanced program.

The basic program is intended to equip students of various backgrounds with sufficient professional preparation to undertake the course work required in the selected advanced program. In this regard, faculty advisory committees are especially constituted to establish the length of the student's basic program and to approve the courses to be taken.

The advanced program consists of 30 hours of course work in the concentration selected, as determined by the faculty advisory committee when the student completes the basic program.

Course work in the advanced program is divided as follows:

	Semester Hours
Required Courses	18
Coordinate Electives	6
Research Project or Thesis	6
Total	30

It is intended that within each concentration there be individual choice by the student with approval of the departmental advisory committee as follows:

Selection of coordinate electives offered in the College of Architecture or in other colleges of the University.

Selection of specific subjects for research or thesis projects.

Admission

Admission to the graduate program requires completion of all admission requirements and procedures set forth by the Graduate College; and the following additional requirements of the College of Architecture: completion of a baccalaureate or first professional degree and, preferably, at least one additional year of professional employment or other experience acceptable to the admissions committee of the appropriate department; submission and approval of a proposed course of study in a concentration offered by the Department; and selection of the candidate by the admissions committee. At the time of admission, students are enrolled in either the basic or advanced program depending on the type and amount of their previous preparation.

Note: Undergraduate students at Arizona State University interested in applying for the urban/regional planning course work concentration are advised to enroll in the professional

level program in urban planning. See the *College of Architecture Planning Studies Bulletin.*

Application. The following should be submitted to the Admissions Office, Graduate College, Arizona State University, Tempe, Arizona 85287:

a) The application for admission to the Graduate College.

b) Two transcripts from each institution that the applicant has attended previously (except ASU).

The following should be submitted to the chairperson of the appropriate department of study; i.e., Architecture, Design Sciences, or Planning; College of Architecture, Arizona State University.

a) Statement of the applicant's qualifications, including previous degree(s), employment, and travel history.

b) Examples of the applicant's work evidencing prior preparation for the proposed course work concentration.

c) Statement of the applicant's educational objectives in sufficient detail to indicate that they are congruent with the aims and capabilities of the department of study.

d) Certificate of Graduate Record Examination score.

e) At least three letters of reference from the applicant's undergraduate instructors or others able to comment knowledgeably on his/her ability to do graduate work. Such letters shall be sent directly from the referee to the office of the appropriate chairperson.

The above listed documents should be submitted together in 8½" x 11" portfolio format, using a notebook similar to a Ful-Vu CB-10 presentation binder with plastic sleeves.

Note: Application documents remain the property of the Department; however, examples of the applicant's work may be returned provided the applicant encloses a self-addressed return mailer with sufficient prepaid postage or personally signs for return of the examples following the selection date. Examples not so returned will be discarded by the Department after one year.

Graduate Program Courses

These courses are open to students admitted to the professional and graduate programs of the College of Architecture.

Other courses open to any student meeting the stated pre/co-requisites are listed under the General Studies offerings.

See course descriptions for the following numbers in the respective departments:

Planning: *Solar Applications*—EDE 532, 661, 662.

Energy Planning and Technologies—ETE 501, 511, 512, 521, 522, 541, 542, 544, 551, 552, 553, 562.

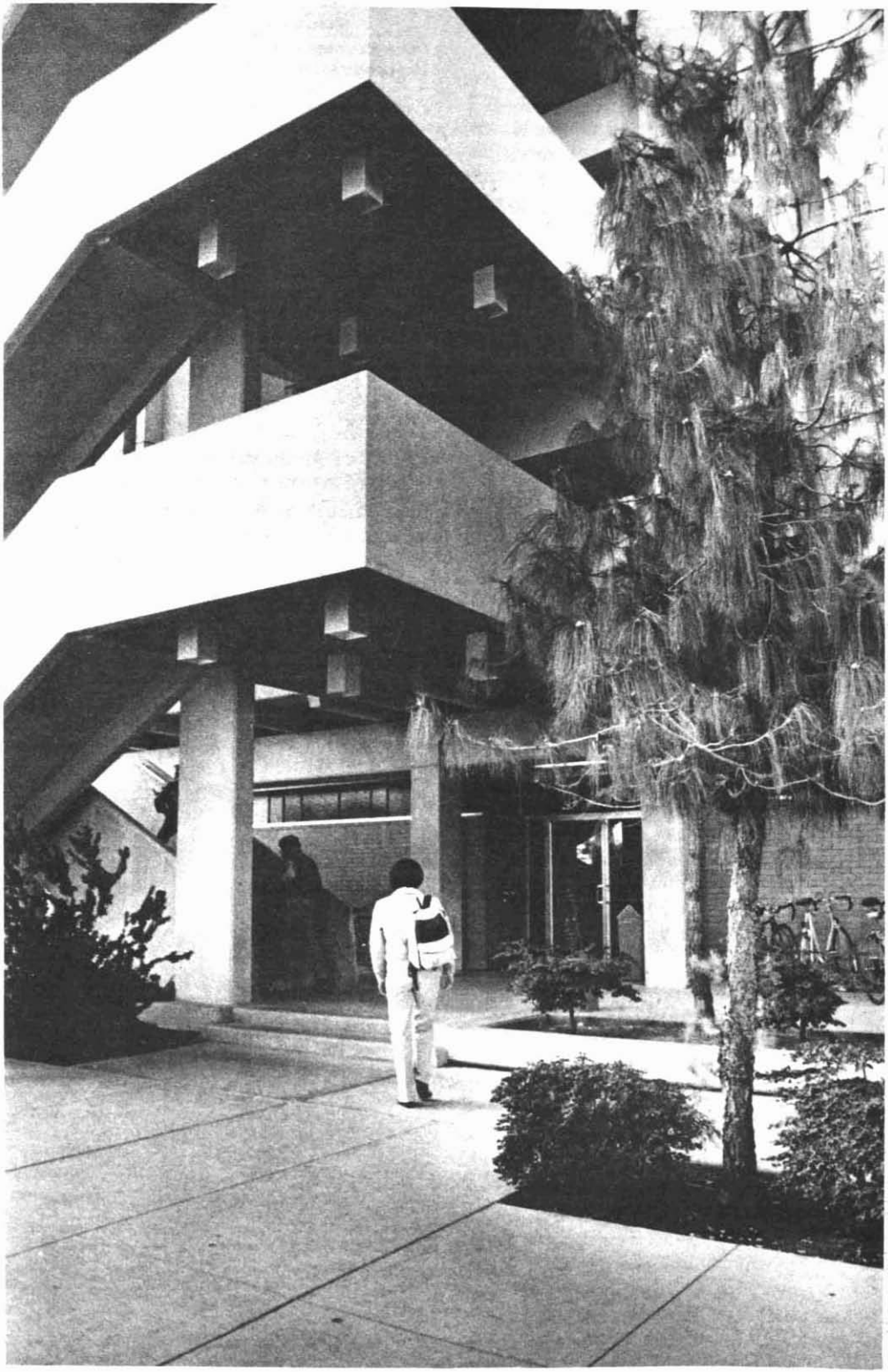
Urban Planning—PUP 401, 403, 414, 421, 474, 511, 546, 572, 574, 671, 672.

Industrial Design/Interior Architecture—DSC 518, 519, 552, 553, 554, 558.

Special Courses: DSC, EDE, ETE, PLA, PUP 498, 499, 500, 580, 584, 590, 591, 592, 593, 594, 598, 599, 600, 680, 683, 684, 690, 691, 692, 693. (See pages 33-34.)

Master of Architecture Degree Program

A professional program in Architecture leading to the Master of Architecture degree (M. Arch.) is offered by the Department of Architecture. Prospective students should consult the *Graduate College Catalog* and the Department of Architecture for additional information.



College of Business Administration

L. William Seidman, M.B.A., LL.B.
Dean

Purpose

The primary objective of the College of Business Administration is to prepare students for positions of responsibility in the business community. The undergraduate and graduate degree curricula are designed to provide (1) a background of general education helpful to informed, thinking citizens in a democracy, (2) a mastery of basic business tools and skills and an understanding of business procedures, and (3) a specialized and professional knowledge of a selected field of business. To attain these objectives in the undergraduate program, the curriculum has been devised so that the student completes 43 percent of work in general education and other nonbusiness courses and 47 percent in courses offered by the College of Business Administration, with the remaining 10 percent selected from either area by the student in consultation with his/her advisor.

The College is a member of the American Assembly of Collegiate Schools of Business (AACSB), the official accrediting organization in the field of business administration. Both the undergraduate and graduate programs of the College of Business Administration are accredited by this organization.

The College is host to a chapter of Beta Gamma Sigma, a national society that recognizes high academic achievement in AACSB accredited schools. Election to Beta Gamma Sigma is the highest scholastic honor a student in business administration can earn.

In addition to the regular degree curricula, other programs of study in the College are designed to meet special needs. Preparation for the teaching of business, office and distributive education subjects in secondary schools is offered in cooperation with the College of Education. Evening and continuing education courses are conducted for qualified persons who are regularly employed and who otherwise would be unable to enroll in college courses. Short courses and institutes on a noncredit basis are organized in cooperation with various business groups for the furtherance of in-service training of employed personnel.

Organization

The courses of instruction offered by the College of Business Administration are organized into groups in order that a related sequence may be established for the various subject fields.

For administrative purposes, these fields are organized into the following departments: Accounting, Administrative Services, Economics, Finance, Management, Marketing, Quantitative Systems.

The Center for Health Services Administration offers a master's degree program designed to prepare qualified individuals who seek careers as administrators of hospitals and other health care organizations.

The Bureau of Business and Economic Research is organized to help business meet the challenges of an increasingly complex economic and technical environment. In cooperation with faculty and students, government agencies, and the business community, it conducts and sponsors research projects. By functioning as the focus of the research and dissemination process in the College of Business Administration, the Bureau provides support for faculty research, opportunities for publication by faculty and advanced graduate students, and information for use by the business community.

The Center for Executive Development serves the needs of the community with continuing education programs designed for business persons and is open to government officials and the general public.

The Dean's Advisory Council, a group of 27 distinguished Arizona business and professional leaders, provides liaison between the College and the business community. The

Council meets regularly throughout the year with administrators, faculty and students to make recommendations as to how the College can be of greatest assistance in meeting com munity needs.

Degrees

Bachelor's Degrees. The College of Business Administration awards the Bachelor of Sci ence degree upon successful completion of a four-year curriculum of 126 semester hours as prescribed below. Students may select one of the following 14 majors:

Accounting
Administrative Services
Advertising
Computer Information Systems
Economics
Finance
General Business Administration
Insurance
Management
Marketing
Purchasing Materials Management
Quantitative Business Analysis
Real Estate
Transportation

Lower division students who wish to qualify to teach business, office and distributive edu cation subjects at the secondary and post secondary levels should major in pre secondary education. Upper division students should ma jor in secondary education with a subject mat ter in business This curriculum leads to the Bachelor of Arts in Educat on degree and certification for teaching business, office and distributive education subjects in Arizona schools. Courses to meet University and pro fessional education requirements for this program are listed under the secondary curricu lum section of the College of Education. Re quired business courses may be found on page 163

Master's Degrees. The Master of Business Administration degree, the Master of Health Services Administration degree, the Master of Accountancy degree, Master of Quantitative Systems degree, and the Master of Science degree in Economics are awarded upon suc cessful completion of programs detailed in the *Graduate College Catalog.*

Master of Business Administration Degree: A general program designed to meet the needs of students who seek broad, integrated graduate course work in the various functional fields of business. The program of study emphasizes the managerial responsibility of policy-formulation, problem-solving and decision-making. Students with undergraduate backgrounds in general education or technical sciences, as well as those with bachelor's degrees in business administration, will find the program well suited to their needs. Students with out prior courses in business administration must complete approximately two years of study while those with an undergraduate degree in business administration may complete requirements in one calendar year.

Master of Health Services Administration Degree: A program designed to prepare qualified individuals for careers as administrators of hospitals and other health services organizations. This preparation is carried out by providing the students selected theories, tools and techniques the understanding, analysis, and application of which are essential for effective health services administration.

Master of Accountancy: A specialized program emphasizing preparation for public accounting and college teaching, with sufficient flexibility to include courses in financial, managerial, and governmental accounting, as well as a concentration in tax.

Master of Quantitative Systems. The program leading to the Master of Quantitative Systems degree is designed to develop professional competence in the following three technical areas· (1) the use of business statistics, (2) the development and implementation of computer based information systems, and (3) the analy sis of alternative organizational strategies and tactics through planning and control models.

Master of Science Degree in Economics: A specialized program for students who desire to teach in community colleges, to prepare for research positions in business and government, or to take additional graduate work in eco nomics. The master's program in economics requires graduate work in macroeconomic analysis, microeconomic analysis and quantita tive methods

Doctoral Degrees

Doctor of Business Administration Degree. The objectives of the Doctor of Business Administration (D.B.A.) program are to prepare individuals for faculty positions in university or collegiate schools of business, and to prepare individuals for positions in business or government where the required educational background is doctoral-level study The D.B.A. degree program is designed to provide

a broad study of the interrelated areas of business administration and a high degree of professional competence in three fields of concentration.

The degree is granted upon the completion of an approved program of graduate study, successful completion of comprehensive written and oral examinations, and submission of an acceptable original research project presented in a dissertation.

Doctor of Philosophy Degree in Economics. The degree is awarded upon successful completion of the program as described in the *Graduate Catalog*. Primary objectives of this degree program are to prepare persons for research positions in public agencies and private business organizations and for teaching and research in institutions of higher learning. The degree is granted upon the completion of an approved program of graduate study, successful completion of comprehensive written and oral examinations, and submission of an acceptable original research project presented in a dissertation.

Curriculum

Bachelor of Science in Business Administration. Students seeking a Bachelor of Science degree in the College of Business Administration must satisfactorily complete a curriculum of 126 semester hours as indicated below

	Semester Hours
General Studies Requirements	54*
Business Administration Core Curriculum	36*
Major	24
Electives	12
Total	126

General Studies Requirements. All students in the College of Business Administration are required to complete a total of 54* semester hours in General Studies courses. Courses of a specialized, vocational, technical, or professional nature may not be taken for General Studies credit.

Only certain approved courses from the departmental offerings listed below may be taken to satisfy the requirements in each of these areas. These specific courses are enumerated in *Policy Statement 54** of the College of Business Administration. Students, in consultation with their advisors, *must select all General Studies courses from this list.* Any exceptions must be approved by the Office of Academic Advisement of the College of Business Administration *prior to enrollment in the course.*

Specific courses from the following departmental offerings may be taken to obtain the designated *minimum* number of semester hours required in each of the following areas:

Humanities and Fine Arts ... 8 sem. hrs
Architecture (APH and DES courses only), art (ARH courses only), dance (DAH courses only), English, foreign languages (foreign language literature classes only), humanities, music (MHL courses only) philosophy, religious studies theatre (THE courses only).

Behavioral and Social Sciences ... 15 sem. hrs
Anthropology, study of justice, cultural geography, economics (ECN 201 and 202 *required*), education, engineering, technology, health education, health science, history, home economics journalism and telecommunication, mass communication, political science psychology (PGS courses only), sociology.

Science and Mathematics ... 8 sem. hrs
Anthropology, biology, microbiology, botany, chemistry engineering, agriculture, astronomy, geology, mathematics (MAT 141 or more advanced course *required*), physical geography, physical science, physics, psychology (PSY courses only), zoology.

Other General Courses
Additional general courses which provide breadth and cultural background must be taken to bring the student's total General Studies credits up to the 54* hour minimum (See *Policy Statement 54**) All students must complete ENG 101 and 102 (First Year English), and one of the following communication courses COM 100, 230, 250, or 331 as part of the General Studies requirement

Total General Studies Courses ... 54* sem. hrs

*General Studies Requirements and Policy Statement 54 will be reduced to 54 hours and the Business Core will be increased to 36 hours contingent upon the funding of CIS 200

Business Administration Core Requirements. In order to obtain an understanding of fundamentals of business operation and to develop a broad business background, every student seeking a Bachelor of Science degree in the College of Business Administration must complete the following courses

ADS	101	Elements of Business Enterprise	3
ACC	211	Elementary Accounting	3
ACC	212	Elementary Accounting	3
CIS	200*	Computers in Business	3
QBA	221	Statistical Analysis	3
QBA	227	Quantitative Information Systems	3
ADS	233	Business Communication	3
ADS	305	Business Law	3
FIN	300	Fundamentals of Finance	3
MGT	301	Principles of Management	3

MKT	300	Principles of Marketing	3
MGT	463	Business Policies	3
		Total	36*

*General Studies Requirements and Policy Statement 54 will be reduced to 54 hours and the Business Core will be increased to 36 hours contingent upon the funding of CIS 200.

Major Requirements

A major consists of a pattern of 24 semester hours in related courses falling primarily within a given subject field. Majors are available in accounting, administrative services, advertising, computer information systems, economics, finance, general business administration, insurance, management, marketing, purchasing materials management, quantitative business analysis, real estate, and transportation.

Accounting. This major includes the essential academic training for: (1) those wishing to prepare for professional careers in public accounting; (2) those seeking positions as controllers, heads of accounting divisions, cost accountants or internal auditors; (3) those wishing to serve in any of the numerous accounting positions offered in federal, state and local governments, and (4) those planning to operate their own businesses.

A major in accounting shall consist of a minimum of 24 semester hours. The following 21 hours must be included:

			Semester Hours
ACC	321	Intermediate Accounting	3
ACC	322	Intermediate Accounting	3
ACC	331	Cost Accounting	3
ACC	351	Income Tax Accounting	3
ACC	383	Advanced Accounting	3
ACC	447	Accounting Information Systems	3
ACC	481	Auditing Theory and Practice	3

To complete the major, the student, with the approval of his advisor, shall select one additional 400 level accounting course.

Note: All accounting majors must complete MAT 210, Mathematical Analysis, or the equivalent as part of the program, and should take CIS 202, Management Information Systems, in place of CIS 200, Computers in Business as part of the business core

Administrative Services. The course work in this major area is designed to prepare students for careers in one of the following: office management, small business, paralegal, and business education

The major in administrative services shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
OFA	351	Administrative Office Management	3
OFA	432	Records Management	3
ADS	461	Theory of Administrative Communication	3
ADS	431	Business Report Writing	3
CIS	202	Management Information Systems	3

To complete the major, the student, in consultation with his advisor, shall select 9 additional hours of course work from business and economics related to the areas described below

Office Management. This area of emphasis is intended to prepare students for careers in office management, records management, and administrative services.

Small Business. This area of emphasis is intended to prepare students for careers in small business.

Paralegal. This area of emphasis is intended to prepare students for careers as aides to lawyers, trust officers, escrow officers, agents, and brokers in private, governmental and industrial practice.

Business Education. This area of emphasis is intended to prepare students who wish to teach business, office, or distributive education subjects in secondary schools.

A student in business education must complete the Business Administration core and ECN 201 and 202. A teaching minor consists of 24 semester hours of credit in business. The remaining courses to complete the major or minor must be selected in consultation with a Business Education advisor.

The Department of Administrative Services participates in programs leading to the degrees of Master of Education, Doctor of Education, and Doctor of Philosophy, Secondary Education. Consult the *Graduate College Catalog* for requirements.

Advertising. Use of the mass communications media for conveying ideas and information to customers, employees, stockholders and the general public is an essential part of modern business operation. This major offers students an opportunity to prepare for careers in advertising, public relations and related activities dealing with mass communications. Employ

ment opportunities include positions with advertising agencies, retail stores, manufacturing firms, newspapers and broadcasting stations.

A major in advertising shall consist of a minimum of 24 semester hours. The following 18 hours must be included:

			Semester Hours
ADV	301	Advertising Principles	3
ADV	311	Advertising Creative Strategy I	3
ADV	312	Advertising Creative Strategy II	3
ADV	371	Advertising Media	3
ADV	453	Advertising Campaign Problems	3
ADV	461	Advertising Management	3

To complete the major, the student, in consultation with his advisor, shall select 6 hours or more from the following group:

			Semester Hours
MKT	302	Fundamentals of Marketing Management	3
MKT	304	Consumer Behavior	3
MKT	310	Principles of Selling	3
MKT	321	Principles of Retailing	3
MKT	325	Public Relations in Business	3
MKT	351	Marketing Intelligence	3

Computer Information Systems. This major involves the evaluation of internal and external organizational data in order to develop and maintain computerized systems that produce information for planning and control decisions. Special emphasis is placed on the analysis, configuration, programming, and data base aspects of the design and implementation of a computerized business information system. The course work given below prepares the student for a career in business computer information systems and also enables the student to continue in specialized areas such as systems analysis, business applications, programming, business database design, business simulation, and decision support systems.

The major in computer information systems shall consist of a minimum of 24 semester hours. The following 21 hours must be included

			Semester Hours
CIS	235	Business Programming II	3
CIS	307	Systems Modeling	3
CIS	330	Interactive Business Programming	3
CIS	335	Intermediate Business Programming	3
CIS	420	Business Database Concepts	3
CIS	430	Advanced Business Programming	3
CIS	440	Systems Analysis and Design	3

To complete the major, the student shall select 3 hours of upper division credit approved in advance by the student's advisor.

