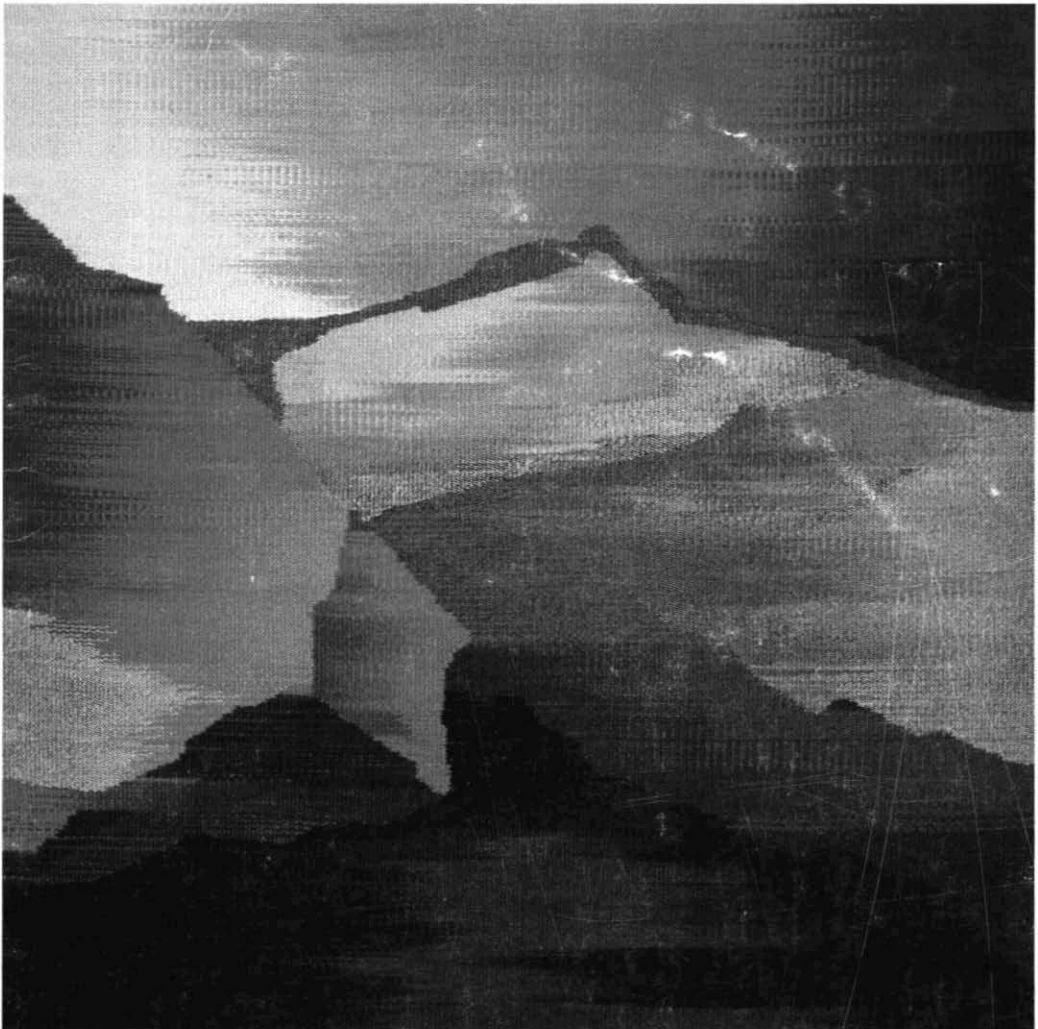

ASU BULLETIN

ARIZONA STATE UNIVERSITY

GENERAL CATALOG 1987-88



Arizona State University

General Catalog 1987-88

All colleges and departments establish certain academic requirements which must be met before a degree is 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 requirements, 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 acquaint themselves with all regulations and to remain currently informed throughout their college careers and to be responsible for completing requirements. Courses, programs, and requirements described in the catalog may be suspended, deleted, restricted, supplemented or changed in any other manner at any time at the sole discretion of the University and the Arizona Board of Regents. The catalog does not establish a contractual relationship but it summarizes the total requirements which the student must presently meet before qualifying for a faculty recommendation to the Arizona Board of Regents to award a degree.



Address requests for additional information to
DIRECTOR OF UNDERGRADUATE ADMISSIONS
ARIZONA STATE UNIVERSITY
TEMPE, ARIZONA 85287

Arizona State University reserves the right to change without notice any of the material information requirements regulations—published in this *Catalog*

Refer to Appendix A, page 500, for Arizona State University's Statement on Grievances of Discrimination

No employee, agent, or institution under the jurisdiction of the Arizona Board of Regents shall discriminate or retaliate against any student, employee, or other individual because of such individual's religious belief or practice or any absence thereof. Furthermore, administrators and faculty members are responsible to reasonably accommodate individual religious practices. A refusal to accommodate is justified only when undue hardship would result from each available alternative of reasonable accommodation. Religious holidays are published in the *ASU Insight* and/or the *University Bulletin*, official faculty publications at the beginning of each semester.

Arizona State University complies with the Family Educational Rights and Privacy Act of 1974 as amended (see page 38)

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Table of Contents

Academic Organization	5
University Calendar	6
General Information	10
Objectives, Organization, History, 10 • Accreditation and Affiliation, Campus, 11 • Libraries and Collections, Cultural Arts Resources, 12 • Alumni Association, 13	
Undergraduate Enrollment: Policies and Procedures	14
Student Services, 14 • Degree Programs Currently Offered at ASU, 15 • Fees, Deposits and Other Charges, 16 • Financial Aid, 19 • Student Budgets, 21 • Undergraduate Admission, 22 • University Honors Program, 27 • Special Programs for Advanced Placement and Credit, 29 • Registration, 35 • Classification of Courses, 37 • Student Records, 38 • Grading System, 39 • Retention and Academic Standards, 41 • General Studies Requirements, 43 • Degree Requirements, 47 • General Graduation Information, 48	
Student Services: The Campus Ecology	50
Undergraduate Admissions, Student Financial Assistance, Registrar, Residence Life, 50 • Educational Development, 51 • Student Life, Counseling and Consultation, Student Health, Student Publications, 52 • Memorial Union, Career Services, Veterans Affairs, Military Training—Officers, 53 • Minority Student Recruitment Services, Other Opportunities for Student Involvement, 54	
College of Liberal Arts and Sciences	56
Admission, Transfer Students, Five Year Liberal Arts MBA Plan, 56 • Chart of Majors, 57 • Teacher Certification, Advisement (Regular and Pre Professional), 58 • Program of Studies, Degree Requirements, 59 • College Graduation Requirements, 60 • Special Credit Options, Academic Standards and Retention, Special Programs, Certificate Programs, 63 • Research Centers, 64 • Departments: Aerospace Studies (Air Force ROTC), 65 • Anthropology, 66 • Biological Sciences, 70 • Botany and Microbiology, 71 • Chemistry, 75 • Computer Science, Economics, 79 • English, 81 • Family Resources and Human Development, 85 • Foreign Languages, 90 • Geography, 100 • Geology, 104 • Health and Physical Education, 107 • History, 110 • Interdisciplinary Humanities Program, 115 • Liberal Arts, Mathematics, 116 • Military Science (Army ROTC), 121 • Philosophy, 123 • Physics, 125 • Political Science, 129 • Psychology, 133 • Religious Studies, 137 • Sociology, 139 • Speech and Hearing Science, 142 • Women's Studies (Programs), 144 • Zoology, 145	
College of Architecture and Environmental Design	150
Purpose, Organization, College Facilities, 150 • Degrees, Curriculum, Admission, 151 • Academic Requirements, Retention Standards, 152 • Student Responsibilities, General Information, 153	
School of Architecture: 154 • Degree Requirements, 155 • General Studies Requirements, 157 • Application Procedures, 158 • Organization and Instruction, Professional Emphasis Elective Course Work, 159 • Courses, 160	
Department of Design: 164 • Purpose, Organization, Curriculum, 164 • Degree Requirements, 165 • Curriculum, 167 • Courses, 169	
Department of Planning: 171 • Purpose, Organization, Bachelor of Science in Design, 171 • Upper Division Requirements, 172 • Curricula, 173 • Advisement, Application Format, 174 • Courses, 175	