Note: All Computer Information Systems majors must complete MAT 210, Mathematical Analysis, or the equivalent and CIS 230 Business Programming I CIS 230 may be counted in the business core in place of CIS 200.

Admission to field: To be admitted to the Computer Information Systems field, a student must have completed the following courses with a minimum grade point average in these courses of 2.50: MAT 210 or higher level; CIS 230; QBA 221; QBA 222.

Economics. The study of economics affords an opportunity for the student to acquire a general knowledge of the methods by which goods and services are allocated, incomes generated, and why prices, employment, money, and financial markets behave as they do. Some knowledge of economics is crucial not only for those intending to participate in the business world, but for those intending to pursue graduate educations in law, or other business fields, or to work in the world of journalism and communication. Economists obtain positions at universities, in government, in financial institutions, brokerage houses, private nonfinancial corporations, in the international organizations, such as IMF and the World Bank, as financial journalists and as marketing and management specialists in domestic and international firms.

The major in economics shall consist of a minimum of 24 semester hours The following 6 hours must be included:

			Semester Hours
ECN	401	Intermediate Microeconomics	3
ECN	402	Intermediate Macroeconomics	3

To complete the major, the student, with the approval of his advisor, shall select 18 additional hours of course work from among the upper division courses offered by the Department of Economics and from selected courses offered by the College of Business Administration.

Finance. Financial management is the process of planning for, acquiring, and utilizing funds in order to maximize the value of business enterprises. A major in finance prepares students to understand the financial implications inherent in virtually all business decisions. Financial management involves knowledge of the markets which supply funds, development of

sound investment criteria, and stimulation of efficient operations. Through proper selection of courses, students can prepare for careers in corporate financial management, financial institution management, or investment portfolio management.

A major in finance shall consist of a minimum of 24 semester hours. The following 12 hours must be included.

			Semester Hours
FIN	331	Financial Markets and Institutions	3
FIN	421	Investment Analysis	3
FIN	361	Managerial Finance or	
FIN	451	Working Capital Management	3
FIN	461	Financial Management Cases	3

To complete the major, the student, in consultation with an advisor, shall select: (1) at least 3 additional hours of upper division finance courses to satisfy an emphasis in corporate finance, financial institutions, investment management, or general finance; and (2) up to 9 additional hours from approved upper division courses offered in the College of Business Administration.

Students majoring in finance are required to take ACC 321 and are urged to include ACC 322, ENG 301 or ADS 431, and a public speaking course in their programs of study. With the approval of an advisor, additional courses in accounting, computer information systems, economics, or quantitative business analysis are also recommended.

General Business Administration. Offering the opportunity for a broad survey of all phases of business operation, this major is particularly suitable for (1) those students who are planning to operate their own businesses and who seek a broad business background, (2) those who are preparing for jobs in which specialization is taught after employment, and (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

A minimum of 24 semester hours in economics and business administration courses is required. One course from each of four departments in the College of Business Administration must be included in the student's program, selected from the following:

Accounting

ACC	321	Intermediate Accounting
ACC	331	Cost Accounting
ACC	351	Income Tax Accounting

Administrative Services

ADS	306	Business Law
ADS	461	Theory of Administrative Communication
OFA	351	Administrative Office Management

Economics

ECN	301	Money and Banking
ECN	321	Labor Economics
ECN	341	Public Finance

Finance

FIN	421	Securities Investment
INS	251	Principles of Insurance
REA	251	Real Estate Principles

Management

MGT	311	Personnel Management
MGT	331	Production and Operations Management
MGT	434	Social Responsibility of Management

Marketing

ADV	301	Advertising Principles
MKT	302	Fundamentals of Marketing Management
TRA	301	Principles of Transportation

Quantitative Systems

CIS	202	Management Information Systems
CIS	320	Intermediate Business Programming
QBA	322	Managerial Statistics

Students may elect additional courses from the above list, subject to the limitations stated below.

The remaining 12 hours necessary to complete the field may be selected from upper-division (or a limited number of lower-division) courses in the College of Business Administration, subject to the approval of an advisor. A maximum of 12 hours in one subject area may be included.

Insurance. Academic preparation for professional work in the risk management and insurance industry is offered. The emphasis is on financial planning for businesses and individuals through the use of risk management techniques in life, health, property, and liability exposure areas. A major in insurance shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
INS	251	Principles of Insurance	3
INS	321	Life and Health Insurance	3
INS	331	Property Insurance Principles and Coverage	3
INS	431	Insurance Law	3
INS	451	Social Insurance	3

To complete the major, the student, in consultation with his advisor, shall select 9 additional hours from upper division courses offered in the College of Business Administration.

Management. The management function includes the planning, organizing, motivating and controlling of business operations. It deals with both human elements and material or physical factors. Through selection of courses, as outlined below, the student may place his/her major emphasis on personnel management, production management or the broad aspects of management philosophy and practice. A major in management shall consist of a minimum of 24 semester hours. The following 15 hours must be included:

			Semester Hours
MGT	311	Personnel Management	3
MGT	331	Production and Operations Management	3
MGT	352	Human Behavior in Organizations	3
MGT	434	Social Responsibility of Management	3
MGT	468	Management Systems	3

The remainder of the required courses shall be selected by the student in consultation with his/her advisor.

Those students planning careers in Personnel Management shall select at least 6 semester hours from:

			Semester Hours
MGT	413	Wage and Salary Management	3
MGT	422	Training and Development	3
MGT	423	Industrial Relations and Collective Bargaining	3

Three additional semester hours must be selected from among the courses listed above or from among other courses offered by the Department of Management or approved in advance by the Chair.

Those students planning careers in production and operations management shall select at least 6 semester hours from:

			Semester Hours
MGT	335	Methods Management	3
MGT	355	Purchasing	3
MGT	432	Materials Management	3

Three additional semester hours must be selected from among the courses listed above or from among other courses offered by the Department of Management or approved in advance by the Chair.

Students planning careers in general management must select 9 hours from among the following:

			Semester Hours
MGT	433	Managerial Decision Making	3
MGT	459	International Management	3

(either or both) and choose one course from the three specified under personnel and or choose one course from the three specified under production. Any exceptions to the above options must be approved in advance by the Chair of the Department of Management.

Marketing. Study in the field of marketing involves analysis of the ways business firms plan, organize, administer and control their resources to achieve marketing objectives. Focus is placed on market forces, growth and survival of firms in competitive markets, and the marketing strategy and tactics of the firm. Through proper selection of courses, a student may prepare for a career in (1) general marketing administration, (2) selling and sales management, (3) promotion management, (4) retail merchandising and management, (5) market research and planning, (6) industrial marketing, or (7) international marketing.

A major in marketing shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

			Semester Hours
MKT	302	Fundamentals of Marketing Management	3
MKT	304	Consumer Behavior	3
MKT	351	Marketing Intelligence	3
MKT	460	Strategic Marketing	3

To complete the major, the student, in consultation with his/her advisor, shall select 12 hours from courses offered in marketing, advertising, and transportation or courses approved in advance by the Department of Marketing.

Purchasing/Materials Management. This major includes the functions of planning, organizing, motivating and controlling the flow of purchased materials, products, and services into and out of the organization. Specific attention is given to planning and scheduling requirements, selecting and analyzing vendors,

price determination, purchasing research and value analysis, controlling inventories, transportation (inbound and outbound), distribution of finished product, and the disposal of scrap and surplus materials.

A major in purchasing materials management shall consist of the following 24 semester hours:

			Semester Hours
MGT	331	Production and Operations Management	3
MGT	355	Purchasing	3
TRA	345	Traffic Management	3
MGT	432	Materials Management	3
MGT	468	Management Systems	3
TRA	445	Physical Distribution Management	3
MGT	455	Purchasing Research and Negotiation	3
MGT	479	Purchasing and Materials Management Strategy	3

Quantitative Business Analysis. Quantitative business analysis is the process of evaluating both external and internal data to produce decision guidelines for managerial action. Model development and both statistical and mathematical analysis provide the foundations for data evaluation. This major prepares students for professional opportunities in applied business statistics, operations analysis and business planning systems.

The major in quantitative business analysis shall consist of a minimum of 24 semester hours. The following 18 hours must be included

			Semester Hours
QBA	321	Intermediate Business Statistics	3
QBA	391	Operations Research	3
QBA	405	Sampling Techniques in Business	3
QBA	410	Applied Business Forecasting	3
QBA	421	Advanced Business Statistics	3
QBA	450	Decision Analysis Applications	3

To complete the major, the student shall select 6 hours of upper division courses approved in advance by the student's advisor.

Note: All Quantitative Business Analysis majors must complete MAT 270, MAT 242 or 342 and CIS 230. CIS 230 may be counted in the business core in place of CIS 200

Admission to major. To be admitted to the Quantitative Business Analysis major, a student must have completed the following courses with a minimum grade point average in these courses of 2.50. MAT 270; MAT 242 or 342; CIS 230; QBA 221; QBA 222.

Real Estate. Courses in real estate are designed to acquaint students with the basic information, knowledge and practices pertaining to real property and the real estate business. This major is the academic foundation for careers in various aspects of real estate work: sales, acquisition and development, taxation, management of property, title searching and legal work, appraisal and finance.

A major in real estate shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

			Semester Hours
REA	251	Real Estate Principles	3
REA	331	Real Estate Finance	3
REA	401	Real Estate Appraisal	3
REA	41	Real Estate Law	3

To complete the major, the student, in consultation with an advisor, shall select 12 additional hours of upper division courses offered in the College of Business Administration.

Transportation. The major in transportation covers all modes of transportation of passengers and freight, and the special problems associated with each mode in urban, national and international transportation. Emphasis is on management of transportation organizations, government transportation policy and regulation of carriers, and the efficient use of transportation services by business management within the framework of the physical distribution management approach. Students are prepared for employment by carriers, businesses, and government agencies.

A major in transportation shall consist of a minimum of 24 semester hours. The following 12 hours must be included:

			Semester Hours
TRA	301	Principles of Transportation	3
TRA	345	Traffic Management	3
TRA	445	Physical Distribution Management	3
TRA	460	Highway Transportation	3

A student with a major in transportation shall choose 6 hours from the following courses:

			Semester Hours
TRA	405	Urban Transportation	3
TRA	461	Air Transportation	3
TRA	462	Problems of Transportation	3

TRA	463	International Transportation	3

To complete the major, the student, in consultation with the advisor, shall select 6 or more hours from the following:

			Semester Hours
ECN	336	International Economics	3
ECN	451	Economics of Public Utilit'es.	3
MGT	355	Purchasing	3
MGT	432	Materia s Management..	3
MKT	310	Principles of Selling	3
MKT	331	International Business..	3
MKT	435	Internat'onal Marketing	3
MKT	444	Marketing Channels	3
TRA	405	Urban Transportation	3
TRA	461	Air Transportat'on	3
TRA	462	Problems in Transportation .	3
TRA	463	International Transportation .	3

Elective Courses. Sufficient elective courses are to be selected by the student to complete the total of 126 semester hours required for graduation.

Honors Program. Students with outstanding academic records may be admitted to the Honors Program by application to the Honors Council of the College of Business Administration. This program provides an opportunity for students with exceptional ability to select an academic program to meet their individual needs. Although the general curriculum requirements must be completed, considerable opportunity is given for independent study under the discretion of an Honors advisor. A thesis or an equivalent creative project is required for graduation.

For further details regarding the Honors Program, see the Academic Advising Office.

Pass-Fail. Students majoring in Business Administration may not include among the credits required for graduation any courses taken at this University on a pass-fail basis. Students with majors in the College of Liberal Arts may register for pass-fail credit in courses offered by the Department of Economics, subject to conditions imposed by the College of Liberal Arts.

General Regulations. Each student enrolling in the College of Business Administration will be assigned an advisor upon the basis of the subject matter field in which he/she is primarily interested. The student should follow the sequence of courses suggested in the four-year curriculum outline and the recommendations of the advisor in completing the prescribed background and tool courses in preparation for the subsequent professional program.

The Pre-professional Program. Each student admitted to the College of Business Administration will be designated as a pre professional business program student. The student will follow the freshman sophomore sequence of courses listed in the four-year curriculum outline and the recommendations of an academic advisor in completing the prescribed background and tool courses in preparation for the subsequent professional program. Pre professional program students will not be allowed to register for 300-400 level business courses.

The Professional Program. The third and fourth years constitute the professional program of the undergraduate curriculum.

To make application and be admitted to the professional program, the student must have completed:

1. At least 56 semester hours with a minimum cumulative grade point index of 2.50;
2. All Business Administration core curriculum courses numbered below 300 and ECN 201, 202, and MAT 141 with a minimum cumulative grade point average in these courses of 2.25; and
3. At least 32 semester hours in General Studies and other cultural background courses, including ECN 201 and 202, and MAT 141.

Failure to meet the requirements for admission to the professional program will result in the student's becoming ineligible to enroll for 300 and 400 level courses in the College of Business Administration.

To be accepted for credit as part of the professional program in Business Administration, all courses transferred from other institutions must carry prerequisites similar to those of the courses they are replacing at Arizona State University.

Non-business Students. Non business students will be permitted to enroll in upper-division business courses if:

(a) they have junior standing at the time of enrollment, and

(b) they have completed the course prerequisites at the time of enrollment, and

(c) they have a minimum 2.00 cumulative grade point average if the course is *required* as part of their program of study, or

(d) they have a minimum 2.50 cumulative grade point average if the course is *not required* as part of their program of study (e.g., it is a recommended elective but not a required course in the program of study).

Unclassified Undergraduate Students. Unclassified undergraduate students must obtain an override authorization from the College of Business Administration Advising Office or from the Chair of the Department in which the course is offered in order to register for an upper division College of Business Administration course. Override authorizations will be issued only to unclassified undergraduate students who at the time of enrollment have a cumulative grade point average of 2.50 or higher in courses taken at Arizona State University and have completed the course prerequisites or the equivalent.

Probation. All students, freshman through senior, must maintain a minimum GPA for all courses completed at ASU of 2.00 and a minimum GPA for all College of Business Administration courses completed at ASU of 2.00 or be placed on probation

Disqualification. A student who has not achieved a minimum 2.00 cumulative grade point average in all courses completed at ASU and in all College of Business Administration courses completed at ASU will be disqualified if:

1 During any semester in which the student is on probation the student:
   a. Obtains a semester GPA below 2.50 or
   b. Receives a grade below C in one or more courses or
   c. Fails to complete courses specified by the College as part of his or her individual probationary requirement, or
   d. Withdraws from any College of Business Administration course after the last day to withdraw from a course without academic penalty.

OR IF

2. At the end of two consecutive semesters on probation the student has not achieved a minimum 2.00 cumulative grade point average in all courses completed at ASU and a minimum 2.00 grade point average in all College of Business Administration courses taken at ASU.

Reinstatement. A student will not be permitted to apply for reinstatement for two semesters after the date of disqualification.

Incomplete. A mark of Incomplete (I) will only be granted in cases where the student can complete the course outside the classroom with the same instructor or an instructor designated by the Department Chair. Incompletes which have been on a student's record for more than one calendar year will be changed automatically to a grade of "E". A grade of Incomplete received in a College of Business Administration course in the fall, 1983 semester or thereafter that has not been changed to another grade will be treated as a grade of "E" for purposes of evaluating College of Business Administration graduation requirements.

Withdrawal. After admission to the Professional Program, students will be limited to three withdrawals from individual College of Business Administration courses after the last day to withdraw from a course without academic penalty. Notwithstanding this policy, a student always will be permitted to withdraw from all courses registered for in a particular semester, i.e. officially withdraw from the University. However, an official withdrawal from the University initiated after the last day to withdraw from a course without academic penalty will be counted as one withdrawal for purposes of applying this policy.

Academic Dishonesty. The faculty of the College of Business Administration has adopted a policy on academic dishonesty. A copy of the policy may be obtained in the Academic Advising Office.

Graduation Requirements. In addition to completion of the pattern of courses outlined on page 163, to be eligible for the Bachelor of Science degree in the College of Business Administration, a student must fulfill the following requirements:

1. Have completed at least 30 semester hours, including 24 in professional business courses (numbered 300 or above), after admission to the professional program.
2 Have attained a cumulative grade point index of 2.00 or higher;
   (a) for all business courses taken at this University; and
   (b) for all courses comprising his or her field of specialization taken at this University.

For computational purposes, the College of Business Administration averages D and E grades received in upper division business courses taken at Arizona State University into the student's grade point index in the College. A student may, by formal application to the

Registrar, request that a grade of D or E in lower division courses not be included in his or her College index after the course has been repeated in residence with a passing grade and prior to completion of the student's first bac calaureate degree.

3. Have earned a minimum of 51 semester hours in traditional courses designed primarily for junior or senior students and completed in an accredited, four-year degree granting institution.

Any exception to the above requirements must be approved by the Standards Com mittee of the College of Business Administra tion.

Application for Graduation. A student must apply for graduation after having completed 87 semester hours. An application is available at the Graduation Office, Moeur Administra tion Building.

Transfer Credit. Students planning to take their first two years of work at a community college or at another four year college should take only those courses in business and eco nomics that are offered as freshman or sopho more level courses at any of the three state supported Arizona universities. These lower division courses are numbered 1 through 299 at the three Arizona universities. *A maximum of 30 hours of business and economics courses from community colleges will be accepted toward a bachelor's degree in business adminis tration.*

Professional business courses taught in the junior or senior year in the three State uni versities may not be completed at a two-year college for transfer credit in the business core or major (field of specialization). The intro ductory course in business law will be ac cepted as an exception to this policy, but only lower division credit will be granted Such courses may be utilized in the free elective category *subject to the 30 hour limitation* Courses taught as vocational or career classes at the community colleges which are not taught in the colleges of business at any one of the three State universities will not be ac cepted for credit toward a bachelor's degree Courses taught in the upper div sion business core at the three State universities must be completed at the degree granting institution unless transferred from an accredited four year school. Normally, upper division transfer credits will be accepted only from AACSB accredited schools.

The following general pattern of courses is recommended for students completing their first two years' work in a community college and who plan to transfer to Arizona State University without loss of credit:

Pre professiona Courses	27 Hours
Accounting	6
Econom cs	6
Statist cs and Quantitative Infor mation Systems	6
C mputers in Business	3
Lower Divis on Business Electives	6
General Stud es	33 37 Hours
Engl sh	
Mathematics	
Science	
Humanities	
Social Sciences	

Four-Year Curriculum Outline

FIRST YEAR

	Seme ter H urs
ADS 101	3
QBA 221	3
ENG 101, 102	6
MAT 141 (or other approved mathematics course)	2 or 4
Humanities, Fine Arts	3
Behavioral and Social Sciences	6
Science or additi nal Mathematics	5-7
E ectives	3-5
	31 35

SECOND YEAR

ACC 211 212	6
ECN 201, 202	6
CIS 200	*3
QBA 222	3
ADS 233	3
COM 100, 300 305 or 405	3
Science and Mathemat cs	3
Genera Studies	5
	32

THIRD YEAR

MKT 300	3
MGT 301	3
ADS 305	3
FIN 3 0	3
Behavi r al and Socia Sciences	6
Field of Specialization and E ectives	14
	32

*Contingent upon funding.

FOURTH YEAR

MGT 463	3
Field of Specialization and Electives	28
	31

Certificate in International Business Studies. The program of studies leading to the Certificate is designed to prepare students for positions with multinational firms, banks, government agencies and international organizations. This program is not a substitute for the listed areas of business specialization; rather, the courses required for the Certificate add an international dimension to the student's chosen field of specialization

The requirements for the Certificate are:

1. At least 15 semester hours of approved courses in international business. The objective of this requirement is to introduce the student to the environment and operating principles of international business, to the international aspects of the student's chosen area of specialization, and to the interaction of all the business disciplines in an international environment. ECN 336, International Economics, and MKT 331, International Business, are required of all candidates for the Certificate. Other international business courses are:

MKT	435	International Marketing
MGT	459	International Management
TRA	463	International Transportation
ECN	311	Economic Development
ECN	331	Comparative Economic Systems
ECN	361	Soviet and East European Economics
ECN	371	Latin American Economics
ECN	488	International Monetary Economics

2. At least 15 semester hours of approved electives in international and area studies. Six semester hours must be in courses which provide a cross cultural perspective from the global point of view of one or more disciplines. The remaining 9 semester hours must be in courses which provide an understanding of one region of the world.

3 Evidence of competence in a foreign language equivalent to one year of college study. Since careful planning and selection of courses are necessary to meet the requirements for the Certificate without exceeding the minimum number of hours required for graduation, interested students are urged to consult with a member of the International Business Committee as early as possible.

Asian Studies. Students in the College of Business Administration may pursue a program with emphasis in Asian Studies. As part of the Bachelor of Science degree requirements in Business Administration, at least 30 upper division semester hours of the program must be in Asian Studies content courses (listed on page 52). Reading knowledge of an Asian language is required. The Asian studies content program must be approved by the Center for Asian Studies. (See page 52). Fulfillment of the requirements is recognized on the transcript as a bachelor's degree with a designation of the discipline Asian Studies. It is possible to complete the certificate program in International Business Studies and the Asian Studies emphasis concurrently.

Latin American Studies. Students in the College of Business Administration may pursue a program with emphasis in Latin American Area Studies. At least 30 upper division semester hours of the program must be in Latin American content courses, including 15 semester hours of Latin American content courses in the College of Business Administration listed above under Certificate in International Business Studies (except ECN 361), and 15 semester hours of Latin American content courses in other disciplines (listed on page 55). A reading knowledge of either Spanish or Portuguese is required. A reading knowledge of both is recommended. The Latin American content program must be approved by the Center for Latin American Studies (see page 55). Fulfillment of the requirements is recognized on the transcript as a bachelor's degree with a designation of the discipline Latin American Studies. It is possible to complete the certificate program in International Business Studies and the Latin American emphasis concurrently.

Mexican-American Business Administration Undergraduate Emphasis. The objective of this program is to provide educational opportunities for Mexican Americans and other interested students who are preparing for leadership positions in local, regional, national and international firms.

The student may enroll in any field of specialization offered by the College of Business Administration. The candidate's degree in Business Administration, combined with directed linguistic and cultural studies, will provide the student with a unique educational experience and a broad background in the liberal arts and in business. Interested students should contact the Academic Advising Office.

Pre-Law Studies. Pre law students may pursue a program of study in the College of Business Administration. Courses in accounting, economics, finance, insurance, labor relations and statistics are recommended for any student planning to enter the legal profession.

The admission requirements of colleges of law differ considerably. The students should communicate with the dean of the law school they hope to attend and plan a program to meet the requirements of that school. Most law schools, including Arizona State University, require a baccalaureate degree for admission, although some permit admission upon completion of three years of college work

Students who plan to take a bachelor's degree prior to entering law school may follow any field of specialization in the College of Business Administration. Many pre law students find it desirable to major in General Business Administration. This gives the student a broad background for the study of law. Within the College of Business Administration are faculty members who are lawyers and who serve as advisors for students desiring a pre law general business administration major.

Accounting

PROFESSORS:

(BA 223A), FLAHERTY, FR TZEMEYER, HARIED, HUIZINGH, IMD EKE, McKENZ E, R. E. SMITH, T DWELL, WILKINSON

ASSOCIATE PROFESSORS:

BOYD, JOHNSON, PANY, RECKERS, RENEAU, WYNDELTS

ASSISTANT PROFESSORS:

BALDWIN, DUNCAN, KAPLAN, KNEER, McKINLEY, O'DELL PATTISON SHR VER

ACC 211 Elementary Accounting. (3) F, S SS
Theory and practice of accounting applicable to the accumulation of external reporting and external uses of financial accounting information Prerequisite: ADS 101 and at least sophomore standing

212 Elementary Accounting. (3) F, S, SS
Selection and analysis of accounting information for internal use by management Prerequisite ACC 211.

300 Survey of Accounting. (3) N
Financial and managerial accounting emphasizing the uses of accounting information Not open to students in the College of Business Administration.

301 Management Uses of Accounting. (3) N
Uses of accounting information for managerial decision making budgeting, and control. Restricted to nonaccounting majors Prerequisite. ACC 212

315 Financial Statement Analysis. (3) N
Analytical methods applied to financial statements for the guidance of management and investors Designed primarily for nonaccounting majors Prerequisite: ACC 212.

321 Intermediate Accounting. (3) F, S, SS
Accounting theory and practice applicable to determination of asset values and related problems of income determination. Prerequisite· ACC 212.

322 Intermediate Accounting. 3) F S, SS
Accounting theory and practice applicable to liabilities and owner s equity. Special problem areas related to income determination and financial reporting Prerequisite ACC 321.

331 Cost Accounting. (3) F, S SS
Cost accumulation systems for product costing cost behavior concepts for planning and control with the integration of quantitative methods. Prerequisites ACC 212 QBA 222 and MAT 210 or equivalent

351 Income Tax Accounting. 3) F S SS
Federal income taxation of individuals, partnerships, corporations and fiduciaries. Estate and gift tax Basic tax planning and research. Prerequisite· ACC 212

383 Advanced Accounting. (3) F, S, SS
Accounting theory applicable to partnerships, branches, business combinations and governmental units Prerequisite· ACC 322.

432 Advanced Cost Accounting. (3) S, McKenzie, Pattison
Decision-making, planning and control including capital budgeting and applications of operations research and statistics Prerequisite: ACC 331

447 Accounting Information Systems. (3) F S, SS; Kneer, McKinney Reneau, Wilkinson
Information requirements and transaction processing procedures relevant to integrated accounting systems, emphasizing systems analysis and design, controls and computer processing Prerequisite C S 202

452 Advanced Taxation. (3) F, S SS Boyd, Duncan, O De
Advanced problems in business and fiduciary income tax, estate and gift tax, planning and research Prerequisite. ACC 351

475 Accounting in Public-Sector Organizations. (3) S, Huizingh
Principles of accounting and reporting, budgeting and financial control systems applied in governmental units and other not for profit organizations. Prerequisite· ACC 301 or 331.

481 Auditing Theory and Practice. (3) F, S, SS
Fritzemeyer Harried, Kneer Pany
Concepts standards and methods in audit judgment formulation internal control evaluation, program development and sampling techniques Ethical and legal considerations Prerequisite· ACC 383

495 Contemporary Accounting Theory. (3) F, S, Flaherty
Theory of financial accounting and reporting requirements for profit oriented enterprises. Prerequisite. ACC 383.

500 Accounting Survey and Analysis. (3) F, S, SS
Basic accounting concepts and procedures for external reporting and internal use by management Open only to students without previous credit in accounting

501 Managerial Accounting. (3) F S, SS
Use of accounting data in the managerial decision making process and in the analysis and control of business operations Prerequisite· ACC 500 or equivalent

511 Tax Planning for Management. (3) S
Economic implications of selected management deci

591 Seminar: Professional Report Writing. (3) F, S

700 Research Methods. (3) S

Special Courses: ADS 484, 492, 493, 494, 497, 498, 499, 590, 591, 592, 593, 594, 598, 599, 690, 692, 700, 790, 791, 792, 799. (See pages 33-34)

BUSINESS EDUCATION

BUE 401 Vocational Education in American Schools. (3) N; Hutt
Basic principles and philosophies of vocational education.

480 Teaching Business, Office and Distributive Education Subjects. (4) F, S, Gryder
Organization and presentation of appropriate content for these subject areas in the secondary school

491 Organization and Management of Cooperative Programs. (3) A; Hutt Murranka
Work-study programs for business occupations in high schools and community colleges.

501 Foundations of Business Education. (3) A
History, philosophy, principles and objectives of business education.

503 Tests and Measurements in Business Education. (3) A
Construction, administration and evaluation of tests in business subjects.

505 Current Literature in Business Education. (3) A
Critical analyses, generalizations, and trends.

506 Data Processing for Teachers. (3) A
Development of curriculum, lesson plans, and strategies for teaching information processing, hardware/software evaluations and equipment acquisition techniques

511 Improving Instruction in Secretarial Subjects. (3) A
Modern methodology in teaching typewriting, shorthand and office education courses.

513 Improving Instruction in Accounting and Basic Business Subjects. (3) A
Modern methodology in teaching accounting and basic business courses

515 Observation and Work Experience. (3) A
Observation and/or participation in business

591 Seminar. (3) A
Topics such as the following will be offered.

(a) Guidance for Business Education

(b) Analysis of Research in Business Education

(c) Administration and Supervision in Business Education

(d) Individualized Progression

(e) Consumer Education

(f) Information Processing

594 Study Conference or Workshop. (3) A

791 Doctoral Seminar in Business Education. (3) A

Special Courses: BUE 484, 492, 493, 494, 497, 498, 499, 590 592, 593, 594, 598, 599, 690, 692, 700, 790, 792, 799. (See pages 33-34)

OFFICE ADMINISTRATION

OFA 344 Administrative Services. (3) F, S
Integrating information processing technology for the automated office.

351 Administrative Office Management. (3) F S
Relationship of administrative office management to the business enterprise.

432 Records Management. (3) F, S, Tate, Keller
Organization and management of manual and automated records systems

591 Seminar in Selected Office Administration Topics. (3) N
Prerequisite: ECN 201 or 202.

Special Courses: OFA 484 492 493 494, 497, 498, 499, 590 592 593, 594, 598, 599, 791. (See pages 33-34.)

Economics

PROFESSORS:
BOYES (319A), BRADA, BURGESS, COCHRAN, GOODING, M JACKSON, KAUFMAN, KINGSTON, KNOX, LADMAN, McPHETERS, PLANTZ

ASSOCIATE PROFESSORS:
COX, DeSERPA, FAITH, HAPPEL, HOGAN, LOWE, SCHLAGENHAUF, WINKELMAN

ASSISTANT PROFESSORS:
BLAKEMORE, HOFFMAN, LOW, McDOWELL, MELVIN, MENDEZ, ROGERS, SCHROETER, J. SMITH, S. SMITH

ECN 100 Development of the American Economic System. (3) F S
Analytical and historical treatment of the growth and development of the American economy and its institutions from colonial times to the present

201 Principles of Economics. (3) F, S, SS
Basic macroeconomic analysis. Economic institutions and factors determining income levels, price levels and employment levels

202 Principles of Economics. (3) F S, SS
Basic microeconomic analysis. Theory of exchange and production, including the theory of the firm.

301 Money and Banking. (3) F, S, SS
Functions of money. Monetary systems, credit functions, banking practices and central banking policy Prerequisite. ECN 201

304 Contemporary Macroeconomic Issues. (3) F, S SS
Macroeconomic principles applied to current problems of economic policy e.g. inflation, unemployment, gross national product (GNP) forecasting Prerequisite. ECN 201

305 Contemporary Microeconomic Issues. (3) F, S SS
Microeconomic principles applied to current problems of economic policy, e.g., pollution, crime, poverty Prerequisite: ECN 202.

311 Economic Development. (3) F
Theories of economic growth and development. Role of capital formation, technological innovation population and resource development in economic growth Prerequisite ECN 201 or 202.

321 Labor Economics. (3) F, S
Origins of labor movement· analysis of labor unions, labor markets, collective bargaining and current policy issues. Prerequisite ECN 202.

322 Economics of Human Resources. (3) F, S
Extensions/critiques of standard labor market theory, current issues in employment/training policy such as education are analyzed. Prerequisite· ECN 201 and ECN 202.

331 Comparative Economic Systems. (3) F
Alternative institutions, past and present for organizing

sions involving application of federal income tax laws. Recognition of tax hazards and tax savings. Prerequisite: ACC 501 or equivalent.

521 Tax Research. (3) F
Tax research source materials and techniques. Application to business and investment decisions. Prerequisite: ACC 351.

541 Managerial Accounting Controls. (3) F
Impact of internal reporting systems on organizational decisions and human behavior. Design, implementation, and evaluation problems. Prerequisite: ACC 331 or 501.

551 Advanced Accounting Theory. (3) F
Accounting measurement theories, income determination and financial reporting alternatives.

571 Taxation of Corporations and Shareholders. (3) F
Tax aspects of the formation, operation, reorganization, and liquidation of corporations and the impact on shareholders. Prerequisite: ACC 351.

573 Taxation of Partners and Partnerships. (3) F
Tax aspects of the definition, formation, operation, liquidation, and termination of a partnership. Tax planning is emphasized. Prerequisite: ACC 351.

575 Estate and Gift Taxation. (3) S
Tax treatment of wealth transfers at death and during lifetime, with emphasis on tax planning. Prerequisite: ACC 351.

582 Auditing Theory and Practice. (3) S
Function and responsibility of the auditor in modern society. Advanced topics in auditing theory and methods. Contemporary issues in auditing. Prerequisite: ACC 481.

585 Analytical Methods in Accounting. (3) S
Application of quantitative techniques to accounting problems. Prerequisites: ACC 501 and QBA 501 or equivalents.

586 Problems in Financial Accounting. (3) S
Problems in controversial areas. External reporting requirements for selected industries. Influence of government regulation.

587 Computerized Accounting Systems. (3) S
Design and evaluation of computer-based accounting information system. Development of computer-based financial models for planning and control. Prerequisite: ACC 447.

591 Seminar in Selected Accounting Topics. (3) F, S, SS

791 Doctoral Seminar in Accounting. (3) F, S

Special Courses: ACC 484, 492, 493, 494, 497, 498, 499, 590, 592, 593, 598, 599, 690, 692, 700, 790, 792, 799. (See pages 33-34.)

Administrative Services

PROFESSORS:
BOGGS (IRISH 3D), BATY, GRYDER, INMAN, TATE

ASSOCIATE PROFESSORS:
ARANDA, BOHLMAN, CHILDERS, DUNDAS, HENNINGTON, HUTT, JACKS, JENNINGS, LEONARD, LYNCH, MURRANKA, OBER, OLNEY, RADER, SMITH, VAN HOOK, WILSON, WUNSCH

ASSISTANT PROFESSORS:
DONOVAN, ESQUER, GILSDORF, HURSTON, KELLER, LEWIS, LOCK, OLIVAS, REISS

ADMINISTRATIVE SERVICES

ADS 101 Elements of Business Enterprise. (3) F, S, SS
Business enterprise as an integral part of American society. Emphasis on social, functional, political, legal, and ethical considerations.

233 Business Communication. (3) F, S, SS
Theories of interpersonal processes and motivational systems as related to effective communication. Directed practice on recurring types of organizational communications.

305 Business Law. (3) F, S, SS
The legal environment of business. Judicial procedures, contracts, torts and agency law.

306 Business Law. (3) F, S, SS
Legal aspects of corporations, partnerships, sales, negotiable instruments, property, secured transactions, bankruptcy, and insurance. Prerequisite: ADS 305.

307 Business and the Legal Environment. (3) F, S, SS
The American legal system. Contemporary legal problems of the modern business.

320 Entrepreneurship. (3) F, S
Opportunities, risks and problems associated with small business development and operation.

401 Small Business Administration. (3) F, S, SS; Aranda, Hutt, Olivas, Van Hook
Students, acting as management consultants, apply business principles and make recommendations to small businesses while learning to manage small firms. Prerequisite: Business core except MGT 463.

431 Business Report Writing. (3) F, S, SS; Baty, Inman, Gilsdorf
Organization and preparation of reports used in business. Prequisite: ADS 233.

451 Business Research Methods. (3) F, S; A.B. Smith
Nature and purpose of research. Prerequisite: QBA 222.

461 Theory of Administrative Communication. (3) F, S, SS; Leonard
Intrapersonal, interpersonal and administrative communication.

500 Legal Environment of Business. (3) F, S, SS
Public and private aspects of the legal environment of business and contemporary legal problems. Not open to those who have received credit in ADS 305 or equivalent.

501 Business Research Methods. (3) F, S, SS
Selection, design, and completion of a business oriented research project.

the social division of labor Property r ghts, nformat on and ncent'ves n ndustria soc et es Prerequ site: ECN 201 or 202.

336 International Economics. (3) F S
The comparat ve-advantage doctrine, including prac- t ces under vary ng commerc a policy approaches The economic impact of 'nternat ona disequi br um Pre requis tes ECN 201 and 202

341 Public Finance. (3) F S
Pub c goods, externa it es, voting models, publ c expend tures, taxation and budget formation with empha s s on the federa government. Prerequ s te. ECN 202

361 The Economics of the Soviet Union and Eastern Europe. (3) F
Origins and analysis of contemporary nstitut ons. Comparat ve deve opment and d fferent at on in the 20th century Prerequ s te. ECN 201.

371 The Economics of Latin America. (3) S
Lat n American econom c deve opment and current s sues n the reg on. Prerequis te: ECN 201 or 202

401 Intermediate Microeconomics. 3) F, S, SS
Role of the price system n organ zing econom c activity under vary'ng degrees of compet t on Prerequis tes ECN 201 and 202

402 Intermediate Macroeconomics. (3 F S, SS
Determ nants of aggregate evels of employment, output and income of an economy Prerequis tes ECN 201 and 202

408 Mathematical Economics. (3 F
ntegrat on of econom c analysis and mathematical methods into a comprehensive body of knowledge w th n contemporary econom c theory Prerequ site ECN 401 and approva of nstructor

421 Economics of State and Local Government. 3) S
Expenditure and taxat on nstruments of state and oca governments Loca pub c goods, f sca federal sm ntergovernmenta grants tax mitation, budget deter m nation. Prerequisite ECN 202

441 History of Economic Thought. (3) F
Deve opment of econom c doctrines, theories of mercant l sm, physiocracy classicism, neoc assicism, Marxism and contemporary economics Prerequis tes ECN 201 and 202

451 Economics of Public Utilities. 3 S
Econom c, leg slative and adm n strat ve problems in the regu at on of publ c util ty rates, costs, plant uti za- t on, serv ce standards and competit on Prerequ s te· ECN 201 or 202.

453 Government and Business. (3) F, S
Development of publ c po c es toward business. Ant trust act vity Economic effects of government polic es. Prerequ site ECN 202.

473 Urban Economics. 3 F, S
Mode s of urban growth and ntra-urban ocat on. The demand for and supp y of urban publ c goods and serv ces Prerequis tes ECN 201 and 202

488 International Monetary Economics. (3) F S
H story theory and po cy of nternat ona monetary ec onomics. Balance of payments and exchange rates. nternat ona financ a markets nc ud ng Eurocurrency markets. Prerequ s te ECN 201.

500 Fundamentals of Economic Analysis. (3 F, S SS
M croeconomic and macroeconom c analysis Price and output determ nat on in var ous market structures Funct ona distr but on of ncome Theory of ncome and employment Open on y to students w thout previous cred t in econom cs.

501 Managerial Economics. (3) F, S, SS
App ication of econom c analysis to manager al dec sion-making in areas of demand, production, cost and pr c ng. Evaluation of compet tive strategies.

503 International Economic Theory. (3) A
Theories of comparative advantage and their empirical ver f cation Theory and po t ca economy of commerc al pol cy Resource transfers and the ro e of the MNC.

505 Monetary Policy. (3) A
Determ nants of the money supp y and nterest rate levels Federa Reserve po icy and its effectiveness.

506 Monetary Theory. (3) A
Trad tiona and post Keynesian monetary theory, inter est rate determ nation, the demand and supp y of mon ey.

511 Macroeconomic Analysis I. (3) A
The nation's ncome, output, emp oyment and genera pr ce level. Examinat on of current theoretica and emp rical research and pol cy prob ems

512 Microeconomic Analysis I. (3) A
Theory of exchange, production, resource use and pricing n capita ist c and mixed systems

513 Macroeconomic Analysis II. (3) A
Advanced topics in macroeconom'cs Emphas s on ap p ed macroeconom c mode s. Prerequis te: ECN 511.

514 Microeconomic Analysis II. (3) A
Advanced topics in microeconomics Emphas s on general equ l brium, welfare economics, and production and cap tal theory. Prerequis te. ECN 512.

521 Labor Economics I. (3) A
Development of bas c theoretical models for analyzing labor market issues

522 Labor Economics II. (3) A
Extensions/cr ticisms of abor market theories. App ication s ons to a var ety of pol cy issues Prerequisite· ECN 521.

537 American Economic Growth. (3) A
Development and growth of the U.S economy within the framework of economic theory Institut ona change from colon al times to the present

541 Development of Economic Analysis. (3) A
H stor'ca deve opment of econom c theory. Emphas s on the development of economic ana ys s from pre c ass cal economics through Keynes.

553 Industrial Organization and Public Policy. (3) A
Analysis of structure, conduct, and performance in industria markets and recent deve opments in ant trust pol c es.

555 Public Sector Economics. (3) A
Economics of co ect ve act on, publ c spending, and taxat on. mpact of centra governmental activ ty on resource al ocat on and ncome d stribution

570 Economics of Developing Nations. (3) A
Econom c problems, issues and po icy decisions facing the lesser deve oped nat ons of the world

580 Econometrics I. (3) F
App cation of mathematical and stat st ca techn ques to problems of economic theory Prob ems n the for mu at on of econometric models Prerequ site· 6 hours of stat st cs

581 Econometrics II. (3) S
Advanced top cs in econometr cs Emphas s on ex tend ng the simple linear model and on simu taneous relationships. Prerequ'site: ECN 580

591 Seminar in Selected Economics Topics. (3) A

791 Doctoral Seminar in Economics. (3) A

Special Courses: ECN 484, 492, 493, 494, 497, 498 499, 590, 592, 593, 598, 599, 690, 692, 700, 790, 792, 799. (See pages 33 34.)

Finance

PROFESSORS:
JOEHNK (BA 267A), DAUTEN, HENDERSON, NELSON, POE, STEVENSON, TENNEY

ASSOCIATE PROFESSORS:
BUTLER, CESTA, DAVIS, HOFFMEISTER, KUDLA, MOREHART, MYLER, O'CONNELL, WILT

ASSISTANT PROFESSORS:
ASHLEY, BOOTH, GALLINGER, IFFLANDER, MARTIN, OFFICER, SMITH, STOLZ

FINANCE

FIN 203 Personal Finance. (3) F, S
Financ al prob ems and nst tut ons affecting ndiv duals. borrowing, saving, insurance and investment. May be taken by students in the College of Business Adm n s trat on for elective credit on y.