College of Business	177
<p>Purpose, Organization, 177 • Degrees, 178 • Curriculum, General Studies, 179 • Business Core Requirements, Major Requirements, 180 • Curricula, 181 • Professional Programs, 185 • General Information, 186 • Certificate in International Business Studies, 188</p> <p>Schools: Accountancy, 189 • Health Administration and Policy, 197</p> <p>Departments: Decision and Information Systems, 191 • Economics, 193 • Finance, 194 • General Business, 196 • International Business Studies, 198 • Management, 198 • Marketing, 199 • Purchasing, Transportation, Operations, 200</p>	
College of Education	202
<p>Purpose, Organization, 202 • Degrees, Advisement, Admission, 203 • Program of Study, General Studies, Retention and Disqualification, 204 • Field Experience Requirements, Graduation and Degree Requirements, Certification for Teaching, 205 • Special Programs, 206</p> <p>Division of Curriculum and Instruction: 207 • Courses: Curriculum and Instruction, Educational Media and Computers, 207 • Elementary Education, 208 • Multicultural Education, Reading and Library Science, 210 • Secondary Education, 212 • Special Education, 213</p> <p>Division of Educational Leadership and Policy Studies: 214 • Courses: Educational Administration and Supervision, 214 • Higher Education, 215 • Social and Philosophical Foundations, 216</p> <p>Division of Psychology in Education: 217 • Courses: Counseling and Counseling Psychology, 217 • Educational Psychology, 218 • Educational Technology, 219</p>	
College of Engineering and Applied Sciences	220
<p>Purpose, Organization, 220 • Research, Degrees, 221 • General Information, 223 • General Studies, 226</p> <p>Division of Agriculture: Purpose, 227 • General Information, Organization, Degrees, Curricula in Agriculture, 227 • Agribusiness, 229 • Environmental Resources in Agriculture, 231 • Courses, 233</p> <p>Department of Computer Science: General Information, Computer Science B.S., 237 • Computer Systems Engineering B.S.E., Courses, 239</p> <p>Division of Construction: General Information, 242 • Construction B.S., 243 • Courses, 246</p> <p>School of Engineering: General Information, 248 • Degree Requirements, 250 • Engineering Core, 251 • Departments: Chemical and Bio Engineering and Materials Science, 252 (Courses, 277) • Civil Engineering, 256 (Courses, 281) • Electrical and Computer Engineering, 258 (Courses, 283) • Industrial and Management Systems Engineering, 260 (Courses, 287) • Mechanical and Aerospace Engineering, 263 (Courses, 289) • Special and Interdisciplinary Engineering Studies, 269 • Analysis and Systems Courses, 276 • Engineering Core Courses, 286 • Society, Values and Technology Courses, 293</p> <p>Division of Technology: Purpose, 293 • General Information, 294 • Departments: Aeronautical Technology, 295 (Courses, 308) • Electronics and Computer Technology, 298 (Courses, 310) • Industrial Technology, 301 (Courses, 312) • Manufacturing Technology, 306 (Courses, 315)</p>	
College of Fine Arts	317
<p>Purpose, Information, 317 • Degrees, 318 • General Studies, 319</p> <p>School of Art: Major Requirements, Bachelor of Arts Degree Curriculum, Bachelor of Fine Arts Degree Curriculum, 321 • Graduate Programs, Courses, 322</p> <p>Department of Dance: Departmental Major Requirements, Bachelor of Arts Degree Curriculum, Bachelor of Fine Arts Degree Curriculum, Courses, 329</p> <p>School of Music: Major Requirements, Curricula, 332 • Graduate Programs, Courses, 336</p> <p>Department of Theatre: Major Requirements, Curricula, 342 • Courses, 344</p>	

4 TABLE OF CONTENTS

College of Law	347
Purpose, Juris Doctor Degree Admissions, 347 • Course of Study, Grading and Retention Standards, 348 • Law Building and Law Library, Accreditation, Courses, 349	
College of Nursing	353
Purpose, Organization, Continuing Education Program, 353 • General Information, 354 • Degrees, General Studies Prereq or Corquisites, 355 • Admission Requirements, 356 • Academic Standards Progression Retention, 357 • Courses, 358	
College of Public Programs	362
Purpose, Organization, Degrees, 362 • Admission, 363 • University and College Course Requirements, 364 • Special Credit Options, Academic Standards and Retention, 365 Department of Communication: Degrees, Requirements, 367 • Courses, 368 School of Justice Studies: Degrees, 371 • Admission Requirements, 372 • Courses, 373 Walter Cronkite School of Journalism and Telecommunication: Major Requirement, Bachelor of Arts Degree Requirements, Bachelor of Science Degree Requirements, 375 • Broadcasting, Journalism, 376 • Courses, 377 Department of Leisure Studies: Departmental Major Requirements, 378 • Bachelor of Science Degree Curriculum, 379 • Courses, 380 School of Public Affairs: 381 • Program, Courses, 383 • Center for Urban Studies, 383 • Morrison Institute for Public Policy, 384	
School of Social Work	385
Degrees, Objectives, Degree Requirements, 385 • Admissions, Retention and Disqualification, 387 • Undergraduate Courses, 388 • Master of Social Work, Program of Study, 389 • Admissions Requirements, 390 • Graduate Courses, 391 • Doctor of Social Work, Program of Study, 392 • Admission to the DSW Program, Courses, 393	
ASU West Campus	395
Objectives, Organization, Degree Programs, 395 • Facilities, Student Services, Library, 396	
Graduate College	398
Graduate Degrees and Majors, Admission to the Graduate College, 398 • General Information, 399 • Application Procedures, 400 • Graduate College Degree Requirements, 401 • Graduate Credit Courses, 402 • Student Responsibility, 403	
Summer Sessions	405
General Information, Credit and Residence Requirements, Admission to Summer Sessions, Terms, Undergraduate Enrollment, Graduate Study, 405	
International Programs	407
Area Studies, American Language and Culture Program, 407 • Academic Programs, 408	
Off-Campus Academic Services	409
Courses, Correspondence Study, 409 • Instructional Television Services, Non-Credit Continuing Education, Elderhostel, ASU Sun Cities, 410 • Conference Services, 411	
Faculty, University Offices and Services	412
Appendix	500
Equal Employment Opportunity and Affirmative Action Statement, 500 • Student Appeal Procedures on Grades, 501	
Index	502

Academic Organization

COLLEGE OF LIBERAL ARTS AND SCIENCES

Departments: Aerospace Studies; Anthropology; Botany and Microbiology; Chemistry; English; Family Resources and Human Development; Foreign Languages; Geography; Geology; Health and Physical Education; History; Mathematics; Military Science; Philosophy; Physics; Political Science; Psychology; Religious Studies; Sociology; Speech and Hearing Science; Zoology.

COLLEGE OF ARCHITECTURE AND ENVIRONMENTAL DESIGN

School of Architecture.

Departments: Design; Planning.

COLLEGE OF BUSINESS

School of Accountancy.

Departments: Decision and Information Systems; Economics; Finance; General Business; Management; Marketing; Purchasing, Transportation, Operations; Center for Health Services Administration.

COLLEGE OF EDUCATION

Division of Curriculum and Instruction: Programs: Adult Education/Selected Studies, Early Childhood; Elementary Education; Humanities Education; Media/Computer Based Education; Multicultural Education; Reading/Library Sciences; Secondary Education, Special Education.

Division of Educational Leadership and Policy Studies: Programs: Educational Administration and Supervision, Higher Education, Social and Philosophical Foundations.

Division of Psychology in Education: Programs: Counseling; Educational Psychology; Educational Technology.

COLLEGE OF ENGINEERING AND APPLIED SCIENCES

School of Engineering.

Departments: Chemical and Bio Engineering; Civ I Engineering, Electrical and Computer Engineering; Industrial and Management Systems Engineering; Mechanical and Aerospace Engineering

Department of Computer Science.

Divisions: Agriculture; Construction; Technology.

COLLEGE OF FINE ARTS

Schools: Art; Music.

Departments: Dance; Theatre.

COLLEGE OF LAW

COLLEGE OF NURSING

COLLEGE OF PUBLIC PROGRAMS

Schools: Walter Cronkite School of Journalism and Telecommunication; Justice Studies; Public Affairs.

Departments: Communication; Leisure Studies.

SCHOOL OF SOCIAL WORK

ASU WEST CAMPUS

GRADUATE COLLEGE

SUMMER SESSIONS

OFF-CAMPUS ACADEMIC SERVICES

University Calendar

Fall Semester

1987

Priority Date for Receipt of Undergraduate Admissions or Readmission Credentials	July 24
Orientation and Advisement for New Students	Aug. 17 21, M F
New Faculty Orientation	Aug. 20, Th
Registration and Drop/Add	Consult <i>Schedule of Classes</i>
Instruction Begins	Aug. 24, M
Labor Day—Classes Excused	Sept. 7, M
Unrestricted Withdrawal Deadline	Sept. 18, F
December Graduation Filing Deadline (no late fee required)	Oct. 16, F
Mid-Semester Scholarship Reports Due in Office of Registrar	Oct. 23, F
Restricted Course Withdrawal Deadline	Oct. 30, F
Veterans Day—Classes Excused	Nov. 11, W
Thanksgiving Recess—Classes Excused	Nov. 26-27, Th-F
Restricted Complete Withdrawal Deadline	Dec. 3, Th
Instruction Ends	Dec. 10, Th
Reading Day	Dec. 11, F
Final Examinations	Dec. 14 18, M F
Commencement	Dec. 18, F
Mid Year Recess Begins	Dec. 19, Sa

Spring Semester

1988

Priority Date for Receipt of Undergraduate Admission or Readmission Credentials	Dec. 18
Orientation and Advisement for New Students	Jan. 13-15, W-F
Registration and Drop/Add	Consult <i>Schedule of Classes</i>
Instruction Begins	Jan. 18, M
Unrestricted Withdrawal Deadline	Feb. 12, F
Presidents' Day—Classes Excused	Feb. 15, M
Spring Recess—Classes Excused	Mar. 6 13, Su-Su
May Graduation Filing Deadline (no late fee required)	Mar. 18, F
Mid-Semester Scholarship Reports Due in Office of Registrar	Mar. 18, F
Restricted Course Withdrawal Deadline	Apr. 1, F
Restricted Complete Withdrawal Deadline	Apr. 28, Th
Instruction Ends	May 4, W
Reading Day	May 5, Th
Final Examinations	May 6, 9 12 F, M Th
Commencement	May 13, F

Summer Sessions**1988**

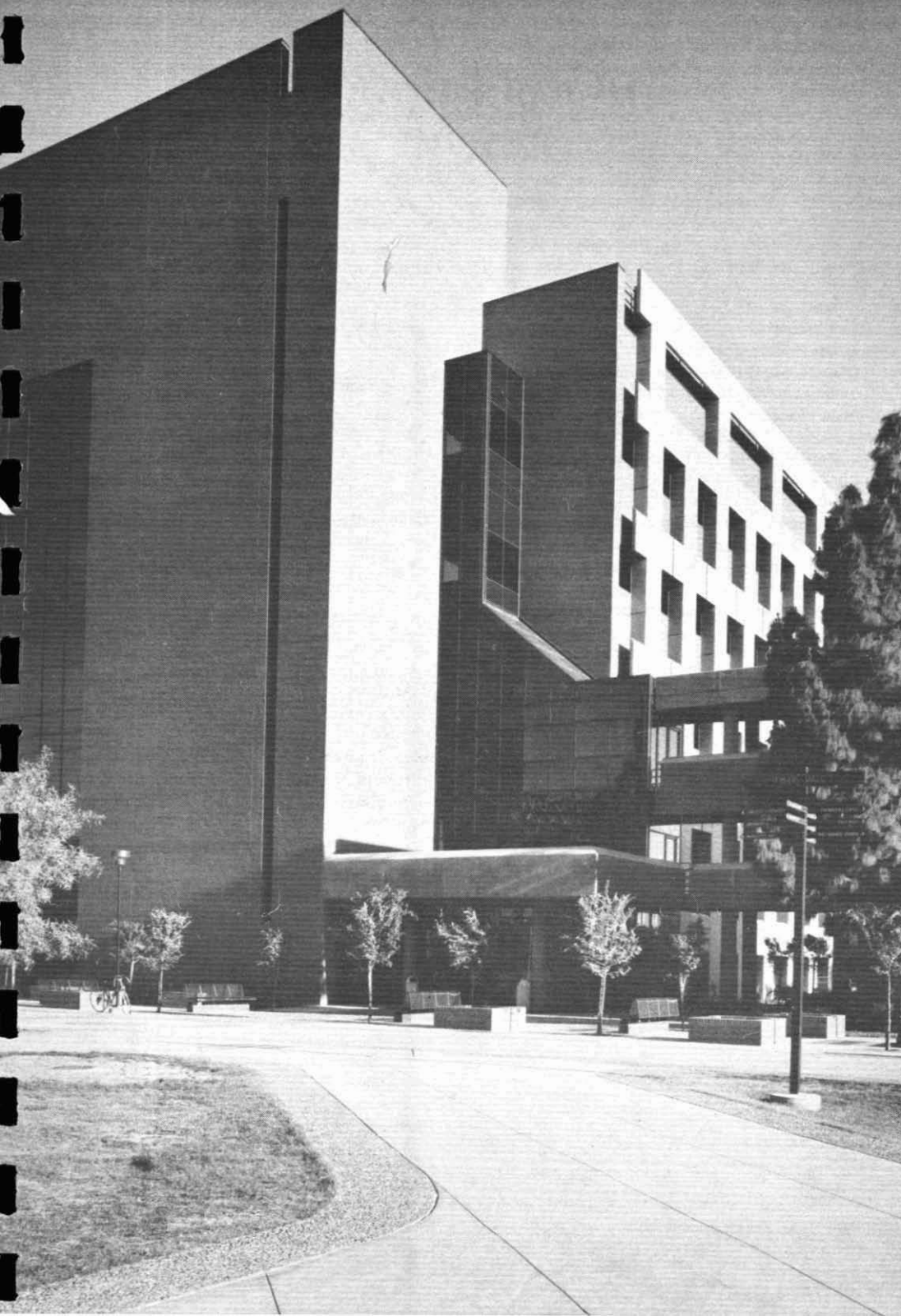
Instruction Begins (First five week Session)	May 31, T
Instruction Begins (Eight week Session)	May 31, T
Unrestricted Withdrawal Deadline (First 5 week and 8 week Session)	June 6, M
Restricted Course Withdrawal Deadline (First 5 week and 8 week Session)	June 17, F
Restricted Complete Withdrawal Deadline (First 5 week Session)	June 24, F
First Five Week Session Ends	July 1, F
August Graduation Filing Deadline (no late fee required)	July 1, F
Holiday	July 4, M
Instruction Begins (Second 5 week Session)	July 5, T
<i>Unrestricted Withdrawal Deadline (Second 5 week Session)</i>	July 12, T
Restricted Complete Withdrawal Deadline (8-week Session)	July 15, F
Eight Week Session Ends	July 22, F
Restricted Course Withdrawal Deadline (Second 5-week Session)	July 22, F
Restricted Complete Withdrawal Deadline (Second 5 week Session)	July 29, F
Second Five Week Session Ends	Aug. 5, F
Commencement	Aug. 5, F

Supplemental Sessions I and II**1988**

Instruction Begins (First Session)	June 6, M
Unrestricted Withdrawal Deadline (First 5 week Session)	June 13, M
Restricted Course Withdrawal Deadline (First 5-week Session)	June 24, F
Restricted Complete Withdrawal Deadline	July 1, F
Holiday	July 4, M
First Session Ends	July 8, F
Instruction Begins (Second Session)	July 11, M
Unrestricted Withdrawal Deadline (Second 5 week Session)	July 18, M
Restricted Course Withdrawal Deadline (Second 5 week Session)	July 29, F
Restricted Complete Withdrawal Deadline	Aug. 5, F
Second Session Ends	Aug. 12, F