300 Fundamentals of Finance. (3) F, S, SS
Theory and problems in f nancial management of firms. Prerequ'sites· ACC 212 and ECN 202.

331 Financial Markets and Institutions. (3) F, S, SS
Analysis of financia markets and ntermediaries. Cap tal market theory, interest rate theory, money and capital market instruments, innovat on and regulation. Prereq- uisite: FIN 300

361 Managerial Finance. (3) F, S
Theories and problems in resource allocat on, cost of cap tal cap ta budget ng, leverage, dividend and grow- th problems Prerequisite· FIN 300.

421 Investment Analysis. (3) F, SS: Cesta, fflander, Joehnk Martin, Stevenson, Wilt
Security analysis Risk and return characteristics of stocks, bonds, opt ons, and futures. Overview of secur - ty markets Prerequisite. FIN 300.

426 Portfolio Management. (3) F, S Cesta, fflander, Joehnk, Mart n, Stevenson
Theory and management of portfol os to meet investor risk and return objectives nvestment se ect on and timing techniques. Prerequisite FIN 421.

431 Management of Financial Institutions. (3) F, S; Booth, Stolz
Asset, l ab lity and cap ta management in financ al nst - tutions. Influence of market factors. Current problems and issues Prerequ sites· FIN 300 and 331.

451 Working Capital Management. (3) F, S; Gall nger Hoffmeister
Analysis of techn ques for manag ng short term profita- bility and liquid ty Emphasis on managing cash, ac- counts receivable, nventory, and current l ab it es. Pre- requ site: F N 300.

461 Financial Management Cases. (3) F, S; Ashley, Henderson, Hoffmeister, ff ander, Kud a, Officer, Poe, Stevenson, Stolz
Case-oriented capstone course n managerial f nance, includ ng coverage of working cap ta management, cap ta budget ng, capital structure and financial strate- gy. Prerequ sites. F N 331 421, either 361 or 451, ACC 321

500 Finance Fundamentals. (3) F, S
Theories and prob ems in financia management of firms, work ng capital management, cap tal budget ng, and characteristics of secur t es ssued by corporat ons Prerequis tes: ACC 500, QBA 500

521 Security Analysis. (3) F
Va uat on techniques for bonds, common stock, pre- ferred stock, warrants, and opt ons, operat on and reg u at on of secur ty markets ntroduct on to portfol o management. Prerequisite F N 500.

526 Portfolio Management. (3) S
Capital market theory and secur ty valuation in a port- fol o context. Mathemat cal approaches to se ect on of optima portfo ios. Prerequisite F N 521.

531 Capital Markets and Institutions. (3) A
Recent theoretica and operational deve opments n ec- onom c sectors affecting cap ta markets and nst tu- tions Prerequis te: F N 500.

561 Financial Management. (3) F S SS
Case-oriented course n app icat ons of f nance theory to management ssues. Acqu s tion, a location and man agement of funds w th n the business enterpr se Work ng capital management, cap ta budget ng, cap ta structure, and financia strategy Prerequisites. FIN 500, ACC 501

581 Theory of Financial Decisions. (3) F, S
Theor es and applications of manager al f nance and in vestments. Cap tal budget'ng capital structure, d vi dend theory and valuation. Prerequ sites: ECN 500, F N 500 and QBA 501.

591 Seminar in Selected Finance Topics. (3) F

791 Doctoral Seminar in Finance. (3)
(a) Investments. S '84. Investments and market theory; eff c ent markets hypothes s; option and commod ty markets. Prerequisite. F N 581
(b) Financial Institutions and Markets. F '84: Econom c and monetary theory appl ed to f nancia markets and nstitutions, mp cations of financ al struc- ture for market performance and eff c ency. Prerequ - s te· F N 581

(c) Financial Management. F 83, S '85.
F nancia theory pertaining to cap ta structure, div dend policy, va uat on cost of cap ta , and capita budget ng. Prerequis te· F N 581

Special Courses: FIN 484, 492, 493, 494, 497, 498, 499, 590, 592 593, 598 599, 690, 692, 700, 790 792, 799 (See pages 33-34)

INSURANCE

INS 251 Principles of Insurance. (3) F, S, SS
Coverages ava lable buying methods procedures in sett ng c a ms, insurance companies and vocat ona op- portunit es

321 Life and Health Insurance. (3) F, S
Types of contracts, functions of var ous contracts, com pany organ zat on, rate making se ect on of r sks and other home office operations Governmental superv sion of ife nsurance compan es. Prerequ site. NS 251.

331 Property Insurance Principles and Coverage. (3) F S
Pol c es and pr nc ples of property and abi ty insur- ance. For students p ann ng careers in agency or home office work, or for a fundamenta know edge of insur- ance for business Prerequ site: INS 251.

425 Current Problems in Insurance. (3) S; Morehart, O Connell, Tenney
Major problems and ssues in the insurance industry. Prerequis te· 9 hours of insurance

431 Insurance Law. (3) F; Staff
Legal concepts and doctrines applicable to the field of insurance. Prerequisite. 6 hours of nsurance

451 Social Insurance. (3) F, S· Morehart, O Conne l, Tenney
Insurance coverages prov ded by state and federa governments: social security unemployment insurance, workmen's compensat on and other soc al or govern mental nsurance p ans.

461 Estate Planning. (3) F S; Morehart, Tenney
Use of l fe insurance w th w lls, trusts and bus ness buy sell agreements Needs approach to estate p anning.

481 Risk Management, Theory and Practice. (3) S; O Connell
Identif cation, measurement and treatment of business r sk from viewpoint of management. Emphasizes contro and/or insuring of commer ca risks. Prerequis te. NS 251

591 Seminar in Selected Insurance Topics. (3) N, Staff

Special Courses: INS 484 492, 493, 494, 497, 498, 499, 590, 592 593, 598 599 (See pages 33 34)

REAL ESTATE

REA 251 Real Estate Principles. (3) F, S SS
Regu at on, practices, egal aspects and professional opportunit es of the real estate bus ness.

302 Real Estate Management. (3) F, S
Management of residences, apartments and commer cial properties Cons derat on of professional standards, methods of bus ness promotion eas ng, insur ng and mainta ning properties as an agent of the owners. Pre requ site· REA 251

331 Real Estate Finance. (3) F, S
Determ n ng and develop ng financia requirements for rea estate projects Prerequis te. REA 251

401 Real Estate Appraisal. (3) F, S, Davis
Factors affecting the value of rea estate Theory and practice of appraising and preparation of the appra sa report Techn ques in appraisals. Prerequis te. REA 251

402 Income Property Appraisal. (3) F S; Dav s
Valuat on of net income streams for various types of n come produc ng properties. Prerequis te REA 401.

411 Real Estate Law. (3) F, S, SS Staff
Legal pract ces as they apply to the real estate fie d and to the fie ds of t t es, mortgages, lending and trust work

441 Real Estate Land Development. (3) F, S My er
Ne ghborhood and c ty growth Mun c pa planning and zoning. Deve opment of residentia , commercial, industr al, and spec al purpose properties Prerequ site REA 251.

456 Real Estate Investments. (3) F S But er
Analysis of nvestment dec s ons cons dering investing property types, market activ ties and cash f ows. Pre requis te. REA 251.

461 Current Real Estate Problems. (3) S, Myler
Recent deve opments n the f e ds of rea estate f nance taxation zoning, p anning governmenta regulations and government ass stance programs Prerequis te· REA 251

591 Seminar in Selected Real Estate Topics. (3) N Staff

Special Courses: REA 484, 492, 493 494, 497, 498, 499, 590, 592, 593, 598, 599. See pages 33-34)

Health Services Administration

PROFESSOR:
EVELAND (BA 352B), BOISSONEAU

ASSOCIATE PROFESSOR:
WILLIAMS

ASSISTANT PROFESSOR:
KIRKMAN-LIFF

HSA 501 Health Care Organization. (3) F, S
Concepts, structures, functions and values which character ze contemporary health care systems in the Un ted States.

504 Community Health Care Perspectives. (3) S
Epidemio ogical, soc ological and po itical perspectives and techn ques for analyz ng health problems and respond ng to hea th care needs n communit es Prerequ s te· HSA 501.

520 Hospital Structure and Policy. (3) S
Funct onal relat onsh ps among manager al elements of health care institutions with major focus on hospital governance and po cy dynamics. Prerequisite· HSA 501.

522 Hospital Administrative Practices. (3) F
Systems concepts, quantitative methods and nforma t on systems app ied to management problems in health nstitutions and commun ty hea th p ann ng. Prerequ sites HSA 501 and 520, QBA 522.

532 Financial Management of Health Services. (3) F, S
Acqu sit on, a locat on and management of f nancial re sources w thin the health care enterpr se Budgeting, cost analysis, financ al p anning and nternal controls. Prerequis tes· HSA 501 and 520.

542 Health Care Jurisprudence. (3) F
Lega aspects of hea th care del very for hospital and hea th services administration. Legal responsibilities of the hospital adm n strator and staff. Prerequ s tes. HSA 501 504, 520.

591 Integrative Seminar. (3) F
Capstone assessment of current po cies, problems and controvers es across the broad spectrum of health services adm nistration Prerequis tes· HSA 501, 504, 520.

In add tion, seminar topics such as the fol owing may be offered.

(a) Comparat ve health care systems
(b) Ambulatory care administration
(c) Health care market ng
(d) Strateg c planning
(e) Health economics

593 Applied Project. (3) F, S, SS
Supervised on site experience in advanced develop ment of managerial sk lls in health services adm nistration and pol cy. Prerequis tes. All courses in approved MHSA program of study

Special Graduate Courses: HSA 590, 592, 598, 599. (See pages 33-34)

Management

PROFESSORS:
FEARON (BA 367E), GROSSMAN, HEIER, INSKEEP, REIF, REUTER, RUCH, SCHABACKER, TINGEY, WERTHER, WHITE

ASSOCIATE PROFESSORS:
BASSFORD, BOHLANDER, BRENENSTUHL, COOK, KREITNER, MENDLESON, MONTANARI, MOORHEAD, ROSS RECK, SHIPPER, STEVENS

ASSISTANT PROFESSORS:
ADAMS, ARANDA, BRACKER, CALLARMAN, KINICKI, KUR, PEARSON, ROBERT RECK, WOLFE

MGT 301 Principles of Management. (3) F, S, SS
Planning, organ zing and control ng human and other resources for the effect ve and eff c ent accomplishment of organizat ona object ves.

311 Personnel Management. (3) F S, SS
Manpower p anning, staffing tra n ng and development, compensat on, appra sa and abor re at ons. Prerequ - site. MGT 301.

331 Production and Operations Management. (3) F S SS
Use of resources in producing goods and serv ces Concepts of plann ng schedu ng and contro l ng product ve act vities and phys cal resources Prerequis te MGT 301.

335 Methods Management. (3) F, S
Theory and practice n work des gn methods improve ment and work measurement Re at onsh p of att tudes and product vity. Prerequ site· MGT 301

352 Human Behavior in Organizations. (3) F S, SS
Human aspects of bus ness as distinguished from econom c and techn ca aspects and how they nf uence effic ency, morale and management practice. Prerequ site. MGT 301.

355 Purchasing. (3) F, S
Management of the purchasing function nc ud ng or gan zat on, procedures, supp er select on, qua ty, n ventory dec s ons, and price determ nat on Prerequ s tes MKT 300 and MGT 301.

413 Wage and Salary Management. (3 F, S Bohlander nskeep Wolfe
nsta lat on and administrat on of a complete wage and sa ary program Includes objectives, po cies organizat on, contro job eva uat on, and wage surveys Prerequisite MGT 311.

422 Training and Development. (3 F, S· Aranda, Kur
Learn ng theory orientat on and bas c eve training, management deve opment, resource mater als and methods Prerequ site· MGT 311

423 Industrial Relations and Collective Bargaining. (3 F S· Bohlander Werther Wh te
Processes and procedures of co ective barga n ng Scope and negotiation of union contracts

432 Materials Management. (3) F, S; Ca larman Fearon Robert Reck, Ross Reck
Ana ysis and manager al ntegration of the materia flow process w thin an organizat on, inc ud ng purchasing, product on and inventory control, and MRP Prerequ site. MGT 331

433 Managerial Decision-Making. (3) F, S, Pearson, Ruch
Decision making concepts, methods and approaches and their app cat on to bus ness problems Use and un derstand ng of quantitat ve and qual tative dec sion making tools. Prerequ s te· MGT 301.

434 Social Responsibility of Management. (3) F, S, SS; Bracker, Kre tner, Kur Stevens
Relationsh p of bus ness to the soc al system and ts en v ronment Criter a for apprais ng management deci s ons Managers as change agents Prerequis te· MGT 301

452 Organizational Behavior Applications. (3) F· Bassford, K n cki, Mend eson
The comp ex set of behavioral forces and relationships that nfluence organizational effect veness Intervent on strategies and appl cation sk l s. Prerequisite MGT 352.

455 Purchasing Research and Negotiation. (3) F, S, Fearon Robert Reck Ross Reck
Current phi osophy, methods, and techniques used to conduct both strategic and operat ons purchas ng research and negot ation Includes negot at on simu a- t ons Prerequis tes MGT 331 355

459 International Management. (3) F S Brenenstuhl, Schabacker Tingey
Concepts and practices of multinat ona and foreign firms Objectives, strategies, pol cies and organizational structures for operating n var ous env ronments. Prerequ s te MGT 301

463 Business Policies. (3) F, S SS
Po icy formulat on and adm nistration of the tota organizat on, nc uding integrative analys s and strategic p anning Prerequis te Comp et on of 87 hours, in cluding al other Bus ness Adm nistration core requirements

468 Management Systems. (3) F, S SS Callarman, Pearson, Robert Reck Ross Reck, Ruch
Systems theory and management funct ons, basic tools of systems ana ys s, organ zat ona systems design sys tems appl cations, systems s mu at on. Prerequ site· MGT 301

479 Purchasing and Materials Management Strategy. (3) F, S Fearon Grossman Robert Reck Ross Reck
Synthesis of purchas ng, production transportat on to prov de a systems perspect ve of mater a s management Deve opment of strateg es Prerequis tes MGT 331 355, 432, 455 468 TRA 345

500 Fundamentals of Management. (3) F S, SS
Manager al funct ons Performance mode s. Env ron menta constraints Operat ons and personnel funct ons Not open to students who have earned cred t n MGT 301 or equ valent

501 Managerial Concepts. 3) F S SS
Analysis of current adm n strat ve ph osophy and prac t ce and the r evo ution Integrat on of an organ zat on from the v ewpo nt of an adm n strator Prerequ site MGT 301 or 500

503 Organizational Behavior. (3 F S SS
Deve opment of effect ve work groups Ana ys s of cases n organ zat ona relationsh ps Group dynamics, effects of change and informal organ zat on

520 Problems in Personnel Management. 3 S SS
Selecting develop ng, ma nta n ng and ut iz ng a com petent abor force Case stud es of personnel problems Preparat on of a wr tten personne program.

522 Labor Relations and Public Policy. (3) F
State and federa eg slation Recent dec s ons of courts and labor boards Legal rights and dut es of emp oyers, un ons and publ c

532 Materials and Purchasing Management. (3) F, S
Ana ys s of the ncoming flow of mater als and the economic env ronment in which the materia s acquisit on and al ocat on functions operate.

559 International Comparative Management. (3) S
Analys s of comparat ve management practices, problems and ssues Managem strateg es for the mul t nationa organ zation. mpact of national and cultural env ronments.

581 Management of Production. (3) F SS
Ana ys s of the production function from a manager al po nt of v ew Conceptua foundat ons, analysis of major prob ems and decis on processes

589 Business Strategy and Policy. (3) F S, SS
Formu at on of strategy and policy n the organ zat on, emphas z ng the integrat on of decis ons n the funct onal areas. Prerequ s tes. ACC 501, ECN 501, F N 561, MGT 501, MKT 501 and QBA 501.

591 Seminar. (3) F S, SS
Top cs such as the fol owing w ll be offered·
(a) Manageria Planning and Contro
b) Bus ness and Soc ety
c) Research and Development Management
d) H story of Management Thought
e) Comparative Adm nistrat on

791 Doctoral Seminar in Management. (3) F, S

Special Courses: See page 33 34 for spec a graduate courses wh ch may be offered by this academ c un t

Marketing

PROFESSORS:
(BA 323E), BROWN, FARRIS, GWINNER, D. JACKSON, OSTROM, OVERMAN, ROWE SCHLACTER, WALKER

ASSOCIATE PROFESSORS:
BESSOM, DANIEL, GOURLEY, HUTT, REINGEN, SHROCK

ASSISTANT PROFESSORS:
BELTRAMINI, BLASKO, CROSS, EVANS, GILL, GRIFFITH, MOKWA, STEPHENS, SWARTZ

ADVERTISING

ADV 301 Advertising Principles. (3) F, S, SS
Advert sing as a communicat ons tool n market ng and business management Survey of market segmentation, creative strategy med a, and effectiveness measures Not open to students w th cred t in MKT 412 Prerequis te MKT 300 or both of the fo low ng. MCO 110 and junior stand ng.

311 Advertising Creative Strategy I. (3) F S
App cation of commun cation theory to advertis ng. dent ficat on of agency approaches to the creat ve dis cipl ne Eva uat on of advert s ng strateg es and execu tions. Prerequis te. ADV 301

312 Advertising Creative Strategy II. (3) F, S
Development and expans on of creative strategies into print and broadcast advert sing messages. Eva uat on of the creat ve component of advert s ng campaigns. Prerequ s te. ADV 311

371 Advertising Media. (3) F, S
Med a strategy as an extens on of marketing strategy, conceptual aspects of media planning, quant tat ve and qual tat ve ana ys s of media Prerequ s te· ADV 301.

453 Advertising Campaign Problems. (3) S, Blasko
Planning and executing the advertising campa gn in c uding research, budgeting, creative strategy, media planning, and campa gn evaluation Prerequisites: ADV 311 and ADV 371.

461 Advertising Management. (3) F, S, Beltram ni, Blasko
Adm nistration of the complete advert sing program Marketing mix, budgeting med a, creative research, and coord nation of promotional act vities. Prerequi s tes· ADV 311 and ADV 371.

591 Special Topics in Advertising. (3) N

Special Courses: ADV 484, 492, 493, 494, 497, 498, 499, 590, 592, 593, 598, 599 (See pages 33 34)

MARKETING

MKT 300 Principles of Marketing. (3) F, S, SS
Role and process of market ng w thin the soc ety, econ omy and bus ness organization. Prerequis te ECN 202.

302 Fundamentals of Marketing Management. (3) F S, SS
Market ng plann ng, imp ementation, and contro by organ zations with spec al emphasis on dentifying market opportunit es and deve oping marketing programs Pre requis te: MKT 300.

304 Consumer Behavior. (3) F, S, SS
Applicat on of behavioral concepts in the ana ysis of consumer behavior and the use of behaviora analysis in marketing strategy formu ation. Prerequisite: MKT 300

310 Principles of Selling. (3) F S, SS
Basic princ ples underly ng the se ling process and their practical app ication in the sale of industrial goods consumer goods and intangibles Prerequ site. MKT 300.

321 Principles of Retailing. (3) F, S SS
Role of retai ng n marketing Merchandis ng (buying and selling), location, promot on, organ zation, personnel and control in a retail enterprise. Prerequisite: MKT 300

325 Public Relations in Business. (3) F, S, SS
Role of pub ic re ations in business, government and social nstitutions emphasizing policy formulation from a manager al perspective. Prerequ site. MKT 300.

331 International Business. (3) F S
Mu tid scip nary analysis of cultural, political, economic and socia systems as they re ate to operations of nternat onal f rms. Prerequisite· ECN 202

351 Marketing Intelligence. (3) F, S, SS;
Integrated treatment of the tradit ona approaches to marketing research and analysis of env ronmental fac tors affect ng marketing decisions in the firm Prerequisite MKT 300 and QBA 221

411 Sales Management. (3) F, S, Evans Jackson
Appl cation of management concepts to the administrat on of the sales operat on Prerequ s te· MKT 302.

412 Marketing Communications. (3) F, S, SS Gil , Rowe
The communicat on process as it relates to the promo t onal activities of the firm from a strategic point of v ew. Prerequ site: MKT 302

424 Retailing Management. (3) S, Evans, Wa ker
Problems of reta ling management nc uding functions with n various institutions and reta ing of goods and services. Prerequis te: MKT 321

434 Industrial Marketing. (3) S; Hutt
Strateg es for marketing products and services to n dustrial, commercia and governmental markets. Chang ng ndustry and market structures. Prerequisite: MKT 302.

435 International Marketing. (3) F, S, Bessom
Ana ysis of marketing strategies deve oped by internat onal firms to enter fore gn markets and to adapt to chang ng internat onal environments Prerequ site: MKT 302.