8 UNIVERSITY CALENDAR

1987	<p style="text-align: center;">JULY</p> <table border="1"> <tr><td>S</td><td>N</td><td>MON</td><td>E</td><td>WED</td><td>TH</td><td>FR</td><td>SAT</td></tr> <tr><td></td><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td></td></tr> <tr><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td></td></tr> <tr><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td></td></tr> <tr><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td></td></tr> <tr><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td><td>31</td><td></td><td></td></tr> </table>	S	N	MON	E	WED	TH	FR	SAT				1	2	3	4		5	6	7	8	9	10	11		12	13	14	15	16	17	18		19	20	21	22	23	24	25		26	27	28	29	30	31			<p style="text-align: center;">AUGUST</p> <table border="1"> <tr><td>SUN</td><td>M</td><td>N</td><td>TUE</td><td>WED</td><td>TH</td><td>FR</td><td>SAT</td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></tr> <tr><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td></td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td></td></tr> <tr><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td></td></tr> <tr><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td></td></tr> <tr><td>30</td><td>31</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>	SUN	M	N	TUE	WED	TH	FR	SAT								1	2	3	4	5	6	7	8		9	10	11	12	13	14	15		16	17	18	19	20	21	22		23	24	25	26	27	28	29		30	31							<p style="text-align: center;">SEPTEMBER</p> <table border="1"> <tr><td>SUN</td><td>MON</td><td>TUE</td><td>WED</td><td>TH</td><td>FR</td><td>SAT</td></tr> <tr><td></td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td></tr> <tr><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td></tr> <tr><td>27</td><td>28</td><td>29</td><td>30</td><td></td><td></td><td></td></tr> </table>	SUN	MON	TUE	WED	TH	FR	SAT			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
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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. Refer to page 5 for academic organization.

These academic units 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 mechanical 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, accompa

nied by successive changes in scope, name and governance. On March 8, 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 and Environmental Design: The program in Architecture leads to the Master of Architecture degree, which is accredited by the National Council of Architectural Registration Boards. The following programs maintain affiliations with the following affiliating boards: American Institute of Planners, Foundation of Interior Design Education and Research, Industrial Design Society of America, American Society of Landscape Architects;

Business: 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 Education, 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 and Sciences: American Association of Teachers of French, American Chemical Society, American Council on Teaching Foreign Language, American Dietetic Association, American Medical Association, American Psychological Association, American Speech Language-Hearing Association, Arizona Foreign Language Association, Committee on Allied Health Education, Modern Language Association, Rocky Mountain Modern Language Association;

Nursing: The National League for Nursing, American Nurses Association, Arizona State Board of Nursing;

Public Programs: American Council on Education in Journalism and Mass Communication, National Association of Schools of Public Affairs and Administration;

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 160,000). 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 more than 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, aesthetic, and educational needs of students, faculty, and staff.

Research Park. Arizona State University's new Research Park, being developed on a 320 acre site southeast of the main campus, is expected to house up to 50 tenant firms drawn from private technological and social research companies from around the world. A hotel complex and recreational facilities are included in the plans. The Research Park project is designed to bring ASU to the forefront of the high tech revolution.

ASU West Campus. ASU West Campus is an upper division branch of Arizona State University located in northwest Phoenix to serve the higher educational needs of residents of western Maricopa County. Construction of the permanent campus was begun in 1986 on a 300-acre site bounded by Thunderbird and Sweetwater Roads and 43rd and 51st Avenues in Phoenix. The first building, the library, is expected to be in use by the spring of 1988. Completion of the first phase of the campus, capable of serving 10,000 students, is expected in the 1990s. While the new campus is under construction, classes and services are offered at two leased facilities, ASU West Alhambra and ASU West

12 GENERAL INFORMATION

Montebello. See pages 395-397 for further information.

Arizona State University Computer Institute. The Arizona State University Computer Institute located at 3883 E. Thomas Road in Phoenix, Arizona, represents a new approach in providing computer education. The first of its kind in the United States, the Institute offers a wide variety of microcomputer training classes.

The Computer Institute offers introductory to advanced level classes from computer awareness, programming, information management, graphics, business applications, word processing, education, technical and special applications. The Institute also works closely with business and industry to provide tailored classes developed specifically for a client and his or her employees.

For additional information, contact the ASU Computer Institute.

Center for Executive Development Annex. The Center operates an 8,000 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 northeast of Payson, this continuing education facility of the University serves the needs of academic departments conducting teaching and research in mountain terrain.

Stevens House. Located downtown and anchoring a corner of one of Phoenix's oldest existing residential blocks, this restored structure offers historical exhibits and showcases current university projects and accomplishments for visitors to this city park.

Downtown Center. Located at 410 North 7th Street in Phoenix, ASU's convenient Center is in one of the former Phoenix Union High School buildings. Courses of interest to the business community are offered during evening hours. Information about all ASU curricula and programs are available from the Center.

University Libraries and Collections

The collections of the University's libraries comprise more than 2.1 million volumes, approximately 2.3 million microform units and more than 28,000 periodical and serial subscriptions. Computer access to commercially produced bibliographic data bases and the ability to

borrow research materials from other libraries enhance local resources.

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

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

Bimson Library. Located in the College of Business, 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.

Howe Architecture Library. In addition to books and periodicals, this library, located in the College of Architecture and Environmental Design, contains the Paolo Soleri archives.

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 listening facilities for individuals and groups, is located on the third floor of the Music Building. Special collections include the Wayne King Collection, the Pablo Casals International Cello Library and the International Percussion Reference Library.

Daniel E. Noble Science and Engineering Library. Opened in 1983, this major branch library houses books, journals, and microforms in the sciences and geography, the Solar Energy Collection, the Map Collection, and the U.S. Patent Collection.

University Archives. The records of the University, its official publications and publications of its faculty, students and staff are preserved in this collection.

Cultural Arts Resources

Gammage Center for the Performing Arts. Designed by Frank Lloyd Wright and named for the late President Grady 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

ties (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.

Sundome Center for the Performing Arts.

As America's largest single-level theatre, the Sundome in Sun City West has 7,169 seats. The theatre is equipped with sophisticated and state-of-the-art lighting systems, and a single-span roof affords each seat a clear view. As one of Arizona's premier entertainment venues, the Sundome provides a varied array of top entertainment from Las Vegas concerts to classical ballets to celebrity lectures.

University Art Museum. This large complex of galleries and art study rooms is housed in Matthews Center. The Oliver B. James Collection of American Art ranges from the early 18th century to the contemporary and includes major works by Stuart, Ryder, Homer, and the Ash Can School painters. Master works by great printmakers such as Dürer, Rembrandt, Whistler and Hogarth are often featured in special exhibitions culled from ASU's extensive print collections.

The gallery devoted to Latin American art features folk art as well as paintings by celebrated 20th century artists Rivera, Siqueiros and Tamayo. Throughout the museum fine examples of 19th and 20th century crafts are interspersed with painting and sculpture.

Special showings of historical and contemporary traveling exhibitions are scheduled throughout the year.

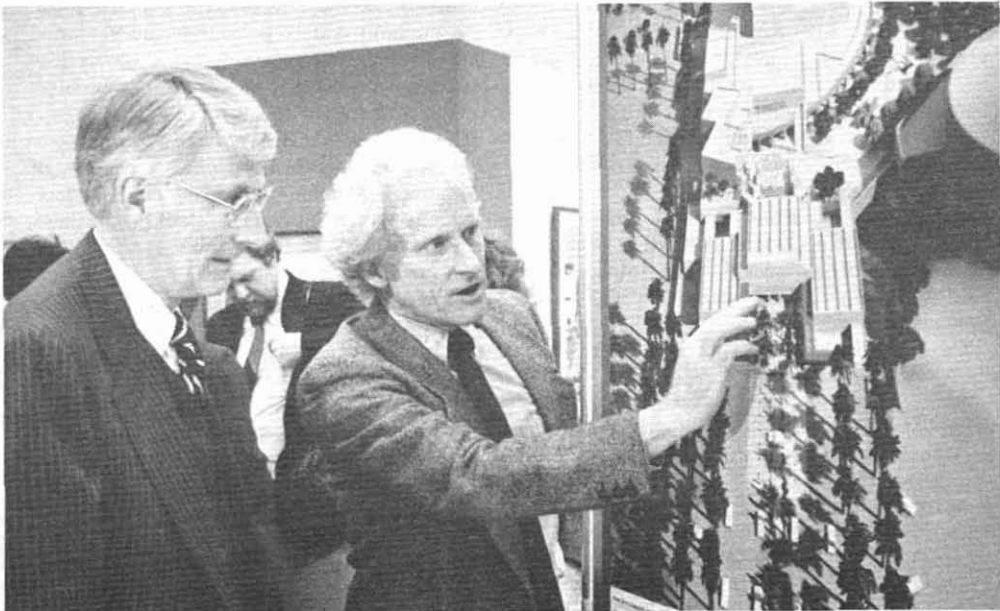
Harry Wood Gallery. Housed in the Art Building (Room 120), the Gallery provides year-round, temporary exhibitions of the visual arts.

Northlight Gallery. This facility is dedicated to qualitative exhibitions of the art of photography and is located in Matthews Hall.

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.

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 125,000 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.



Undergraduate Enrollment: Policies and Procedures

Arizona State University shares with other colleges and universities a tradition of service and academic excellence that is hundreds of years old. Its purpose is the exchange of knowledge and the pursuit of wisdom. What makes this university special is its commitment to provide a place where faculty and students are challenged to exchange ideas and information with in an atmosphere of intellectual honesty.

The University offers its students unique opportunities to enjoy both a rich cultural heritage and a diverse student population. All persons giving evidence of suitable preparation usually by way of acceptable academic credentials are welcome to the university without regard to race, skin color, religious creed, or national origin.

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.

Remaining in good standing in the University community is a privilege rather than a right. A student, by enrolling, voluntarily assumes certain obligations of conduct and performance. These conduct expectations include avoiding irresponsible use of alcohol and the use, possession, distribution, or possession with intent of distribution of illegal drugs.

The University enforces its conduct rules through sanctions imposed for violations. The University also cooperates fully with law enforcement agencies to enforce all laws relating to alcohol use and illegal substances.

Educational programs are available to students regarding alcohol and illegal drug use through the Student Health Center. Students are encouraged to use the health information re-

source clinic in the Health Center to obtain information about alcohol, illegal drugs or other health-related issues.

The University has an educational interest in student conduct on the campus, as well as events and functions off campus sponsored by the University. Students are expected, as part of their obligations of enrollment, to become familiar with the University *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 violations of University regulations with regard to academic dishonesty.

Student Services at ASU

Arizona State University is a richly diverse academic setting enrolling more than 41,000 students. The ASU student may be a traditional 18 to 24 year old, a recent high school graduate, a community college transfer, an adult returning to college to pursue a degree while having commitments at home and work, or the professional studying for an advanced degree or career change. The ASU student lives in residence halls, or sororities or fraternities on campus, or commutes from one of the many communities in metropolitan Phoenix. Each of the 50 states, and more than 100 foreign countries, have students enrolled on this campus.

The campus is organized into six distinct administrative areas. Student Affairs, one of the six areas, is responsible for the delivery of a variety of services and developmental programs in support of students' total university needs and educational pursuits. These programs and services are based upon human development research which advocates that a person develops physically, psychologically, morally, socially, spiritually, emotionally, culturally, and intellectually. Student Affairs services are accom-

plished through effective environmental management and purposeful program planning.

Special attention is given not only to the recruitment of a high achieving, culturally diverse student body, but to the creation of an energetic campus ecology that both catalyzes mature development and advances the academic endeavors of students.

Enrollment services to students are begun through recruitment, admissions, student financial assistance, on campus housing, and registration programs. Once students are on campus, they are encouraged to explore the interrelationships of people to the physical surroundings, the structural facilities, the service offerings, and human resources. Campus agencies guiding

students in this learning process include Counseling and Consultation, Student Life, Educational Development, Student Health, Student Publications, Residence Life and the Memorial Union. Each of these areas provides specialized learning opportunities which contribute to an environment that fosters both personal and academic growth.

ASU's commitment to students does not diminish as a student nears graduation. By promoting career exploration and placement services, students are accompanied through their transition from the university experience to the professional lifestyles and challenges they have chosen to pursue.

Degree Programs Currently Offered at ASU

Programs Leading to the Bachelor's Degree

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

16 DEGREE PROGRAMS / FEES, DEPOSITS AND OTHER CHARGES

Programs Leading to the Master's Degree

Accountancy	Educational Technology	Natural Sciences
Agribusiness	Electrical Engineering	Nursing
Anthropology	Elementary Education	Performance (Music)
Architecture	Engineering Science	Philosophy
Art	English	Physical Education
Biological Sciences	Environmental Resources in Agriculture	Physics
Botany	Environmental Planning	Political Science
Business Administration	Family Resources and Human Development	Psychology
Chemical Engineering	French	Public Administration
Chemistry	Geography	Quantitative Systems
Child Drama	Geology	Recreation
Choral Music	German	Religious Studies
Civil Engineering	Health Services Administration	School Library Science
Communication	Higher and Adult Education	Secondary Education
Communication Disorders	History	Social and Philosophical Foundations (Education)
Community Education	Humanities	Social Work
Computer Science	Industrial Engineering	Sociology
Counseling	Instrumental Music	Spanish
Counselor Education	Justice Studies	Special Education
Creative Writing	Mass Communication	Taxation
Dance	Mathematics	Technology
Economics	Mechanical Engineering	Theatre
Educational Administration and Supervision	Microbiology	Theory and Composition (Music)
Educational Media	Music History and Literature	Zoology
Educational Psychology		

Programs Leading to the Education Specialist Degree

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

Programs Leading to the Doctoral Degree

Anthropology	Electrical Engineering	Mechanical Engineering
Botany	Elementary Education	Microbiology
Business Administration	Engineering Science	Physics
Chemical Engineering	English	Political Science
Chemistry	Exercise Science	Psychology
Choral Music	Geography	Public Administration
Civil Engineering	Geology	Science and Engineering of Materials
Computer Science	Higher and Adult Education	Social Work
Counseling Psychology	History	Sociology
Curriculum and Instruction	Industrial Engineering	Solo Performance
Economics	Instrumental Music	Spanish
Educational Administration and Supervision	Justice Studies	Zoology
Educational Psychology	Law	
Educational Technology	Mathematics	

Fees, Deposits and Other Charges

The following fees apply to both credit and non-credit (audit) registrations and are subject to change.

The Board of Regents reserves the right to change fees and charges without notice. Always refer to the current semester *Schedule of Classes* for the up to date fee amounts.

Academic Year Registration and Tuition

Full-time Students. Students registered for 7 or more hours are considered full-time for fee payment purposes. The amounts listed below are per academic semester. Information on in state versus out of state residency classification is on page 19.

Registration and Tuition fees are.

In State status

\$ 598.00

FEES, DEPOSITS AND OTHER CHARGES 17

Out of state status:	
12 hours and over	\$2,314.00
11 hours	\$1,998.00
10 hours	\$1,868.00
9 hours	\$1,738.00
8 hours	\$1,608.00
7 hours	\$1,478.00

Part-Time Students. Students registered for 6 hours or less \$60 per hour.

Concurrent Enrollment; Nonresident Tuition.

A. It is unlawful for any nonresident student to register concurrently in two or more public institutions of higher education in this state including any university or community college for a combined student credit hour enrollment of more than six semester hours without payment of nonresident tuition at one of such institutions.