444 Marketing Channels. (3) S; Evans, Walker
Distribution channels used by firms engaged in mar keting and manufactur ng Strateg es for market ng channels management. Relationsh ps among marketing intermediar es Prerequis te· MKT 302.

460 Strategic Marketing. (3) F S, SS, Gour ey, Gw nner, Mokwa, Reingen
Po icy formulation and dec sion making by the mar keting execut ve Integrat on of marketing programs and considerat on of contemporary marketing ssues Prerequisite· MKT 304 and MKT 351

500 Fundamentals of Marketing. (3) F, S, SS
An introduction to market ng concepts and funct ons uti zed by organ zat ons to ach eve their goals w th n dynamic externa env ronments. Not open to students who have earned cred t n MKT 300

501 Marketing Management. (3) F, S, SS,
Deve opment and implementat on of market ng objec- t ves and strateg es in response to market opportun t es, env ronmental change, and compet tion Prerequi s te: MKT 500 or 300.

502 Public Relations. (3) N
Modern pub ic re ations concepts applied to managerial dec s on mak ng. nc udes histor cal cases and current problems

520 Strategic Perspectives of Buyer Behavior. (3) S; Concepts and theor es from the behav oral sciences as they relate to marketing strategy formu at on. Prerequ s te MKT 500 or equ valent, or approval of nstructor.

522 Marketing Information. 3) F·
Marketing research, marketing nformat on systems and modern stat st cal techniques n marketing decis on making. Prerequ s te MKT 501

563 Marketing Strategy. (3) F, S,
P anning and control concepts and methods for devel op ng and evaluat ng strateg c policy from a marketing perspective Prerequ site. MKT 501

591 Seminar. (3) N,
Topics such as the fo ow ng w l be offered·

(a) Product Strategy
(b) Channe Strategy
(c) Promot on Strategy
(d) nternat onal Bus ness
(e) Marketing n nternat ona Operat ons
(f) Market ng Strategy n Not for Profit and Pub ic Sector Organ zat on

791 Doctoral Seminar in Marketing. (3) F, S

Special Courses: MKT 484, 492, 493, 494, 497, 498, 499 590 592, 593 598 599 690 692, 700 790, 792, 799 (See pages 33-34.)

TRANSPORTATION

TRA 301 Principles of Transportation. (3) F, S, SS
Econom c character st cs, regu at on, and public policy imp ications of rail, motor, air water and p peline transportat on. Managing the sh ppers transportat on needs.

345 Traffic Management. (3) F, S Daniel, Shrock
Traff c management in bus ness enterprises analys s of sh pper-carrier relationships and the lega environment with respect to rates and serv ces. Prerequisite. ECN 202

405 Urban Transportation. (3) F, S· Farris
Economic, soc al, pol t cal and bus ness aspects of pas senger transportation Pub ic po icy and government a d to urban transportat on development.

445 Physical Distribution Management. (3) F, S; Dan el, Shrock
Managing the f rm's phys cal d stribution act vities, n tegrat ng transportat on, inventory, warehous ng, faci ity ocation customer service, and related activites n system context

460 Highway Transportation. (3) F, S, Shrock
Analysis of motor carr er econom cs, regu at on, management and rate mak ng pract ce eva uat on of public po cy issues re ated to h ghway transportation.

Prerequis te. TRA 301.

461 Air Transportation. (3) F, S, SS, Daniel
Econom c and legal environment of a r transportat on; government pol c es concerning promotion, f nancing, and economic and safety regu at on; carrier operat ng practices Prerequ site: TRA 301

462 Problems in Transportation. (3) S, Farris
Current problems of transportation operation, physical distribut on and logistics, carr er management, and pub ic transportat on po cy. Prerequ'site· TRA 301.

463 International Transportation. (3) F S; Griffith, Dan el
Ro e of transportation in nternational business, eco nomic and ega env ronment; carr er operations and practices, managing the firm s international transportation needs

541 National Transportation Policy. (3) F
Public po icy alternatives and problems in transportation· nterrelationships of competing transportation modes; relationships of public nvestment to private operat ons

545 Business Logistics. (3) S
Systems management concepts approach to logistics requ rements of the business enterprise; analysis of goods and nformat on f ows and coordinating act vities

Special Courses: TRA 484, 492, 493, 494, 497, 498, 499, 590, 591 592, 593, 598, 599, 700, 790, 792, 799. (See pages 33 34)

Quantitative Systems

PROFESSORS:
(BA 297B), ECK, HERSHAUER, KAZMIER, PHILIPPAKIS, WOOD

ASSOCIATE PROFESSORS:
BROOKS, BURDICK, HUSTON, MILLER, O'LEARY, ST LOUIS, VERD NI

ASSISTANT PROFESSORS:
ESQUERRA, GREEN, HUGHES, KEIM, PADDOCK, ROY, SWANSON

LECTURER:
NOEL

COMPUTER INFORMATION SYSTEMS

CIS 200 Computers in Business. (3) F S, SS
Required in the business core beg nn ng Fal 1983 con tingent upon funding. Uses of computers n process ng business data. ntroduct on to business programm ng n

BASIC. Not open to students with credit n a higher evel CIS class. Prerequis te· MAT 141 or concurrent registrat on.

202 Management Information Systems. (3) F, S, SS
Bas c computer systems concepts. ntroduction to data f les storage, and process ng. Uses of COBOL and oth er suitable anguages Not open to students w th credit in a h gher eve CIS c ass Prerequisite· ACC 211 or concurrent enro lment

230 Business Programming I. (3 F, S, SS
Computer analysis of bus ness data. F owcharting, com puter programming, and use of software for bus ness app cations. Prerequ s te: QBA 221 or concurrent en-ro lment

235 Business Programming II. (3), F, S, SS
Deve opment of computer generated business reports from business data f les Use of a high- evel, f le or ented language Prerequ site CIS 230 or concurrent enrollment.

307 Systems Modeling. (3) F, S
Procedures for nvestigating and ana yzing dec sion sys-tems. Use of specia languages as tools of ana ys s and s mulation Prerequ s tes CIS 230, QBA 222, MAT 210 or MAT 270.

330 Interactive Business Programming. (3) F, S
Deve opment of programs for nteract ve business data entry, nformation acquis t on and manager a ana ys s. Programm ng in an nteract ve bus ness language Pre requis tes· CIS 230, MAT 210 or MAT 270.

335 Intermediate Business Programming. (3) F, S SS
Overview of bus ness software concepts and recent de ve opments. Business app icat ons of the computer via high-leve , procedure or ented languages Prerequ sites. CIS 235 and ACC 212

420 Business Database Concepts. (3) F S, Eck, Mil er, Phil ppak s
Overv ew app ications and management of bus ness database systems and methods Prerequ s tes· CIS 335 CIS 330.

430 Advanced Business Programming. 3) F, S
Phil ppakis Swanson
Appl cations deve opment and advanced programming concepts. Program structure and des gn. Software de ve opment cycle Prerequ s tes CIS 335, C S 330

440 Systems Analysis and Design. (3 F, S SS, Green, Ke m Paddock
Pr nc p es and app icat ons of computer-based manage ment nformat on systems and ana ys s and design Pre requis tes C S 307 C S 420.

502 Computer Information Systems. (3) A
E ectronic data process ng systems for admin strat ve appl cations. Computer hardware software program ming in business oriented languages Prerequis te Computer Programm ng

510 Systems Models and Simulation. (3) A
Design of computer-based decis on systems Simu at on as a research and dec sion making too Prerequ s tes QBA 221 and Fortran or Basic programm ng

515 Management Information Systems. (3) A
Systems theory concepts app ied to the col ection re tent on, and d ssem nat on of nformat on for manage ment decision mak ng Prerequ s te· CIS 502 or equ va ent

520 Systems Design and Evaluation. 3) A
Methodo og es of Systems Ana ys s and Des gn Issues nc ude project management nterface organizat ona requirements constra nts documentat on, implementa-t on, control and performance eva uat on Prerequ site C S 440 or equ va ent

591 Seminar in Selected Computer Information Topics. (3) F, S
Top cs such as: (a) Decision Support Systems, (b) Da-tabase systems, (c) DSS Generators, (d) Application De ve opment Languages, (e) Business M cros and M nis, and (f) Bus ness Graph cs.

593 Applied Project. F, S SS
A proposa for a project must be submitted to and ac cepted by the Master of Quantitative Systems com-m ttee during the semester pr or to enrollment

791 Doctoral Seminar in Computer Information Systems. (3) N
Topics such as (a) Research Direct ons in Information Systems, (b) Systems Des gn, (c) Strateg c Planning n S, (d) Informat on Systems Productiv ty, and (e) Man-Mach ne Dia ogues.

Special Graduate Courses:
See pages 33 34 for spec al graduate courses which may be offered by this academ c un t.

QUANTITATIVE BUSINESS ANALYSIS

QBA 221 Statistical Analysis. (3) F S, SS
Methods of stat stica description. App ication of probabi ty theory and statistical nference in bus ness. Prerequ site. MAT 141 or equ valent

222 Quantitative Business Analysis. (3) F S, SS
Appl cation of quant tat ve methods to product on, mar-keting, finance, and management. Use of standard computer programs Prerequ site QBA 221 or equiva ent.

321 Intermediate Business Statistics. (3) F, S
Appl cation of regress on and ana ys s of variance mod e s to bus ness and economic problems. Prerequisites. QBA 221 or equiva ent

391 Operations Research. (3) A
Appl cat on of quant tat ve techn ques such as mathe mat ca programming and inventory models to bus ness prob ems. Prerequis tes QBA 222, MAT 242 or MAT 342

405 Sampling Techniques in Business. (3) F, S
Burd ck Hughes
Planning, execut on and analysis of surveys in bus ness research Prerequ site QBA 221 or equ va ent

410 Applied Business Forecasting. (3) A; Wood, St. Lou s
App ication of forecasting techniques n business and nst tutional env ronments Prerequ site· QBA 321

421 Advanced Business Statistics. (3) A· Burdick, Brooks, Hughes, Noel
App cations of probab ity and statistical inference to bus ness decision. Probab ity theory, dec s on theory and Bayes an inference. Prerequis tes. QBA 221, MAT 270.

450 Decision Analysis Applications. (3) A; Hershauer, Verdini
Imp ementat on of quantit at ve techniques for the anal-ysis and solut on of manageria prog ems Prerequisites. QBA 391, QBA 405, QBA 410

500 Fundamentals of Business Statistics. (3) F S SS
Basic stat st cal measures Probabi ty concepts and statistical nference Prerequ site· MAT 141 or equiva-lent

501 Managerial Statistics. (3) F, S SS
Stat st cal methods used n dec sion mak ng includ ng analysis of var ance, mu tiple regression time series, dec sion theory, and non parametr c statistics Prereq uis te QBA 500 or equ va ent

523 Quantitative Models in Decision Making. (3) A
Linear Programming, network analysis, inventory models, and simulation for use in decision making. Prerequisite: QBA 500 or equivalent.

524 Nonparametric Statistics. (3) A
Nonparametric statistical tests for location, dispersion, trend, association, correlation, and goodness-of-fit. Nonmetric scaling techniques. Prerequisite: QBA 500 or equivalent.

525 Experimental Design. (3) F, S
Analysis of variance and experimental design with emphasis on business research. Multiple regression and correlation. Nonparametric techniques. Prerequisites: QBA 500 and 501.

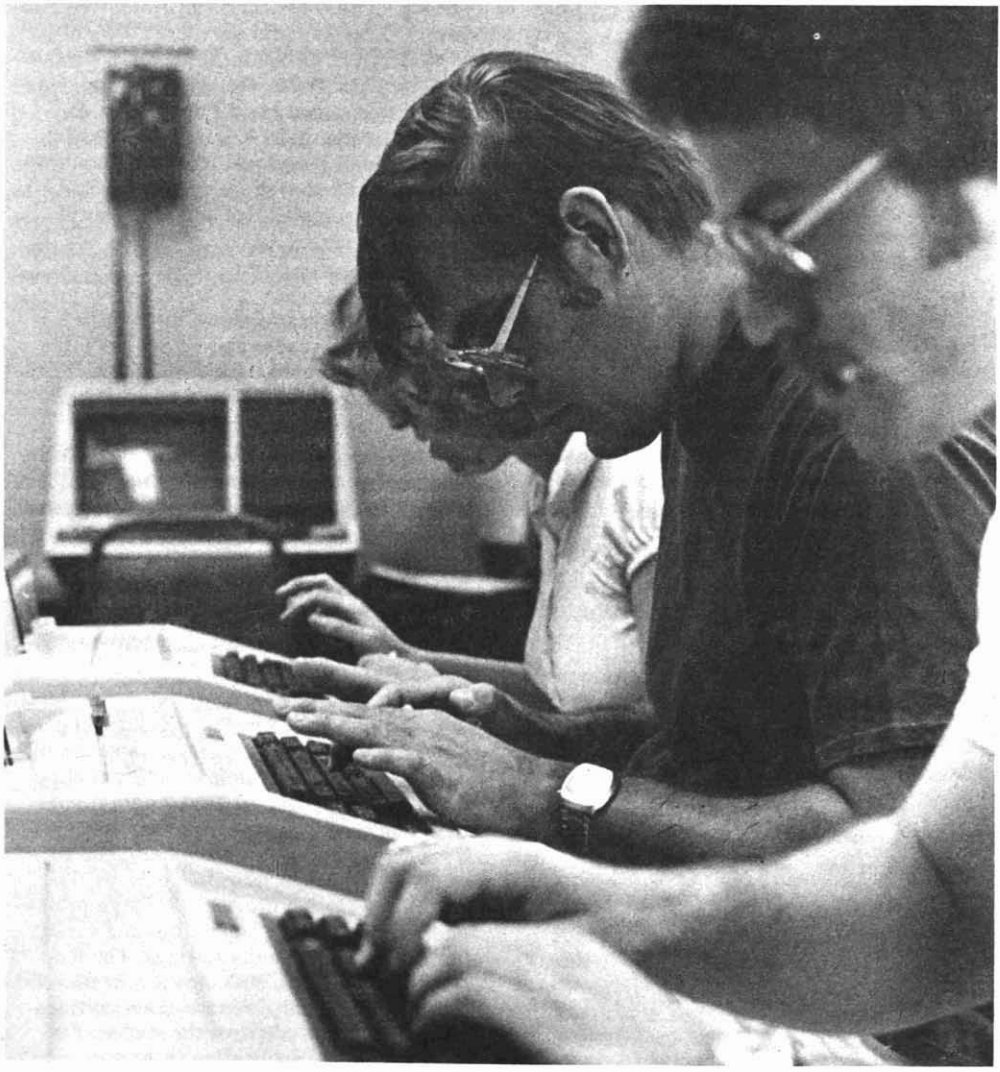
530 Advanced Experimental Design. (3) A
Advanced statistical methods used in business research. Factorial and repeated measures designs, multivariate analysis of association and interdependence. Prerequisite: QBA 525 or equivalent.

591 Seminar. (3) F, S
Topics such as: (a) Business Forecasting, (b) Advanced Management Science, (c) Decision Analysis, (d) Sample Design, and (e) Computer Modeling for Operations Research.

593 Applied Project. F, S, SS
A proposal for a project must be submitted to and accepted by the MQS committee during the semester prior to enrollment.

791 Doctoral Seminar in Quantitative Business Analysis. (3) N
Topics such as the following will be offered: (a) Advanced Experimental Design, (b) Forecasting, (c) Multivariate Analysis, and (d) Decision Theory.

Special Graduate Courses. See pages 33-34 for special graduate courses which may be offered by the academic unit.



College of Education

Robert T. Stout, Ph.D.
Dean

Purpose

The central purposes of the College of Education are to prepare leaders in education and to help improve the quality of education in the United States.

Supportive purposes are:

1. To contribute to the body of professional knowledge in the field of education through research, the development of educational theory, and innovation and experimentation in educational method and organization.
2. To offer leadership beyond the campus through the dissemination of information and ideas and through cooperative involvement with other agencies engaged in education.
3. To provide services to other agencies engaged in education in such manner as to promote improved educational practice throughout a widening sphere of influence.

Organization

The College of Education is comprised of eight departments. They are:

Counselor Education
Educational Administration and Supervision
Educational Psychology
Educational Technology and Library Science
Elementary Education
Higher and Adult Education
Secondary Education
Special Education

Several bureaus, centers and special laboratories directly complement the academic programs of the College. These include the Arizona Educational Information System; Center for Adolescent Research, Evaluation and Service; Center for Bilingual Bicultural Education; Center for Indian Education; Center for Multicultural Education; Counselor Training Center; Instructional Resources Laboratory; Office of Field Services; Office of Research Services; Office of Student Services; I.D. Payne Laboratory for Multicultural Education; Professional Field Experiences; Psychological Assessment Laboratory; Reading Center/Clinic; Southwest Regional Center for Community Education Development; Special Education Testing Clinic; and University Testing Services.

Degrees

Bachelor of Arts in Education Degree. Several undergraduate majors are available leading to the degree Bachelor of Arts in Education which require a minimum of 126 semester hours of credit.

Master's Degree. Students may enroll in either the Master of Education or the Master of Arts degree program. Each program consists of 30-42 semester hours of study, depending upon given departmental requirements. The Master of Arts programs emphasize research competencies. The Master of Education programs stress development and extension of professional competence.

Master of Counseling Degree. A first-level professional degree, Master of Counseling, is awarded upon the satisfactory completion of a two-year (60 semester hours) program of approved graduate studies. This program provides for a core of required professional studies supported by related disciplines, and for two professional specialization options. The Practitioner Option provides thorough professional preparation for counseling in a variety of school and community settings. The Research Option is well suited as preparation for future doctoral study. With teacher certification, either option prepares the student for school counselor certification in Arizona and

other states. For further information regarding admission and courses of study, contact the Department of Counselor Education.

Education Specialist Degree. The degree Education Specialist is awarded for satisfactory completion of the Specialist program of graduate studies.

Doctor of Education Degree. The degree Doctor of Education is awarded for satisfactory completion of the doctoral program of graduate studies.

Doctor of Philosophy Degree. The degree Doctor of Philosophy is awarded for satisfactory completion of this doctoral program of graduate studies.

Graduation and Certification Requirements

Admission to Undergraduate Programs

Elementary Education. Students wishing to become elementary school teachers should declare their intent during their freshman or sophomore year and register for advisement with the College of Education Office of Student Services. Advisors will assist students to meet all requirements for admission to and completion of the Professional Preparation Sequence.

Admission to the Professional Preparation Sequence requires:

1. Completion of at least 45 semester hours of appropriate University course work with a cumulative grade point average of 2.50 or higher;
2. Approval by the Office of Student Services certifying that the student has met all requirements, including successful passage of required personal and academic tests or examinations;
3. Satisfactory completion of EDF 300.

Secondary Education. Students wishing to become secondary school teachers may enroll either in the College of Education or the college in which the major teaching field is to be taken.

The college in which the student is enrolled will assign an advisor from the appropriate major department in cooperation with the Office of Student Services.

Admission to the Professional Preparation Sequence requires:

1. Completion of at least 56 semester hours of appropriate University course work with a cumulative grade point average of 2.50 or higher;
2. Approval from the Office of Student Services certifying that the student has met all requirements, including successful passage of required personal and academic tests or examinations.

Special Education. Freshman or sophomore students wishing to teach handicapped children or children with other exceptional characteristics should register for advisement in the College of Education Office of Student Services. An advisor from the Department of Special Education will be assigned.

Admission to the Professional Preparation Sequence requires:

1. Completion of at least 56 semester hours of appropriate University course work with a cumulative grade point average of 2.50 or higher;
2. Approval by the Office of Student Services certifying that the student has met all requirements, including successful passage of required personal and academic tests or examinations.

Selected Studies in Education. Students who may wish to major in education but who may choose careers in fields other than public school teaching can elect to develop an individualized degree program. Such students should seek advice early from the College of Education Office of Student Services.

Admission of Transfer Students. Students planning to study education and who transfer to Arizona State University from other universities or colleges should seek advice early from the College of Education Office of Student Services.

Retention and Disqualification

1. A student must maintain a cumulative grade point average of 2.50 or better to remain in good standing. Any student whose cumulative grade average is below the required index may be placed on academic probation. Once a student is on academic probation, he she remains in that status until the grade point index reaches the retention level, 2.50, or he she is disqualified from the University. Unless the Standards Committee acts otherwise, a student with a deficient grade point index may not enroll in any of the Professional Education classes.
2. A student must also maintain sound physical and mental health. A student who appears to lack the degree of physical and mental health necessary to function successfully as a teacher may be required to

take a medical examination and make the results available to the Standards Committee of the College of Education. The responsibility for reviewing and determining the qualification of students whose behavior and/or performance are in question is vested in the Standards Committee. The Committee's decision may require the dismissal or disqualification of a student from the College.

3. Any student who has earned the number of semester hours required for graduation, but has not achieved the 2.50 index required for graduation, is subject to disqualification.
4. A disqualified student who desires to be reinstated may submit an application for reinstatement. A disqualified student normally will not be reinstated until at least one semester has elapsed from the date of disqualification. The burden of establishing fitness is on the disqualified student, who may be required to take aptitude tests and submit to other examinations before being readmitted
5. While students are subject to the general retention policy, they are evaluated in the College on broader criteria than mere academic average. Students are reviewed for evidence of competency for teaching and are continuously evaluated as they progress in the program. Prospective teacher candidates who do not meet the established criteria are guided toward a program that is compatible with their interests and abilities.
6. The effective date a student is academically disqualified or retained is the first day of classes of the semester following the establishment of the deficiency.

Degree Requirements. Each candidate for graduation in a degree curriculum leading to Bachelor of Arts in Education degree is required to complete an approved program of at least 126 semester hours with a cumulative grade point index of 2.50 or above for: (1) All courses taken while a student at the University; (2) All courses included in his her major teaching field; (3) And all professional education courses.

Departments may have graduation requirements in addition to those listed above. A student is responsible for checking and meeting departmental requirements.

These specific requirements are available from the departments offering the particular program.

Each candidate must file a written application for graduation acceptable to the College of Education Standards Committee and receive a recommendation for graduation from the faculty of the College of Education.

General Studies. The student should consult with his/her advisor for specific recommendations or requirements within the area of General Studies in order to build an acceptable pattern of courses and to be qualified for admission to and graduation from the College of Education. A minimum of 45 semester hours (54 semester hours for Elementary Education majors) of General Studies must be completed before the student is eligible for graduation in any of the undergraduate curricula offered by the College of Education. It is anticipated that heavy emphasis will be placed on these requirements during the first two years of study before formal admission to the College of Education. The following minimum requirements exclusive of Education courses indicate the general nature of the distribution which must be met as the student completes this basic requirement:

1. A minimum of 8 semester hours (9 semester hours in Elementary Education) credit in the Humanities and Fine Arts (exclusive of freshman English);
2. A minimum of 8 semester hours (9 semester hours in Elementary Education) credit in the social and behavioral sciences, including a course in general psychology.
3. A minimum of 8 semester hours (9 semester hours in Elementary Education) credit in sciences and mathematics, including one course in science and one course in mathematics.

Student Teaching

Students must be admitted to the College of Education's approved teacher education program and have completed the appropriate prerequisites to be eligible for admission to student teaching.

Students planning to student teach should contact the Director of the Office of Professional Field Experiences for specific prerequisites. Application to student teaching must be submitted in the semester prior to the semester in which the candidate intends to student teach.

Opportunities for student teaching in England are available for students in Special Education, Elementary Education and selected fields in Secondary Education during the

Spring Semester of each year. For information contact the Director of the Office of Professional Field Experience.

Guidelines are available in the Office of Professional Field Experiences should place ment limitations exist.

Requirements. Students admitted to student teaching must have a cumulative index of 2.50 or better and 90 semester hours of college credit. The cumulative index in the Teaching Major shall be at least 2.00 (some majors may require a higher index for entry into student teaching).

The completion date of the last education methods course must be within two years of the beginning date of student teaching to be accepted as meeting the prerequisites.

Students in the Elementary Education curriculum devote their full time to student teaching all day in the cooperating schools. Student teaching occurs during the first or second semester of the senior year for elementary education students.

Students who are preparing for secondary school certification teach for one half school day for one semester during the first or second semester of their senior year. These students may devote all day to student teaching when their programs and major departments permit them to do so.

The student's course load is limited to 16 semester hours during the semester in which he she is teaching. All student teachers are required to attend seminars conducted by the College Supervisor. Seminar time is arranged by each supervisor and is an integral part of the student teaching experience. Student teachers are not permitted to take part in activities that interfere with their student teaching conferences, seminars or other activities related to teaching in the cooperating school. Applications for the appropriate semester of Student Teaching will be distributed and received; for Spring semester between September 15 and October 15, for Fall semester between March 1 and April 1

Cooperating Schools Available. Excellent schools and school systems cooperate with the College of Education in the supervision of student teachers Each of the schools presents its own particular type of organization and problems so that the student may receive experience in many types of work from the kinder garten through high school Student teachers are required to adhere to the calendar, rules, regulations, and philosophy of the school in which they are accepted to student teach. Each student teacher is under direct guidance of a cooperating teacher, a college supervisor and the Director of Field Experiences. Students are strongly advised to seek student teaching assignments in multicultural and bilingual classrooms.

Student Teaching Waiver. Under certain limited conditions a student may be excused from student teaching. In general the conditions apply to persons who have extensive teaching experience. Specific conditions may be discussed with the Director, Office of Professional Field Experiences

Honors Program. An Honors Program is available within the College of Education for the exceptional student. It s administered by the Standards Committee which serves as an Honors Council.

Pass-Fail Grades. Students in the College of Education may participate in the Pass Fail program of the College of Liberal Arts. However, no course taken for Pass-Fail may be counted toward the student's major or minor teaching field requirements or other required academic special zation.

Bachelor of Arts in Education

Elementary Education Curriculum. The Department of Elementary Education prepares students to work with children in home, school and other educating environments. Certification and selected studies programs are designed to assist candidates in providing the wisest possible nurture for all children. Successful candidates for the Bachelor of Arts certification pedagogy degree will be able to show proficiency in seven areas:

1. Personal and philosophical orientations,
2. Communication skills;
3. Knowledge of human development and human variability;
4. Use of measurement, assessment and evaluation techniques,
5. Mastery of appropriate subject matter,
6. P anning and organization of instructional activities,
7. Fostering posit ve student performance.

Elementary or Ear y Childhood Education pedagogy students obtain a Bachelor of Arts in Education degree and are recommended for certification in kindergarten and grades 1-8.

Major. The pedagogy major is Elementary Education An option in Early Childhood Education is available The Early Childhood Education option prepares students to work in educational environments for children from birth through age eight, and leads to a degree of

Bachelor of Arts in Education with the recommendation for certification for teaching in the public schools, K-8. It also prepares students to work in infant and preschool settings. For specific requirements students should refer to the Early Childhood Education checksheet available in Student Services.

Elementary Education General Pattern. A minimum of 126 approved semester hours is required. This is divided as follows:

	Semester Hours
General Studies:	
Humanities and Fine Arts	9
Behavioral and Social Sciences	9
Sciences and Mathematics	9
General Studies Electives	21
Freshman English	6
Total General Studies	54
Elementary Education Major	48
Educational Specialization	12*
Academic Minor	15**
Grand Total (Minimum)	126

*Hours will vary according to program.

**Minor is made up of an approved sequence of general studies courses

Requirements for State Certification.	
United States and Arizona Constitution	5
United States History	3
General Psychology	3

Within the general pattern of course work, students are strongly encouraged to include the following: 1) a foreign language, particularly Spanish or a Native American language, 2) work with children in classrooms or other settings; 3) experiences in multicultural and bilingual settings.

Advising. Advisors in Elementary and Early Childhood Education curriculums have check sheets with recommended and required courses for each year of work These check sheets contain patterns of course work appropriately related to the age level of pupils with whom the student as a teacher will want to work. The check sheets also contain recommendations for General Studies electives, specializations and minors. It is necessary for students to consult advisors in this curriculum in order to ensure the best possible program of studies. This is particularly important inasmuch as the advisor must sign the checkout sheet for graduation which indicates that an approved program of course work has been developed.

All Elementary and Early Childhood Education students must take the following field based sequence·

1. EDF 300 Self Assessment with field experiences and academic and personal testing (3 hours), prior to admission to professional courses.
2. EED 366 Observation and Participation and RDG 481 Reading Practicum (6 hours) *or* ECD 378 Practicum Early Childhood and RDG 481 Reading Practicum (6 hours), practical experience concurrent with method courses.
3. EED 478 Student Teaching in the Elementary School (15 hours), to display competency in an on site setting.

Professional Education Alternatives

Campus Based. Students may take courses in professional education on campus, but are required to have substantial experiences with children prior to student teaching including the admission, practica and student teaching courses which are field based.

Field Based. Students take most of the courses required in professional education at field based sites established in the metropolitan area. During the junior-senior year, students intern in classrooms and take courses on site. One full semester in the senior year is devoted to student teaching typically in one of the classrooms where the student interned.

Secondary Education Curriculum. This curriculum prepares students for teaching in the secondary school. Majors and minors are completed in the teaching fields desired. The curriculum has considerable flexibility for those who wish to pursue specialized work in addition to the regular expectations for teaching. This curriculum leads to the degree of Bachelor of Arts in Education and to recommendation for certification for teaching in the secondary school (grades 7 through 12).

Suggested Pattern. A program of 126 approved semester hours is required. This is divided as follows:

	Semester Hours
General Studies*	45
For details see page 36 37	
Major Teaching Field (required)	36 42
Minor Teaching Field (optional)	24
Professional Education	28

*United States and Arizona Constitution, U S. history, general psychology, science, and mathematics, are required for state certification and may be included in the General Studies requirement.

Advisors in this curriculum have check sheets with recommended courses for each major. The check sheets include recommendations for electives. Students should consult ad-

visors in this curriculum in order to ensure the best possible program. This is necessary for the following reasons: (1) An advisor signs the graduation checkout sheet for that student. (2) Check sheets are revised each year on the ba sis of refinements which are incorporated into the program. (3) Check sheets offer excellent opportunity for the student to keep a record of his/her progress throughout the curriculum.

Teaching Fields. Students in the secondary education curriculum are required to complete a program of preparation in a major teaching field. This program consists of 36 to 42 semester hours of course work determined by the academic department. The fields of music, art, physical education, industrial education, and business, office and distributive education require special certification. In these fields the program may consist of more than 42 semester hours. A minimum of 18 semester hours of work in the major teaching field should be at the upper division level. Courses approved by the advisor may be used to satisfy General Studies requirements as well as the requirements of a major teaching field. A composite social studies major consisting of 60 semester hours is available for those desiring broader preparation in social studies. It consists of at least 30 hours of one social science or history, plus 12 semester hours in each of two other related social sciences or psychology and 6 semester hours in another related field. In cer tain other related areas it is possible to be come prepared to teach in two fields through completion of a 60 semester hour program. In formation about the specific options available may be obtained at the Office of Student Ser vices of the College of Education or the college offering the program.

Opportunity is also available for students to complete a program of preparation in a minor. teaching field consisting of 24 semester hours of course work determined by the academic department

In many instances employment opportunities require teaching in more than one field. It is strongly recommended that students add to their professional versatility by completing a program in a minor teaching field, a program in Elementary Education leading to dual cer tification at both the elementary and secondary school levels, or a program leading to certification in Special Education. Students should at least make a substantial beginning toward preparation in a second teaching field. The North Central Association requires that a teacher have preparation consisting of not less than 24 semester hours of credit in a specific field in order to teach in that field in an ac credited secondary school. Considerable attention should be given to the selection of teaching combinations. Information regarding this may be obtained from the student's ad visor, the Office of Student Services, or the Department of Secondary Education.

Major and minor teaching fields under the secondary curriculum approved by the College of Education, leading to the degree of Bachelor of Arts in Education, are offered in departments of the Colleges of Liberal Arts, Business Administration, and Engineering and Applied Sciences. Students with teaching majors in the College of Fine Arts will earn the appropriate bachelor's degree (Bachelor of Fine Arts or Bachelor of Music) from that College. The appropriate department should be consulted for statements of specific require ments.

Major Teaching Fields Available

Art	German
Asian Languages	Health Sciences
Biological Sciences	History
Business, Office and Distributive Education	Home Economics Humanities Industrial Arts
Chemistry	Instrumental Music
Choral Music	Journalism
Communication	Mathematics
Dance	Phys'cal Education
Economics	Physics
English	Political Science
French	Russian
General Science	Social Studies
Geography	Spanish
Geology	Theatre

Minor Teaching Fields Available. In addition to minors in the above fields, the following minors are available:

Anthropology	Photography
Athletic Coaching	Physical Science
Elementary Education	Portuguese Psychology
Industrial Education	Sociology
Latin	Special Education
Library Science	

Other minors can be developed for individu al students with the approval of the chair of the Secondary Education Department, the chair of the department in which the minor is developed, and the College of Education Standards Committee.

Professional Education Options Available

Professional Education Sequence. The professional program of secondary education has been carefully designed to prepare students to become teachers in a variety of settings. (1) It is specifically intended that it require four semesters for completion. (2) Each of the four semesters requires clinical experiences in off-campus educational settings. (3) Field experiences in multicultural and special education settings are required.

The following sequence of courses is required for completion of the secondary education curriculum: EDF 300, SED 343, 373, 403, 433, RDG 467, 480, and Methods of Teaching in the Major Teaching Field. Check catalog course descriptions and departmental checksheets for requirements relative to prerequisites and concurrent enrollments

Special Education Curriculum.

This curriculum is designed to prepare students to teach mildly handicapped children and adolescents.

Professional Education Alternatives

Campus Based. Students may take all their required courses in professional education on campus, with the exception of practicum and student teaching. Students in the campus based program will be provided with substantial experience with children prior to their student teaching.

Two options are available on campus. *Option 1* leads to a Bachelor of Arts degree and certification for teaching the mentally handicapped emotionally handicapped or learning disabled in grades K-12. *Option 2* is intended for persons interested in special education and whose degree would not be directed toward public school teaching.

Field Based. Students may take a one semester field based experience in Special Education. The field based core is composed of required professional course work and practicum delivered in field based sites established in the metropolitan area. As in Option 1 above, the field based program leads to a Bachelor of Arts in Education degree and State Certification in areas of mental retardation, emotionally handicapped or learning disabilities

Major. The major in this field is Special Education.

Supplementary Requirements. All Special Education majors must complete 27 semester hours of supplementary course requirements. Most of this course work is necessary for certification in the state of Arizona and provides a strong background in regular education.

Related Areas of Study. Each major in Special Education is required to complete an 18 semester hour related area of study (minor). This area of study may be selected from one of the related areas of study which have been approved by the Special Education Department. Those who wish to select another area may do so with the approval of the Special Education Department and the department offering the courses in the requested related area of study. Courses which are listed under the General Studies and Supplementary Requirements may also be used in meeting the required number of hours in a Related Area of Studies. When this is done, the hours earned in the course can be counted only *once* toward the 129 hours required for graduation. However, such courses must be approved by the student's advisor.

General Pattern. A program of 129 approved semester hours is required. The credit hours are divided as follows:

	Semester Hours
General Studies*	45
Assessment Semester	3
Special Education	36
Supplementary Requirements	27
Related Areas of Study	18
Electives	3 6
Total	129

*United States and Arizona Constitution and U.S History, which are requirements for state teacher certification, may be included in the General Studies field of behavioral and social sciences

Advisors in this curriculum have check sheets with recommended and required courses for each year of work. These check sheets contain appropriate patterns of course work for the area of exceptionality in which the student as a teacher will want to work. It is necessary for students to consult advisors in this curriculum in order to ensure the best possible program of training. This is particularly important inasmuch as the advisor must sign the checkout sheet for graduation which indicates that an approved program of course work has been developed.

Recommended Minor in Special Education. Majors in other academic areas in consultation with their advisors, may select a 24 semester hour minor in Special Education.

The minor leads toward Arizona certifica-

tion requirements for teaching in Special Education, but does not include provisions for student teaching in Special Education.

Recommended Concentration in Special Education. Majors in Elementary Education, in consultation with their advisors, may select a concentration in Special Education which emphasizes mental retardation, emotional disturbance, or learning disabilities.

The concentration meets basic Arizona certification requirements for teaching in the Special Education area emphasized.

Selected Studies in Education Curriculum. This program is designed for undergraduate students who are interested in the field of education but do not intend to become public school teachers. Students may wish to prepare for a variety of positions outside as well as inside educational institutions. These may be with government agencies, religious organizations, foundations, business and industry, or in private, early childhood, or higher education, and even in public elementary or secondary schools, although not usually in a formal classroom setting.

The program offers the opportunity for such students to develop individualized curriculum plans tailored to their particular needs and interests. It provides an alternative to the regular program of the College of Education. Any undergraduate student in the College of Education may present a Selected Studies in Education plan. The plan must be developed in close consultation with a faculty advisor in the College of Education and must have the endorsement of the Undergraduate Standards Committee of the College. To be approved, a Selected Studies in Education plan must demonstrate that it is significantly different from established programs at the University in both intent and content.

Interested students should obtain application forms and other pertinent materials from the Office of Student Services.

Special Programs of Teacher Preparation. Several areas of concentration are available on the undergraduate level in connection with any of the undergraduate curricula. These are available as a sequence of courses to be taken in addition to the regular requirements of the undergraduate curriculum.

Library Science. Students desiring endorsement as a school librarian (K-12) must complete the requirements for teacher certification and a program approved by the Department of Educational Technology and Library Science. Undergraduates will complete the library science minor which consists of 24 semester hours, including 15 hours of prescribed library science courses, an approved elective in Library Science or Instructional Media, and 6 hours of student teaching in a school library. Students may also select library science as a field of specialization at the graduate level.

Teaching American Indian Children. Students pursuing a major teaching field in elementary education may, with the approval of their advisors, elect to take a special sequence preparatory to the teaching of American Indian children. This is appropriate for those who will have only a few Indian children in a classroom, or for those who will have a classroom composed only of Indian children. Such students shall be required to complete satisfactorily the basic elementary program.

Students pursuing a major teaching field in secondary education may also take this special training for teaching American Indian children. Such students shall be required to complete satisfactorily the basic secondary major.

Students interested in pursuing an Indian Education concentration in conjunction with their elementary or secondary education programs should confer with faculty from the Center for Indian Education and faculty from their departments. Indian Education, Elementary, and Secondary Education faculty have curriculum check sheets which will assist the students to plan their programs in Indian Education. This concentration is normally a 27 semester hour sequence.

Teaching in Multicultural or Bilingual Settings. A modern teacher is called upon to provide instruction in a wide variety of classroom settings. In these settings will be children of different races or ethnic backgrounds. Often there will be children who speak little or no English or who are fluent in English and some other language. Students are encouraged to anticipate such assignments and to work to prepare for them.

The I. D. Payne Laboratory for Multicultural Education and the Center for Bilingual/Bicultural Education, working in close cooperation with all of the departments of the College, are valuable resources for students. A wide range of appropriate course work is available in each department. Students are advised to include in their programs as much work as possible in multicultural and bilingual education.

Certification for Teaching. The State of Arizona is the legal entity responsible for certifying teachers within the State. The delegated responsible agency is the Arizona De-

partment of Education. The laws of the State and rules and procedures of the Department govern the issuance of certificates. From time to time changes occur in the laws and rules. Students are advised to be informed about the laws and rules. The Office of Student Services keeps up-to-date information sheets describing all requirements for certification.

The College of Education is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary, secondary and special education teachers and for other professional positions. Students who complete the appropriate curriculum and applicable State requirements are recommended for certification to the Arizona Department of Education. They are also eligible for certification in other states.

Certification as a teacher should not be understood as employment. Teaching is a competitive field in which more persons seek positions than there are available openings. In general, teacher candidates who have special skills or are prepared to teach in more than one area are given preference by prospective employers.

Counselor Education

The doctoral programs of the Department of Counselor Education are approved in Counseling Psychology by the American Psychological Association.

PROFESSORS:
CABIANCA (ED B-401A), BLACKHAM, GUINOUARD, HEIMANN, McWHIRTER, NOBLE, SNYDER, YAMAMOTO

ASSOCIATE PROFESSORS:
ASHER, CHRISTIANSEN, CHURCHILL, CUMMINGS, GROSS, MAZEN, MILLER, ROBINSON, SHELL

ASSISTANT PROFESSOR:
ARCINIEGA, HARDING, KINNIER, MOORE

CED 512 Introduction to the Helping Relationship. (3) F, S, SS
Introduction to the skills used in the helping professions and an examination of the settings in which they occur

522 Personality Development. (3) F, S, SS
Interaction of affective and cognitive factors in personality development at different age levels. Various personality theories examined

523 Psychological Tests. (3) F, S, SS
Standardized tests in the study of the individual with emphasis on test score interpretation in counseling.

534 Occupations and Careers. (3) F, S, SS
The world of work, career development, education and training for occupational entry and mobility.

545 Analysis of the Individual. (3) F, S SS
Theory and methods commonly used in studying the individual. Observational methods, diagnostic interviews structured and semi-structured methods for assessing personality. Prerequisite or corequisite CED 522

567 Group Procedures. (3) F, S, SS
Factors determining interaction, effectiveness and morale in small groups. Techniques of observation, assessment and leadership.

577 Counseling. (3) F, S, SS
Principles and application of counseling with particular emphasis on counseling theories. Prerequisites: CED 512, 523, 534 545, 567, and admission to M.C. or CED doctoral degree program

612, 613 Child Counseling. (3, 3) S
Applications of counseling theory in working with children in clinics and elementary schools. Practicum integrated with didactic instruction. Prerequisite or corequisite. CED 680 and approval of instructor

622 Group Counseling. (3) F, S, SS
Theories and methodologies used in group counseling. Prerequisite CED 577

634 Organizational Development and Planned Change. (3) F, S
Organizational / individual dynamics theory, analysis, techniques, and consultation/intervention strategies used in organizational development. Field consultation projects. Prerequisite: CED 567 and 577.