B. Any nonresident student desiring to enroll concurrently in two or more public institutions of higher education in this state including any university or community college for a combined total of more than six semester hours who is not subject to nonresident tuition at any of such institutions shall pay the nonresident tuition at the institution of his choice in an amount equivalent to nonresident tuition at such institution for the combined total of semester hours for which the nonresident student is concurrently enrolled. (A.R.S. Ch.14, par.15 1807)

Summer Sessions, Off-Campus Academic Services and Correspondence

Fees are:

Summer Sessions	\$60 per hour.
Academic Services	\$60 per hour.
Correspondence	\$33 per hour.
Law Courses	\$75 per hour.

Further information on these services is included in the sections on Summer Sessions (pages 405-406) and Off Campus Academic Services, Correspondence (pages 409 411).

Other Fees, Deposits, and Charges

Special class fees and deposits. Certain University classes require payment of fees or deposits for materials, breakage and/or rentals. These fees and deposits are listed in the *Schedule of Classes* for each semester.

Private Music Instruction

1/2 hour of instruction weekly	\$40.00
1 hour of instruction weekly	\$60.00
More than one hour of instruction weekly music majors only	\$60.00

Musical instrument rental charge. Charge for use of University owned musical instruments \$10.00
Consult the School of Music for specific information.

Late Registration. This fee is assessed on registrations beginning with the first day of each session \$10.00

Admission Application \$25.00

This is a non-refundable fee paid by *out of state* undergraduate applicants when applying for admission.

Transcripts \$1.00

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

Copies of educational records other than transcripts:

<i>Number of Pages</i>	<i>Total Charge</i>
1 to 5	Free
6 to 10	\$2.00
11 to 15	\$3.00

Copies of additional pages cost \$1 per each 5 pages copied.

Graduation Application or Reapplication:

Undergraduate	\$ 10.00
Graduate	\$ 15.00

If the graduation charge is not paid on or before the date specified in the section of this *Catalog* headed Graduation Requirements, a late fee of \$5.00 is added to the charge noted above.

I.D. Card Replacement \$5.00

Replacement because of wear or deterioration is free of charge.

Comprehensive Examination \$7.50
Per Semester Hour

Paid by all students seeking to establish credit by examination.

Parking Permits Varies

A parking permit must be purchased for motor vehicles parked on campus. Annual permits run from \$37.00 for perimeter parking to \$90.00 for controlled access parking.

Returned Checks and Credit Cards. Checks or credit card payments returned by a bank are assessed a \$10.00 service charge with repayment needed within 5 business days of notification. A second \$10.00 service charge is made if the returned check or credit card payment is not repaid within this five day period. Repayment of a returned check or credit card must typically be in cash.

Students paying registration and tuition with a check or credit card that is subsequently not

18 FEES, DEPOSITS AND OTHER CHARGES

honored by a bank are subject to involuntary withdrawal from the University if repayment is not made. All students involuntarily withdrawn are charged tuition and/or registration based upon the percentage of time in attendance during the semester.

On-Campus Housing. For information on student housing, refer to catalog section on Student Services Residence Life.

Parking Violations. Violations of the parking regulations are subject to citations and fines. Appeals to parking citations may be filed with the Citations Hearing Officer and after payment may be further appealed to the Parking Appeals Board. Unpaid parking citations are delinquent financial obligations subject to provisions of the section on Delinquent Financial Obligations.

Payment Methods and Deadlines

Check. Checks payable for the exact amount of charges and without a restrictive endorsement are generally acceptable, except for students on check use suspension due to previously returned check(s) from a bank.

Financial Aid. Students receiving financial aid may use their expected aid to pay registration and tuition if these funds have been authorized for this purpose by the Student Financial Assistance Office.

Veterans Deferred Payment. The Veterans Readjustment Assistance Act allow veterans to apply for deferred payment of registration fees. A 'Certificate of Eligibility' must be presented. Contact the Veterans Affairs Office for information on meeting the necessary requirements. The University may deny this privilege to students with previous delinquent obligations.

Payment Deadlines. A fee payment deadline is printed on all Schedule/Billing Statements. Fees must be paid by the date and time indicated or the registration will be voided.

Refunds

Academic Year Registration and Tuition.

Students withdrawing from school or individual classes receive a refund as follows:

<i>Withdrawal Date</i>	<i>Refund</i>
Before first day of the semester	100% less \$10.00
1 through 14 calendar days	80%
15 through 21 calendar days	60%
22 through 28 calendar days	40%

29 through 35 calendar days	20%
After the 35 calendar day	No refund

Withdrawal occurs on the calendar day that a complete withdrawal form is presented to any one of the Registrar Sites. Students withdrawing for medical or other extenuating circumstances may contact the Comptroller's Office Student Fee Payment Section, Administration Building, Room 109 for refunds that may be available under these circumstances

Summer Session Fees. Students withdrawing from any Summer Session or individual classes receive a refund as follows:

<i>Withdrawal Date</i>	<i>Refund</i>
Before first day of session	100% less \$10.00
1st and 2nd days of session	80%
3rd day of session	60%
4th day of session	40%
5th day of session	20%
After 5th day of session	No refund

Refunds are based on the class days of the session and not the class meeting dates for any particular classes.

Special Class Fees. Refunds, if any, are determined by the department offering the course. Refund determination is based on withdrawal date, type of activity and costs already incurred by the department.

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, as determined by the School of Music.

Late Registration. Not refundable.

Residence Halls. Refunds to students departing from residence halls prior to end of the academic year are computed on the following basis:

Deposits Housing deposits are refunded as prescribed by the Residence Life license agreement that students sign when they apply for residence hall accommodations. Students should refer to this document for specific information on refunds. When check-out occurs prior to the last two weeks of the spring semester, students forfeit their \$50 room deposit.

Rent. Students are charged 10% of the total semester rate for each week or partial week of registered occupancy.

Board. Students are charged for meals through the last day of the week in which for mal check-out occurs. Students departing during the last two weeks of the semester shall be

charged the full semester rate for meals. No refunds are made for meals missed.

Check-out A student's check out is based on the date Residence Life is notified on a prescribed check out form, not the last day of occupancy.

Other University Charges. Other university charges are normally not refundable, except for individual circumstances

Payment of Refunds. Refunds require student identification and are made net of amounts due the University. When the last day of a refund period falls on a weekend or holiday, a complete withdrawal form must be submitted to one of the Registrar Sites during operating hours on the workday preceding the weekend or holiday. Refunds are normally paid by check and mailed to the student's local address within two weeks.

Forfeiture of Refunds. Refunds are subject to forfeiture unless obtained on or before June 30 of the year originally paid. When June 30 falls on a day when the Comptroller's Office is closed, the refund must be requested by the last working day preceding June 30.

Delinquent Financial Obligations

Board of Regent's Policy 4-103B states:

1. Each university shall establish procedures to collect outstanding obligations owed by students and former students.
2. Each university shall maintain a system to record all delinquent financial obligations owed to that university by students and former students.
3. Students with delinquent obligations shall not be allowed to register for classes, receive cash refunds or obtain transcripts, diplomas or certificates of degree. The university may allow students to register for classes, obtain transcripts, diplomas or certificate of degree if the delinquent obligation is \$25 or less.
4. Unpaid obligations shall remain a matter of record until students and former students satisfy their financial obligations or until satisfactory arrangements for repayment are made with the university.
5. The University may write off delinquent financial obligations of students according to accepted accounting principles and after appropriate collection efforts. No such write off shall operate to relieve the student of liability for the obligation nor shall such write off entitle the student to release of any transcript, diploma or certi-

cate of degree or to register for further university classes until such obligation is actually paid.

6. Each university shall include this policy in its bulletin or catalog.

A late charge of \$10.00 is made for any balances due the University not paid within 30 days of the initial due date, with a second \$10.00 late charge being made if these amounts are not paid within 30 days of the first late charge. Procedures to be followed for disputed charges are available from the Accounts Receivable Section of the Business Services Office.

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 fees and tuition. There are several criteria that need to be met. Students interested in becoming an Arizona resident, for tuition purposes, should contact the Residency Classification Office soon after arrival in the State. Direct inquiries to: Residency Classification Office, Arizona State University, Moer 1, Tempe, AZ 85287 or call 602/965-7712.

Financial Aid

The primary responsibility for financing a college education belongs to students and their families. The Student Financial Assistance Office will assist students in meeting this responsibility by evaluating all aid applications through the use of a standard financial needs analysis system to determine the cost of their education, as well as how much they and their families can afford to contribute toward that cost. It is the students' responsibility to complete all applications in an accurate and timely manner and to notify the Student Financial Assistance Office of any changes in circumstances that might affect their eligibility (i.e., loss of parent's income, change in residency classification, change in marital status, etc.). Student financial assistance is available 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, federal and state governments.

To be considered for financial aid all students must complete an application separate from the admission application. The College Scholarship

20 FINANCIAL AID

Service Financial Aid Form is the preferred application, although the American College Testing Family Financial Statement is also acceptable. Either form should be completed between January and March preceding the academic year the student anticipates attending ASU. Students will be notified by mail regarding any additional items needed to complete their applications. These items may include copies of federal tax returns, proof of valid visa, proof of registration with the Selective Service, etc.

A Determination of Eligibility letter will be sent to all applicants. This letter will estimate their expenses and contribution for the aid period. This letter will also specify the amount of determined financial need. If students have financial need in excess of \$200, they will receive a separate Financial Aid Notification. This letter will inform them of the types and amounts of aid they are eligible to receive through ASU. Applicants should read carefully all correspondence received from the Student Financial Assistance Office.

Students receiving aid from the Student Financial Assistance Office will be required to meet minimum standards of satisfactory academic progress. In addition to maintaining the minimum GPA defined for good academic standing, undergraduate students awarded on a full-time basis must complete a minimum of 24 semester hours within the academic year. Failure to meet these standards will result in the suspension of aid funds for subsequent semesters until the deficiency is satisfied. Undergraduate students are limited to six full-time semesters for

receiving federal financial aid. Registration fees and other amounts due the University are deducted from financial aid when awards are paid each semester.

Refer to publications of the Student Financial Assistance Office for detailed information concerning the types of aid available and the specific requirements of each program.

Types of Financial Aid

Please refer to publications of the Student Financial Assistance Office for detailed information concerning the following programs:

Scholarships

- University funded
- Privately sponsored

Grants

- Pell Grant
- Supplemental Educational Opportunity Grant (SEOG)
- State Student Incentive Grant (SSIG)
- University Grant

Loans

- Perkins Loan (National Direct Student Loan (NDSL))
- Guaranteed Student Loan (GSL)
- Parent Loan for Undergraduate Students (PLUS)
- Supplemental Loans for Students (SLS)
- Short Term Loans

Employment

- College Work Study Program (CWSP)
- University hourly
- Part-time off-campus



STUDENT BUDGETS FOR 1987-88

(Nine month living costs fall and spring semester full time enrollment)

Cost/Allowance Category	Single On-Campus	Single Living w/ Parents	Single Off-Campus	Head of Household (Single +1)	Married, No Dependents
Room/Board	\$ 3,375	\$ 1,100	\$ 3,800	\$ 6,400	\$ 7,600
Personal (Including Travel)	\$ 1,925	\$ 1,900	\$ 2,200	\$ 2,600	\$ 4,400
Living Total	\$ 5,300	\$ 3,000	\$ 6,000	\$ 8,100	\$12,000
Fees	\$ 1,196	\$ 1,196	\$ 1,196	\$ 1,196	\$ 1,196
Books Supplies (15 hour course load)	\$ 450	\$ 450	\$ 450	\$ 450	\$ 450
Resident Total	\$ 6,946	\$ 4,646	\$ 7,646	\$ 10,646	\$13,646
Tuition	\$ 3,432	\$ 3,432	\$ 3,432	\$ 3,432	\$ 3,432
Non Resident Total	\$ 10,378	\$ 8,078	\$ 11,078	\$ 14,078	\$17,078

Note:

- 1 Living expenses (room, board, personal expenses) are stated for a nine month period. 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.

Undergraduate Admission

Arizona State University welcomes application for admission from all persons seeking benefit from the University's broad spectrum of educational programs and services.

Prospective students may call 965-7788 (toll free numbers 1 800 252-ASU1 for out of state applicants and 1 800 325 9371 for in-state) or write to the Undergraduate Admissions Office for information including application materials. With reasonable advance notice, the Undergraduate Admissions Office will arrange for a tour of the campus and, if desired, a meeting with an admission counselor.

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 academic advisement, placement testing, campus tours, special events, and an introduction to University resources and procedures. Parent programs are also included. Newly admitted students will be sent information preceding each 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 Undergraduate 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 \$25 application fee (for applicants residing out of the State of Arizona only).

Applicants are urged to apply and have their materials sent 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.

The priority deadline for receipt of undergraduate admission materials is 30 days prior to the

first day of classes. Applicants whose files are not complete by the priority deadline may not be admitted in time to register for the desired semester. Admitted students who do not register must submit a new application if they wish to apply for a subsequent semester. All documents are kept on file for one year.

Any misrepresentation or falsification including failure to report any college or university attendance, is cause for cancellation of enrollment and or any credits earned.

Application. Prospective students must complete and sign the Application for Undergraduate Admission. A \$25 nonrefundable fee is required of all applicants residing outside the State of Arizona.

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. Residents of Arizona are required to file a Domicile Affidavit which is part of the admissions application. Any student who does not complete the Domicile Affidavit will be classified an out of state resident for tuition purposes. Students should contact the Residency Classification Office, or call 602/965 7712 for more information.

Transcripts. Transcripts must be requested by the applicant. Official transcripts of academic records from high school, as well as all other institutions of higher education the student has attended, must be *mailed directly* to the Undergraduate Admissions Office by the records office of the issuing institution(s). *Transcripts sent 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. Applicants with less than 36 semester hours 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 completed less than 36 semester hours of acceptable work must submit either ACT or SAT scores.

A report of the test scores must be sent to the Undergraduate 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 and must provide a complete immunization history for Student Health. A tuberculin skin test is recommended for international students who come from a high risk environment for exposure to tuberculosis. Students will not be permitted to register until the immunization history is on file with Student Health. 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 New 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 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. Students admissible to the University but not satisfying the above requirements will be admitted into pre-professional programs. In addition to the General Aptitude requirements mentioned above, applicants with less than 36 transferable semester hours must meet the following Basic Competency requirements:

English

1. 4 years high school English (Composition/Literature only) OR,
2. Minimum test score on one of following: ACT English 19, SAT Verbal-450, OR,
3. One transferable 3 hour college level English Composition course

Mathematics

1. 3 years high school including Algebra I, Geometry I, and one year additional math requiring Algebra as prerequisite (beginning Fall 1989 must be Algebra II), OR,
2. Minimum test score on one of following: ACT Math 18, SAT Math 500, OR,
3. Two 3 semester hour college Pre Algebra math courses or 1 transferable 3-hour College Algebra course

Laboratory Science

1. 2 years high school 1 year each from 2 of following: Biology, Physics, Chemistry (Earth Science may be used by students enrolling before Fall 1989.), OR,
2. 1 year high school lab science + minimum test score on one of following:
ATP Chemistry Achievement-575,
ATP Biology Achievement 550,
ATP Physics Achievement 590,
ACT Natural Science 20
(Only 1 lab science requirement may be met by a test score and the test score may not be in the same subject as the unit earned.), OR,
3. Two 4-semester hour college lab science courses

Social Science

(Complete both A and B)

1. 1 year high school American History, OR,
 2. Minimum test score on ATP American History/Social Studies Achievement 510, OR,
 3. One 3 semester hour college American History course, AND,
1. 1 year additional high school social science such as European History, World History, Economics, Sociology, Geography, Government, Psychology, Anthropology, OR,
 2. Minimum test score on one of following: ATP European History/World Cultures Achievement 545, ACT Social Studies 18, OR,
 3. One 3 semester hour college social science course.