644 Psychology of Careers. (3) F S
Structural and developmental theories of occupational choice The role of counseling in the development of a career Prerequisite or corequisite: CED 577

645 Professional Issues and Ethics. (3) F, S
Ethical, legal, and professional issues of concern to the practicing counselor. Includes confidentiality, family conflict child rights, certification, malpractice, and use of client information. Prerequisite: CED 577.

655 Student Development Programs in Higher Education. (3) F
Emerging conceptual models of student development. Overview of student personnel and student affairs programs in community colleges, four-year colleges and universities Observation on campuses.

656 The American College Student. (3) S
Selected theories of human development with application to academic/social psychological learning tasks of post-secondary environmental influences, including faculty expectations, campus subcultures.

666 Comparative Theories of Personality. (3) F
Comparative analysis of personality theories in relation to counseling practices. Prerequisites. CED 522, 577.

667 Patterns of Behavior Disorders. (3) F, S
Etiology, dynamics and treatment of a variety of psychological problems including traumatic reactions, anxiety, somatoform, dissociative, personality, affective, psychosexual and psychotic disorders. Prerequisite. CED 577.

670 Behavioral Counseling. (3) S
Theory, procedures and applications of behavior modification and therapy in working with children parents, and adult clients in school, clinic and institutional settings. Didactic instruction, analysis of individual and group problems and directed experiences. Prerequisites CED 680 and approval of instructor.

671 Multicultural Counseling. (3) F, S
Provides awareness of the influence of socio cultural variables on human development and explores implications for counseling minority populations. Prerequisite: CED 577.

672 Marriage and Family Counseling I. (3) F, S
Introduction to marriage and fam ly counse ng theories Emphasis is on a systems commun cat on model uti-lizing co-counseling Prerequisite. CED 577/622, CED 680 and approval of nstructor.

673 Marriage and Family Counseling II. (3) S
Advanced analys s and application of systems commu-n cat on counsel ng Focus on mar ta and sexua coun sel ng Practicum recommended. Prerequ s tes CED 672 and approval of instructor.

674 Women: Sense of Identity. (3) S
Examines counse ing techniques and deve opmenta is-sues for explorat on of women s sense of dent ty and factors contr but ng to t ncluding soc al/psycho og ca and cu tural nfluences which particu ar y mpact on the development of women

675 Counseling Interventions in Stress Management. (3) F, S
Theory, procedures and app ication of stress manage ment techniques inc uding b ofeedback, med tat on, re laxat on, autogenic therapy, visua zat on and imagery. Concurrent practicum (CED 680) Prerequisite· CED 577, 680, and approva of instructor.

677 Advanced Counseling. (3) N
Counsel ng systems and theor es and the r pract cal ap-p ication n case management comparat ve case ana y s s. Prerequis te· CED 577.

681 Supervised Practice. (3) F, S
Supervised experiences in schools or commun ty agen-c es. Prerequisites. CED 680 and approval of nstructor.

Special Courses: CED 494, 498, 499, 500, 580, 583, 584 590, 591 592, 593, 594, 598, 599, 600, 680 683 684, 690, 691, 692, 693, 700, 780, 783, 784, 790, 791, 792, 799. (See pages 33-34)

Educational Administration and Supervision

(Member: University Council for Educational Administration)

PROFESSORS:
WOOTTON (ED 107), HUNNICUTT, MENKE, METOS, NORTON, STOUT, WARREN, WEBB

ASSOCIATE PROFESSORS:
FARRAR, LEVAN, WALKER

ASSISTANT PROFESSOR:
DRAKE

EDUCATIONAL ADMINISTRATION

EDA 501 Competency/Performance in Educational Administration. (6) F, S, SS
Nature of educat onal adm nistrat on, foundational knowledge of competency n administrat on.

511 School Law. (3) F, S, SS
Constitut onal, statutory and case law that re ates to a school personnel, pupi s, the schoo d strict and other governmental units. Contracts, d sm ssa s, tenure re-tirement, pupil injuries, liabi ity of personne and district school d strict boundary changes, bonding.

524 Theory and Application of Educational Administration. (3) F, S, SS
History and development of publ c schoo admin stra-tion in the United States current organizat onal pat-terns for pub ic educat on at local, intermediate, state, and nationa evels current theoretica posit ons in edu cat ona admin strat on

525 Human Relations and Societal Factors in Educational Administration. 6) F SS
Interre at ons between problems of educational ad m nistrat on and interdisc p inary soc a sciences Com-municat ons ski s, morale, author ty and percept on through the case approach Educat on's re at onship to the economy, futurist soc o ogy comparat ve and changing va ue systems Act vit es include computer s mu ation aboratory and off-campus exerc se.

526 Instructional Supervision. (3) F, S SS
Adm n stering curr cu um mprovement, in serv ce edu-cation eva uat ng and mprov ng teach ng competence; adm n strative nstructiona responsib it es

527 Managerial Functions in School Administration. (3) S, SS
Relates to the work of the centra distr ct office staff and the schoo principal Use of human resources, property management, and organization and manage ment of t me

538 Administration of the Community School. (3) F, S, SS
Philosophy, history organization and operat on of the commun ty-centered schoo ntroduct on of the com munity education concept nto a school system and mak ng it operat onal.

544 Public School Finance. (3) F, SS
School budget procedures, accounting, revenues, state and county f nance and prob ems relating to f nanc ng public education

548 Community Relations in Education. (3) F, S, SS
Administrative factors of pr mary mportance n deve-oping community nvo vement n pub ic schools. Em-phasis on theory and sk l of schoo system and individ-ua commun cat on.

549 Programming and Financing Community Education. (3) N
In-depth nvestigation of component programs effect ve as a veh c e for community educat on n area schools plans which help schoo s change· mode s for fund ng commun ty education Prerequ site· EDA 538 or ap-proval of instructor

555 Educational Facility Planning. (3) S, SS
Schoo bui ding needs, educat onal planning for fac i-ties, responsib ities of architects, duties of contractors, equipping and furn sh ng of school bu ld ngs

568 Role and Responsibility of Supervising Teacher. (3) N
Exper ences and content for those planning to become superv sors of student teach ng n teacher-educat on programs In-serv ce tra n ng for those in student teach ng.

571 School Business Management. (3) A
Purchas ng, budget ng, accounting, payro manage ment auditing, f nancia reporting, insurance and ad min strat on of nonteaching personne and services

573 School Personnel Administration. (3) S, SS
Organization for personne serv ces, deve opment of pol cy to govern se ect on, or entation placement, re muneration, transfers separations, and deve opment of mora e among nstruct ona and noninstructional per sonnel

576 The School Principalship. (3) F, S, SS
Prob em and aboratory approaches used to provide appl cat on of administrative act vities of e ementary and secondary schoo s.

634 Instructional Leadership. (3) N
Curricular practices and processes used by instruc-

tional eaders who p an, organize and coordinate the professiona act vit es in e ementary and secondary schoo s. Prerequisite EDA 526

658 Problems and Issues in Administering Community Education. (3) A
Prov des community educators w th an understanding and ski l in school aw, plant management, personnel adm n stration bus ness practice, schoo legislat on, community educat on h story research and utilizat on of local resources Prerequisites· EDA 548 and 549.

675 Politics of Education. (3) N
Socia sc ence theory and research are used to consider the po itical context of educational po icy making

676 The School Superintendency. (3) S
Crit cal exam nation of the schoo superintendency and the primary funct ons of th s educat ona posit on The dut es responsib lities activ ties and prob ems of the schoo superintendent are included The un que eader-sh p role of the schoo superintendent is examined. Pre requisite: approval of nstructor.

679 Administration of Special Programs in Education. (3) N
For personnel adm n stering special educat onal ser-v ces; respons bil ties of superintendents, principals, supervisors, and directors for spec al education, stu dent personnel, aud ovisual, library sc ence and others.

711 Administrative Leadership. (3) A
Emphas s on research in leadership, appl cation of re search find ngs to administrat ve and supervisory func tions in educational endeavors. Prerequ sites: 30 se-mester hours in Educational Adm n stration; adm ss on to doctorate

722 Administration of Instructional Improvement. (3) F
Recent research re at ng to administrat ve and supervi-sory respons bil ties for the mprovement of the educa-tional program Effective processes by adm n strators, supervisors, consu tants and coord nators Prerequ - s tes· 30 semester hours in Educat ona Adm nistration, adm ss on to doctorate.

733 Administrative Management. (3) A
Recent research re ating to school management. Schoo finance, law, bu id ngs transportat on, food services and supply management Prerequ sites· 30 semester hours in Educational Adm nistration; admission to doc-torate.

Special Courses. EDA 498, 580, 583 590, 591, 592 593, 594, 598, 599, 680 683, 684, 690, 691, 692, 693, 700, 780, 783, 784, 790, 791, 792, 799. (See pages 33 34)

NOTE: *A laboratory is maintained in the Southwest Regional Center for Community Education Development covering materials and practices in the field of Community Education. The use of the laboratory may be scheduled with the secretary in Room 108. Farmer Education Building*

Educational Psychology

PROFESSORS:
(ED B 301), FRY, GRINDER, HELMSTADTER, KERR, KULHAVY, NELSEN, SATTLER, VAN WAGENEN

ASSOCIATE PROFESSORS:
CARROLL, HARRIS, KRUS, MEYER, STOCK

ASSISTANT PROFESSORS:
ARGULEWICZ, BETZ, BURKE

EDP 310 Educational Psychology. (1-6) F S, SS
Human behav or in educational s tuations presented through nstruct ona modules. Students may re-enroll for credit to a tota of s x hours

454 Introduction to Descriptive Data Analysis and Measurement. (1-3) F, S, SS
The nature of measurements and data Frequency dis tr butions, their descriptors and probabilities derived from them Derived scores correlation and regression. Qua ities of tests

510 Essentials of Classroom Learning. (3) F, S. SS
Theoretica and empir cal foundations of learning in the c assroom mil eu. Critical exposure to research and method n instructional psychology

514 Psychology of the Adolescent. (3) F, S, SS
Cognitive, physical, and social development of ado es-cents in contemporary society. Impact of family, school, and work p ace on ado escent development. Prerequi-sites: PGS 100 or EDP 310 or equivalents.

530 Theoretical Issues and Contemporary Research in Human Development. (3) S
Psychological theories, research and methods relevant to human deve opment emphasizing the relations be-tween early development and later performance.

532 Psychology of Exceptionality. (3) S
General psycholog cal theory and experimental re-search relevant to exceptionality, emphas zing impl ca-tions for educat onal programs which recognize unique learner characteristics. F eld work.

534 Principles of Behavior Modification. (3) F
Principles of cond tioning as app ied to behavior modifi cation, current research on the exper mental analysis of behavior in educational psychology.

540 Theoretical Views of Learning. (3) F, S, SS
Classical and cognitive theories of learning, plus recent orientations. illustrative experimental and rational foun-dat ons; mpl cations for educat onal practice.

542 Learning and the Training-Evaluation Process. (3) S
Critical rev ew and evaluation of research on learn ng variables relevant to acquisition and retention of in-structional materia s Laboratory exper ence.

543 Life-Span Prose Comprehension. (3) S
Examinat on of prose learning across the adult life-span: research, models, methods, d scourse analysis and scoring procedures. Prerequ site. EDP 540 or equivalent

544 Psychology of Reading. (3) F
Alternate analyses of the read ng process; designs and procedures for investigating instructional and nonin-structional variab es related to read ng achievement. Prerequisite EDP 454.

550 Basic Issues in Measurement. (3) S
Methodology of educational measurement with emphasis on test reliability, validity, homogeneity, and structure. Prerequisite: EDP 454.

552 Inferential Techniques of Data Analysis. (1-3) F, S, SS
Inferential procedures in educational research; probability, sampling design, statistical inference, hypothesis testing, and basic experimental design. Prerequisite: EDP 454 or passing score on qualifying exam.

554 Multivariate Procedures in Data Analysis. (3) F, S, SS
Contrasts, multiple classification analysis of variance and covariance, multivariate analysis of variance and multiple linear regression. Prerequisite: EDP 552, or passing score on qualifying exam.

555 Computer Utilization for Data Processing in the Behavior Sciences. (3) F
Introduction to data processing skills through the uses of major statistical programming packages. Prerequisites: EDP 454 and 552, 552 may be taken concurrently.

556 Data Processing Techniques in Measurement and Research. (3) S
Advancement of statistical design and measurement skills through development of data processing techniques and usage of special programs and data processing programs. Prerequisite: EDP 554.

560 Individual Intellectual Assessment. (1-5) F, S
Experience in administering and interpreting individual tests. Theoretical basis for ability testing, ethical considerations, and diagnostic use of test results. Initial enrollment, 3 hour minimum. Laboratory experience. Prerequisite: admission to a program in professional psychology or approval of the instructor.

562 School Psychology: Theory and Practice. (3) F
Development and present status of school psychology: overview of assessment and intervention strategies and professional issues.

563 Interventions in School Psychology. (3) S
Examination of interventions and intervention research relevant to school psychology practice. Field experience. Prerequisite: school psychology program or approval of instructor.

566 Diagnosis of Learning Difficulties. (3) F
Clinical diagnosis of learning difficulties emphasizing specific academic problems. Use and interpretation of diagnostic instruments in practical school situations. Prerequisites: EDP 560 and 562, or approval of instructor.

750 Research Heuristics and Technical Writing. (3) F
Rationales for research—suppositional and presuppositional logic, and the precision of problems. Writing practice emphasizing clarity of exposition.

754 Advanced Multivariate Analysis. (3) S
Multivariate experimental design, multivariate multiple comparison procedures, confidence intervals, covariance structure analysis, and analysis of qualitative data. Prerequisite: EDP 554.

756 Advanced Quantitative Methods. (3) S
Techniques for analyzing educational data, including multiple regression, factor analysis and canonical analysis. Integration of general linear model measurement theory. Prerequisite: six hours in quantitative measurement courses or approval of instructor.

Special Graduate Courses: EDP 494, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599, 680, 683, 684, 690, 691, 693, 700, 780, 783, 784, 790, 791, 792, 799. (See pages 33-34.)

Educational Technology and Library Science

PROFESSORS:
HIGGINS (ED B-146), GERLACH, NILSEN, SATTERTHWAITE, SULLIVAN, VERGIS

ASSOCIATE PROFESSORS:
KENNEDY, SCHON

ASSISTANT PROFESSORS:
BEYARD-TYLER, McISAAC

EDUCATIONAL TECHNOLOGY

EDT 405 Competency-Based Instruction. (3) F, S, SS
Students develop instructional objectives, select learning activities, and design assessment procedures for competency-based instructional programs.

501 Foundations of Educational Technology. (3) F
Introduction to instructional development. An examination of accomplishments and problems in the field.

502 Design and Development of Instruction. (3) F
Design, development, and formative evaluation of objectives-based instructional materials.

503 Research Techniques for Instructional Development. (3) S
Procedures for analyzing the effects of alternative instructional practices.

504 Educational Evaluation. (3) S
Issues and practices in summative educational evaluation, models of evaluation, evaluation of educational programs.

702 Advanced Instructional Development. (1-3) S
Conducting and documenting selected instructional development activities.

703 Advanced Instructional Research. (1-3) F
Design and execution of instructional research on selected topics.

Special Courses: EDT 494, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599, 680, 683, 684, 690, 691, 692, 693, 780, 783, 784, 790, 791, 792, 799. (See pages 33-34.)

COMPUTER BASED EDUCATION

CBE 521 Computer Literacy. (3) F, S, SS
Survey of the role of computers in K-12 schools. Infusion of computer concepts into curriculum and instruction.

522 Evaluating Computer Materials. (3) F, S, SS
Selection, utilization, and evaluation of computer hardware and software for use in schools.

523 Computer Programming for Instruction. (3) F, S
Computer programming in BASIC for instructional purposes. Students develop computer-controlled instructional programs.

637 Computers in Elementary School Curriculum. (3) F, S, SS
Introductory experiences with educational uses of computers; computer awareness, family/societal impact, classroom applications/software, curriculum development, BASIC/LOGO language, microcomputers.

EDUCATIONAL MEDIA

IME 411 Audiovisual Materials and Procedures in Education. 3) F, S, SS
Preparat on and ut izat on of aud ov sual materia s and equ pment in teach ng. Lecture and laboratory

455 Cinema and Television. (3) F, S, SS
Structure development and behav ora effects of thea tr cal mot on pictures

521 Design of Instructional Media. (3) S
Preparing specif cations for nstructional telev sion film, and sl de/tape programs

522 Audiovisual Production Techniques in Education. (3) F, S
Product on and use of aud otapes, video tapes sl de programs, and graph c materials. Lecture and abo ratory.

523 Audiovisual Resources for the Classroom. (3) N
Survey and eva uation of commercia y avai able audio- v sual mater als for the classroom and l brary med a center

524 Instructional Photography. (3) F, S, SS
The camera f m exposure, compos tion and ghting. Dark room exper ences n develop ng and print ng b ack and white f m. Lecture and laboratory.

525 Instructional Graphics. (3) F
Princip es of des gn, production and uti zat on of graph c media n instruct ona materia s. Lecture and laboratory

526 Instructional Cinematography. 3) S
Pr nciples of des gn, product on, and ut l zation of educational motion p ctures. Lecture and laboratory.

527 Instructional Television. (3) S
Des gn and production of nstruct ona programs for te ev s on Lecture and laboratory

528 Advanced Photographic Media Production. (3) S
Design and production of mult media instruct ona pro grams. Emphasis on sl de tape format. Prerequ site ME 524 or approva of nstructor Lecture and abo ratory.

533 Administration of Media Services. (3) F S
Pr nc p es for admin ster ng audiovisual services in schoo brary media centers Prerequ site. s x hours in ME or approval of instructor

560 Current Issues and Problems in Audiovisual Education. (3) NR
Crit cal ana ys s of current pract ces in nstructional me- d a Prerequ site six hours in IME or approval of in- structor

Special Courses: ME 494, 498 499 500 580, 583, 584, 590 591 592 593 594, 598, 599 (See pages 33 34)

LIBRARY SCIENCE

LIS 410 Children's Literature. (3) F, S, SS
Se ect ng and us ng modern and c assic terature with young readers

411 Advanced Studies in Children's Literature. (3) S
Folk and modern iterature for chi dren Storyte l ng book ta ks, puppetry, and creat ve drama as mot va- t ona techn ques Prerequ site. L S 410 or approva of instructor

440 Classification and Cataloging. (3) F
Descr pt ve cata oging and Dewey Dec ma Class f ca- tion of pr nt and nonprint ibrary mater a s

461 Selection of Library Materials. (3) F S
Pr nc ples and procedures used in the se ect on of ma teria s for the school brary

463 Library Materials for Children. (3) F
Select ng and using print and nonprint materials to sup- port the elementary school curr culum.

464 Library Materials for Adolescents. (3) S
Selecting and using print and nonpr nt materia s to sup- port the secondary school curriculum

465 Library Materials for Minority Students. (3) N
Library services and materials for ch ldren from Mex- can Amer can, Nat ve American, B ack, and other mi- nority groups.

471 Basic Reference Resources. (3) F
Prov ding reference service n the schoo l brary. Con- tent and use of basic resources.

481 School Library Administration. (3) F, S
Prerequisites LIS 440 and 461

510 Library Automation. (3) S
Library uses of computers Fundamental concepts and ssues in the f eld of l brary automation. Prerequisites· L S 471 and 481 or approval of instructor.

533 Current Library Problems. (3) F
Crit ca analysis of current pract ces and problems in school librar anship. Prerequis tes· LIS 481 or approva of instructor

534 Evaluation of Literature for Young Readers. (3) S
App ying standards of literary cr ticism to literature for young readers. Prerequ s te· LIS 410 or approval of in- structor.

584 School Library Internship. (3) F, S
Prerequ sites· LIS 440, 461, 463 or 464, 471, 481. Con- current enrol ment in L S 481 is permitted.

Special Courses: LIS 492, 493, 494, 497, 498, 499, 580 583, 584, 590, 591, 592, 593 594, 598, 599. (See pages 33-34.)

Elementary Education

PROFESSORS

ENGELHARDT (ED B-225), BITTER, CAHEN, DOYLE, GARCIA, MALONE, MANNING, MOYER, RALSTON, RAY, SILVAROLI, STROM, WALLEN

ASSOCIATE PROFESSORS

ANDERSON, CHR STINE, EDELSKY, EEDS, GREATHOUSE, HARDT, JACOBS, KAMINS, KNAUPP, KNIEP, PETERSON, SCHALL, SEARFOSS, STALEY

ASSISTANT PROFESSORS

COHEN, FLORES, GILL, GOMEZ, ROSEGRANT, STEERE, TIPPECONNIC, VALLEJO

Laboratory and off-campus experiences may be included in courses marked with an asterisk.

BILINGUAL EDUCATION

BLE 498 Introduction to BLE. (3) F, S
Provides an overview of mode s of bi ingual education and focuses on genera teaching strateg es for bilingual c assrooms Primar ly Spanish Engl sh considerat ons.

535 Sociolinguistic Issues in Bilingual Education. (3) F
Survey of major theoretical issues (e.g., language situations, communicative competence, anguage attitudes) interrelating language, soc al processes and bilingual education.

543 Bilingual Education Models. (3) F
Bilingual education programs in other countries; analy s s of polit cal, soc al, economic, and educational impl cations; practice in planning bil ngual education curricula.

See a so offerings under MCE, SED and SPE on pages 199, 200 and 202

Special Courses: BLE 494, 498, 499, 592, 593, 594, 598, 690, 691, 784, 790, 791, 799 (See pages 33-34.)

EARLY CHILDHOOD EDUCATION

ECD 308 Introduction to Early Childhood Education.* (3)
An overv ew of the ear y chi dhood educat on f eld in clud ng professional options, historical roots and current theories and policy developments at national, state and local leve s.

310 Educational Environments: Infants/Toddlers.* (3)
Organizing, p anning and implementing educationa practices based on developmental theories wh ch wil enab e early childhood educators to provide optimal learn ng environments for infants and todd ers. Prereq uisite: EED 13.

311 Social Studies in Early Childhood Education.* (3) F S, SS
Development of democrat c living in all areas of the cur riculum. Objectives, unit planning, prob em solving, selection of content, scope and sequence, construction of instructional material and resources. Experiences with children.

312 Educational Environments: Nursery-Kindergarten.* (3) F, S, SS
Considers a l aspects of curriculum. Philosophy, principles, practices, problems and eva uat on in the integrated experience program.

322 Communication Arts in Early Childhood Education.* F, S, SS
Factors affect ng language development. Sett ng conditions for learn ng in istening, speaking, read ng and writ ng. Profic ency in handwr ting and spe ling requ red. Prerequisite. ENG 213 or equivalent

378 Practicum in ECE. (3)
Provides a f eld based experience in several early ch ldhood settings (outside the publ c schools) pr or to student teaching. Prerequ sites· EED 313 308

411 Early Childhood Education: Programs and Materials.* (3) F, S, SS
Principles, experiments, research stud es, and recent trends as factors related to the education of ch ldren through seven years of age. Prerequ site· ECD 312

522 Developmental Social Experiences in Early Childhood Education. (3) S
Materials techniques, esthetic expression, creat ve ac tiv ties and values in the ntegrated curr culum. Prereq uis te: ECD 311 or equivalent.

525 Communication Arts in Early Childhood Education. (3) F
Problems and trends of current programs and oral language deve opment Effort to bring together anguage acquisition findings with educational practices. Op portunity for self-d rected learning/study. Prerequis te. ECD 322 or equivalent

527 Mathematics in Early Childhood Education. (3) F
Theory and pract ce in the use of manipulative materials for teaching mathematics to preschool and primary grade ch ldren Prerequ s te· EED 380 or equivalent

555 Modern Practices in Early Childhood Education. (3) F, S
Trends and practices, instructional and resource materials, methods and techn ques in early childhood education. Prerequ site. ECD 312 or equivalent

733 Social and Emotional Development. (3) S (A)
Inquiry into the soc al and emot onal developmenta dynamics in children such as peer re at onships, self concept parenting processes

744 Evaluative Procedures: Young Children. (3) S (A)
A cr tica exam nat on and use of developmentally appropriate evaluative procedures for chi dren b rth through eight

Special Courses: ECD 294, 298, 492, 493, 494, 497, 498, 499, 583, 584, 590 591, 592, 593, 594, 598, 599, 680, 683, 684 690, 691 692, 693, 700, 780, 783, 784, 790, 791, 792, 799 See pages 33-34.

ELEMENTARY EDUCATION

EED 313 Child Development.* (3) F, S, SS
Principles under ying the total development of the chi d dur ng the pre schoo and e ementary school years with observat ons in a variety of settings Enhancement and understand ng of the chi d in the physica nte lectual, socia and emotional areas of deve opment Discussion sessions may be scheduled.

320 Teaching Science to Children.* (3) F, S, SS
Develops students' persona philosoph es of the nature of elementary school sc ence, why teach science and how children learn sc ence Knowledge and skil s in planning instruction using instructional models n tegrating the curr culum, employ ng current science programs and materia s and evaluating chi dren s learning Laboratory sections. Prerequisite PSE 220 and 221 or equiva ents.

333 Communication Arts in the Elementary School.* (3) F, S SS
Factors affecting language growth Setting cond tions for learning to teach listen ng, speaking and writing sk lls Emphas s on middle and upper grades Prof c en cy in handwr t ng and spel ing requ red Prerequisite ENG 213 or equivalent

344 Elementary School Organization and Management.* (3) F S, SS
Overal program of the elementary schoo Pract cal approaches to plann ng, organ zing and managing the c assroom.

355 Social Studies in the Elementary School.* (3) F, S, SS
The core function of soc al stud es scope and se quence, unit organization methods of nstruct on, mate rials and resources for learn ng

366 Observation and Participation. (1 3) F S, SS
Students observe and work d rectly w th elementary chi dren in a classroom situation Includes a critical eva uat on of the student s exper ences. Y grade only

380 The Teaching of Mathematics in the Elementary School.* (3) F S, SS
A beg nning course n methods and mater als used Laboratory exper ences with curr culum materia s Laboratory sect'ons. Prerequ site· MAT 180 or ts equiva lent.

434 Creative Communication in the Elementary School. (3) S
Considers creativ ty in commun cation at kindergarten through the e ghth grade levels defin ng the creat ve

process and exp or ng programs Speak ng and writing experiences designed to deve op proficiency n creative commun cat on. Prerequ s tes EED 322 or 333, or ap prova of nstructor

478 Student Teaching in the Elementary School. (3 15 F, S, SS; Staff
Supervised teaching n the area of specia izat on A synthes zed exper ence in curricu um nstruct on and c assroom management Prerequ s te EDF 200 or EED 366, 27 semester hours of the core in major f eld and adm ssion to elementary teacher educat on curr cu um

511 Principles of Curriculum Development. (3) F, S SS
Contemporary curr culum theor es. Curr cu um as an in terrelated ent ty Pr nc p es of conce ving and effecting change

513 Child Development. (3) F, S, SS
Continu ng analys s of pr nc p es, theories and research concern ng the e ementary schoo child and h s deve opment. An ntegrated approach to the study and faci tat on of who esome educat ona and psycho ogica de ve opment

526 Communication Arts in the Elementary School. (3) S
A cr tica exam nat on of language arts curr cu um and teach ng pract ces n the e ementary schoo , w th a survey of approaches to teaching var ous forms of written compos tion, ora expression and stening Opportun t es for self d rected study

528 Social Studies in the Elementary School. 3) F
Problems and trends of current programs Deve opment of a ba anced and art culated program of socia stud es Prerequ s te: EED 355 or equ va ent

529 Science in the Elementary School. (3) F S
Problems and trends of current programs Deve opment of a ba anced and art cu ated science program Prereq u site. EED 320 or equiva ent

530 Outdoor Education. (3) S, SS
Use of var ous outdoor sett ngs as aboratories for c assroom re ated experience study observat on n qu ry research, and recreation

535 Sociolinguistic Issues in Bilingual Education. (3) F
Survey of major theoret cal ssues e g., anguage s tuat ons communicat ve competence anguage att tudes) nterre at ng anguage, socia processes and b ngual education

537 Mathematics in the Elementary School. (3 F S SS
Contemporary mathemat cs programs used n elemen tary schoo s. Content, mater a s and approaches to nstruction Prerequ site EED 380 or equ va ent

544 Play Education. (3) F S
Conf cting theor es of play and the educational mp ca tions of each n a curricu um A pract ca app cat on in the ower eve s of the e ementary schoo

581 Diagnostic Practices in Mathematics. 3) S SS
Spec f c skr s n d agnos ng treat ng ch ldren s earn ng d ff cu t es n mathemat cs nc udes pract cum experi ences n dent fying strengths weaknesses and n t a remed at on Laboratory sect ons Prerequ s te· EED 537 or nstructor's perm ss on

585 Contemporary Issues in Elementary Education. 3) S, SS
Des gned to deve op understand ng of a broad range of contemporary humanist c ssues and to ass st students n estab sh ng an nformed profess ona v ew Prerequ site. EED 511 or equ va ent

Special Courses: EED 294, 298, 492, 493, 494, 497, 498, 499 580 583, 584, 590, 591, 592, 593, 594, 598, 599, 680, 683, 684, 690, 691, 692, 693, 700 780, 783, 784, 790, 791 792, 799. (See pages 33 34.)

INDIAN EDUCATION

IED 411 Foundations of Indian Education.* (3) F, S
H stor ca development of Indian affa rs and Ind an educat on, nclud ng contemporary educat ona ssues, tradit ona nd an concepts of education and Indian cultures.

422 Methods of Teaching Indian Students.* (3) F
Ph osoph es methodo ogies, and materia s used n Ind an education. Exam nation of oca and tr bal class room materia s. Experimentat on with new teaching concepts. Prerequ s te. ED 411.

424 Curriculum and Practices for Indian Education.* (3) S
Curr cula, ph losoph es, and research n ndian educat on. Techniques for curr cu um development, change, and improvement Prerequ site IED 411

425 Anthropological Applications in Indian Education.* (3) N
Va ues and cu tural assumptions with the r mpact on Ind an education Case study approach in understand ng socia and cultural factors.

433 Counseling the Indian Student.* (3) A
Techniques and methods used in counsel ng w th emphasis on understanding nd an cultures and values Exper mentation w th new counse ng concepts. Prerequisite. IED 411.

490 Problems of Teachers of Indian Students. (3) S
Current ssues, trends and prob ems encountered by teachers V able solut ons discussed. Research re viewed and eva uated. Prerequis te· IED 411.

498 Pro-seminar: Administration and Management of Indian Education. (3) A
Examines administrative pract ces, federa state and tr ba aw court dec sions, personne , program and f sca management.

498 Pro-seminar: Development of Indian Cultural and Language Materials. 3) A
Prov des a cultura language approach to curricu um development. Exam nes philosoph es and materials used n b cu tural bi ngua curriculum.

511 Community Schools in Indian Education. (3) A
Deve opment mp ementation and adm n stration of Indian commun ty schoo s Techniques and methods for effect ve schoo -community relations

522 Education of Indian Adults. (3) A
Deve opment and mp ementation of Ind an adu t educat on nc ud ng program se ection content, and ingredients of successful programs

544 Role of Tribal, State and Federal Government in Indian Education. (3) A
Exam nes responsib it es and relationsh ps of each agency n the operat on of nd an educat on programs. Ana yzes egis at on, financia resources and tr ba control.

594 Workshop in Indian Education. (6) SS
Practica approaches to teaching Indian students. Curr culum and mater als deve opment, community nvo vement, current ssues and research exam ned

Special Courses: ED 492 493 494 497, 498, 499, 580, 583, 584, 590, 591 592 593 594 598, 599 (See pages 33-34)

MULTICULTURAL EDUCATION

MCE 446 Teaching the Culturally Diverse Child. (3) F, S, SS
Physical, social, psychological and educat onal needs of children from culturally and linguistically different popu lations. Multidisc plinary approach will be fol owed.

447 Methods of Teaching the Culturally Diverse Child. (3) A
Techniques for organizing and provid ng special educa tional experiences for students from cultural y and l n guistically different populations. Prerequis te· MCE 446

448 The Mexican American Child. (3) A
Cons deration of variables in teach ng Mexican Ameri can children. School programm ng based on bi ingual, cultural and re ated factors

Special Courses: MCE 492, 493, 494, 497, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599. (See pages 33 34)

READING EDUCATION

RDG 314 The Teaching of Reading.* (3) F, S SS
For elementary teachers in-training; aimed at improving classroom reading programs and practices Required course provides basic teacher sk lls, evaluation, c assroom environments and reading methods D scussion sessions may be scheduled Prerequisite· ENG 213 or equiva ent

315 Decoding in Reading.* (3) F, S, SS
A comparative analys s of phonet'c and l ngu st c inter pretations of the sounds and structures of Eng ish Required course emphasizes how sounds (grapheme phoneme correspondences) are related to the decoding process. D scuss on sess ons may be scheduled Pre requisite: RDG 314.

456 Diagnosis of Reading Problems. (3) F, S
Acqua nts the teacher in-training with diagnostic procedures n read ng. Clinic methods and materia s wi l be presented with modifications for ch ldren w th earning disabilities. Prerequisites: RDG 314 and 315.

467 Reading in the Content Areas: Secondary. (2) F, S, SS
Introduces reading procedures n subject matter fields Emphasis: content reading princ ples and methodology, including decoding. Required for Secondary Educat on majors. To be taken concurrently w th SED 373.

480 Practicum: Secondary Reading. (1) F, S
Provides for practical appl cat'on of content reading principles in an on-s te secondary schoo setting. Requ red for Secondary Education majors. To be taken concurrently with SED 433.

481 Practicum: Elementary Reading.* (3) F, S SS
Teachers-in-training work directly w th students who are disabled in reading Techniques emp oyed in treat ng d sabilities. Required for Elementary Education majors. Prerequisite: RDG 314

505 Developmental Reading. (3) F, S, SS
For c assroom and spec al read ng teachers. Specif c professional skills n decoding, comprehens on and evaluation Recommended for special reading endorsement stamp. Prerequisite: Teaching certif cate.

507 Reading in the Secondary School. (3) F, S, SS
Acquaints classroom teachers with techniques for efficient read ng, vocabu ary development and readability procedures. Prerequisite. Teaching certificate

533 Reading-Teaching Bilingual Students.* (3) S, F, SS
Acqua nts teachers with theory and practice in second language acquisition and with strateg es for developing word recognition and comprehension n native language and second language reading (Spanish-Engl sh emphasis)

544 Resource Specialist and the Content Area Teacher. (3) S
For reading consu tants, teachers and majors interested n the ro e of "reading teacher as a resource person to content area teachers." Prerequ s tes· RDG 507, 556 and 550 or 557.

550 Directed Experiences in Reading. (3) F S, SS
Practicum exper ence utilizing d agnostic and instruct'on techniques of the c assroom for correct ve reading remediation. Participants tutor assigned students twice a week. Prerequisite: RDG 505 or nstructor s approval. Laboratory sect ons

556 Diagnostic and Treatment Procedures in Reading. (3) F S, SS
Basic and specia ized d agnostic and instruction techn ques for corrective and c inica read ng remediation Recommended for special read ng endorsement stamp. Prerequ site. RDG 505

557 Reading Clinic Experience. (3) F
Practicum experience ut liz ng specia ized d agnostic and instruction techn ques for c inica reading remediation Partic'pants tutor ass gned students tw ce a week Recommended for specia reading endorsement stamp. Prerequ s te RDG 556 or approval of instructor. Laboratory sect ons

581 Individualizing Reading Instruction. (3) F, S, SS
For classroom and spec al reading teachers Spec fic techn ques for ndividua iz ng the teaching of read ng. Emphas zes literature as the med um of instruction

630 Research in Reading. (3) F
For advanced graduate students interested in app ied research prob ems literature of reading nstruction and major issues related to reading research Approval of instructor required.

Special Courses: RDG 294, 298, 492, 493, 494, 497, 498, 499, 580, 583, 584, 590, 591, 592, 593, 594, 598, 599, 680 683, 684 690, 691, 692, 693, 700, 780, 783, 784, 790, 791, 792, 799. (See pages 33 34.)

Higher and Adult Education

PROFESSORS:
RICHARDSON (ED B-7F), FENSKE

ASSOCIATE PROFESSORS:
AXFORD, BOGART, PADILLA, OKUN, ROSSMAN

ASSISTANT PROFESSOR:
FISK

HAE 510 Development and Structure of Higher and Adult Education. (4) F S
An histor cal and structura exam nat on of the develop ment of Amer can higher/adu t educat on nc ud ng the ph losoph cal, pol tica and social aspects

511 Program Development. (2) F, S
Methods of curr culum development n higher and adu t education

512 Learners in Higher and Adult Education. (3) F S
Participat on, retent on and attainment Character st cs of adult earners and non trad tional c ente e mpl ca- t ons of age re ated changes to nstruct on

513 Minorities in Higher and Adult Education. (1) F S
Analys s of the key pol c es and ssues affecting the par- t c pat on of rac al and ethno inguistic m nor t es n post secondary education.

514 Instructing Adults. 1) F S
Theory and pract ce for nstructing adu ts.

515 Instructional Personnel. 2) F S
Profess onal roles and responsib l ties of instruct ona personne in higher and adult educat on

516 Administration in Higher and Adult Education. (1) F S
Introduct on to concepts of management theory and pract ce Soc eta goa s n re at on to observable out comes and concepts of cost effect veness

517 Student Support Services in Higher and Adult Education. 1) F S
Theory organization and operat on of support serv ces for students Bas c principles of ass st ng students

522 Introduction to Educational Gerontology. 3) S
Educat ona considerat ons and methods used n teaching older adu ts from the perspect ves of psycho- logy and educat onal gerontology

533 The Community-Junior College. (3 F S
History functions, organ zat on and current issues. Meets Ar zona commun ty co lege course requ rement for cert f cat on

555 Adult Basic/Developmental Education. 3) S
Roles of teacher, student and program n Adu t Bas c Deve opmenta Educat on High schoo equ v- alency and re ated areas Prerequ sites HAE 510, 512 and 513

566 International Adult Education. 3) F
Review and compar son of adu t educat on programs and fac lities n se ected countr es

611 Curriculum/Programming. (3) S
Curr cu um development, instruct onal organ zation and improvement of nstruction in two and four year co lege. Micro-teaching Prerequis tes· HAE 510 511, 512 and 514

633 Research in Higher and Adult Education. 1) F, S
Comparat ve analys s of methods n study of higher and adult educat on Prerequ site EDP 454 or equ valent

644 Financing Higher Education. (3) S
Pub ic and private fund ng of post secondary educat on. Issues re ated to cost benefit tuit on and student finan cial a d nst tut onal planning budgeting and f nanc al management. Prerequis tes. HAE 510 and 516

649 Law in Higher Education. (3) F
Lega issues and adm n strat ve process case method of analys s app ied to key court decis ons. Prerequisites. HAE 510 and 516.

664 Community Service, Extension and Continuing Education. (3 S
Objectives, organizat on and practices of post secondary programs of cont nuing education commun - ty and publ c serv ce and extens on. Prerequ s tes. HAE 510 and 516

689 Administration. (3 F
Theory and pract ce. Prerequ s tes HAE 510 and 516

Special Graduate Courses: HAE 580, 591, 683 684 690 691 692 693 790 791 792, 799.

Seminars covering such topics as current issues, nstitutional advancement and support, institutiona research, student financial a d, co ect ve barga ning, staff deve opment, teaching adults and proposal writing are offered periodica ly.

Secondary Education

Including Humanities Education, Safety Education, Educational Foundations and Social and Philosophical Foundations

PROFESSORS:
JOHN E. BELL (ED 409), ARMSTRONG, JAMES W. BELL, BELOK, COOK, EDWARDS, FRASIER, FULLERTON, GRIFFITH, HAGGERSON, HOOVER, KIESOW, LAMM, MITCHELL, MOULTON, SHAFER, SVOBODA

ASSOCIATE PROFESSORS:
APPLETON, BROOK, CUMMINGS, FINER, FRAZIER, MANERA, METHA, STAHL, THOMAS, WAMACKS, WURSTER

ASSISTANT PROFESSORS:
CARRASCO, B. PARR SH, W. PARRISH

SECONDARY EDUCATION

SED 343 Introduction to Secondary Education. (3)
The secondary schoo n a socia , h stor cal and philoso- phica context; study of ado escents and observation of teach ng Observation/participation in secondary schools required Prerequ sites· Concurrent enrol ment in EDF 300 and adm ss on to Secondary Teacher Educ at on program Lab fee requ red

373 Principles, Curricula and Methods I. (5)
Deve opment of knowledge and skil s of instructional p anning and methods of teaching and evaluating in the secondary schoo Observat on/part c pation in secon- dary schoo s requ red. Prerequis te: SED 343. Lab fee required.

403 Principles, Curricula and Methods II. (5) F S, SS
Advanced evel of deve opment of know edge and sk lls of nstruct ona plann ng and methods of teach ng and evaluat ng in the secondary school. Observat on/particip ation required. Prerequ site· SED 373 Lab fee requ red.

433 Student Teaching in the Secondary Schools. (3 12) F S, SS
The practice of teaching. The re at onsh p of theory and pract ce in teaching. Prerequis tes. SED 403 and Spec a Methods.

480 Special Methods of Teaching Social Studies. (3) F, S
Interd scipl nary approaches production and collection of materia s Prerequ site. SED 311

522 Secondary School Curriculum Development. (3) F, S SS
Socia processes, issues pr nc p es, patterns, and pro cedures n curriculum development. Prerequisite. SED 433

533 Improving Instruction in Secondary Schools. (3) F, S SS
Ana yses of procedures, methods, techniques, and exper ments in teach ng in secondary schoo s Prerequ- is te. SED 433.