24 UNDERGRADUATE ADMISSION

NOTE:

- 1) A minimum 2.00 average (4.00 – A) must be earned in the courses taken in each of the 4 competency areas.
- 2) Applicants with a maximum of 1 deficiency in no more than 2 competency areas may gain regular admission subject to removing the deficiencies within one calendar year of university enrollment.
- 3) Competencies may be met by combinations of high school and college courses or test scores.

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

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 semester hours at a community college or summer or evening sessions at a university, or both.

The School of Engineering recommends 3-1 2 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 2 1 2 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. 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 Undergraduate Admissions Office directly from the high school. In addition, students who were conditionally admitted with more than two deficiencies must submit, at least 45 days in advance of the semester, official records to verify the completion of competencies such that *no more than two* deficiencies remain. Students with more than two deficiencies who have not been admitted 45 days in advance of the semester may not be eligible for admission. The conditional admission may be cancelled if the final verification shows that the applicant has not met the University requirements for admission or that more than two deficiencies remain.

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. High school seniors who rank in the top 10% of their class or students who have already completed all the available course work in a specific academic area, 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 Undergraduate 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 class standing and rank must be sent directly to the Undergraduate Admissions Office by the high school.
3. Students not in the top 10% must have the principal or counselor of the high school send a written recommendation to the Undergraduate Admissions Office authorizing

the enrollment of the high school student at Arizona State University at the same time the student is completing the high school program.

Admission of Unclassified Applicants—Undergraduate. Any high school graduate is invited to enroll for six semester hours or less per semester of undergraduate course work as an unclassified student. Students admitted as unclassified for a specific year and term must remain as unclassified until the next semester.

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. An unclassified student who decides to work toward a bachelor's degree will have to *apply for admission to a degree program* with the Undergraduate Admissions Office and meet all the admission requirements.

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 cumulative 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.

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 Technology 2.25, Speech and Hearing Science 2.50; Education 2.50. (International applicants should see requirements on page 26) Applicants with less than 36 semester hours of completed transferable work will follow the procedures for entering freshmen, as outlined on page 23. Applicants with less than 36 hours of transferable work must submit official high school records and meet the Basic Competency requirements. Students who will be 22 years old by the time the semester begins are exempt from the competency requirements.

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 non-traditional 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) 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.

Certain types of credits cannot be transferred to Arizona State University, including: (1) credits awarded by postsecondary institutions in the United States that lack candidate status or accreditation by a regional accrediting association; (2) credits awarded by postsecondary institutions for life experience; (3) credits awarded by postsecondary institutions for courses taken at non-collegiate institutions (e.g. governmental agencies, corporations, industrial firms, etc.); (4) credits awarded by postsecondary institutions for non-credit courses, workshops, and seminars offered by other postsecondary institutions as part of continuing education programs; (5) credits given for extension courses.

Acceptable academic credits earned at other institutions that are based on a different unit of credit than the one prescribed by the Arizona Board of Regents are subject to conversion before being transferred to Arizona State University.

Veterans Exception. By Arizona statute, no failing grades received by a veteran at an Arizona university or community college prior to military service may be considered when determining admissibility. This exception applies only to veterans who are 1) honorably discharged, 2) who have served in the Armed Forces of the United States for a minimum of 2 years and 3) who have previously enrolled at a university or community college in Arizona. Military service records must be submitted in coding 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 community college courses to meet the requirements of the curriculum they select.

26 UNDERGRADUATE ADMISSION

Students Attending Other Arizona Community Colleges. To determine the equivalency of courses between Arizona institutions and those offered at Arizona State University, students should refer to the *Arizona Higher Education Course Equivalency Guide* in consultation with their academic advisor. 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 47.)

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 Undergraduate 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 will be denied admission. Such applicants, however, may write a letter of appeal accompanied by letters of recommendation, to the University Undergraduate Admissions Board, Arizona State University, Tempe, AZ 85287, for reconsideration of their applications. The decision of this Board is final.

Admission of Disabled Applicants

Persons with disabilities who meet academic qualifications are encouraged to apply for admission to Arizona State University.

A pre-admission inquiry may be made by Disabled Student Resources Office in order to better assist the incoming student with the appro-

prate support services. The inquiry will be made on a confidential basis. Refusal to respond to the inquiry or to provide information requested will have no bearing on either the applicant's admission or treatment at Arizona State University.

The Disabled Student Resources Office is staffed with specially trained professionals working with hearing impaired/deaf, visually impaired/blind, orthopedically disabled, learning disabled and other handicapped applicants. Disabled Student Resources is committed to facilitating appropriate resources which will allow each qualified disabled student access to a greater number of educational, social, and cultural/recreational opportunities within the university community. Each student is encouraged to function independently and to develop his/her own techniques for attaining the highest possible goals in life.

Disabled Student Resources coordinates a comprehensive academic support program for the disabled student population. (For additional information about available services see page 51.) Eligibility for such services is based on enrollment, appropriate documentation of permanent or temporary disability, and documented need for academic support services.

Students with disabilities who require attendant care or other personal assistance must make appropriate arrangements *before the beginning of each academic term.* The student has the sole responsibility for his/her own personal care assistance.

To ensure a smooth transition into the University community, prospective students with disabilities are encouraged to contact the Disabled Student Resources Office, Arizona State University, Tempe, AZ 85287, or call 602/965-1234 (TDD).

Undergraduate Admission of International Applicants

For admission purposes, international applicants are defined as all persons who hold non-immigrant visas or have had immigrant or refugee status for less than two years.

All international applicants seeking admission to Arizona State University, in addition to meeting the standards for undergraduate admission, either as freshmen 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 semester hours or more): Must have a cumulative grade point average of 2.50 or higher on a 4.00 scale in all work undertaken at the previous institution(s) of higher learning and at the same time be in good standing and eligible to return to such institution(s)

International students whose most recent education is outside the United States are not required to fulfill the competency requirements for admission.

- 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 Undergraduate 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 Undergraduate Admissions Office at least two months prior to the beginning of the semester for which application is being made.
- 6) All international applicants for Undergraduate Admission must pay a nonrefundable application fee of \$25 in U.S. funds.

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 Advisor in the Student Life Office.

American Language and Culture 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 The American Language and Culture Program, Arizona State University, Tempe, AZ 85287. Acceptance into the American Language and Culture Program is separate from admission to the University. For additional information see pages 407-408.

The University Honors Program

Nature and Goals

The University Honors Program provides talented and motivated students with educational opportunities designed to further their individual academic and career goals. The Program has been developed to provide benefits characteristic of a small college atmosphere and the resources of a large urban university. Students admitted to the University Honors Program are exposed to highly creative teaching faculty who nurture intellectual pursuits unique to the individual student's abilities and interests. Such faculty bring the expertise of their own education at prestigious institutions and the excitement of nationally recognized research to undergraduate teaching.

Through the University Honors Program, students can complete an undergraduate degree in any major normally available at the university. The first two years of the honors curriculum are devoted to general studies, while the last two years focus on studies related to each student's major. Participation in the Program offers students the opportunity of writing an honors thesis or working on some other appropriate project during the senior year. Students not only find these projects challenging and personally fulfilling but also valuable for developing talents and interests used after leaving the university.

Benefits

Honors courses are limited to enrollments of 22.
Honors students receive priority at early registration.

28 UNIVERSITY HONORS PROGRAM

- Honors study space is set aside in Hayden Library.
- Honors advisors help students arrange challenging, personalized programs of study.
- Completion of all work in the University Honors Program is recognized on student transcripts, including individual courses, completion of lower division requirements, and graduation from the Program. All honors work counts toward graduation, even if students leave the Program. Graduates from the Program normally receive special consideration for admission to graduate schools and when applying for jobs.

Admission

Entering freshmen who are in the top 5% of their high school graduating class, or have either an ACT composite score of 27 or an SAT combined score of 1250, or can submit similar indications of academic aptitude are eligible for admission to the Program.

Continuing and transfer students who have completed at least 15 semester hours of study with at least a 3.25 cumulative GPA are eligible for admission to the Program.

Students not meeting these requirements but who believe they can meet the Program's academic standards may apply for provisional admission.

Students with a 3.25 GPA who are not members of the Program may enroll in any of its courses.

Retention

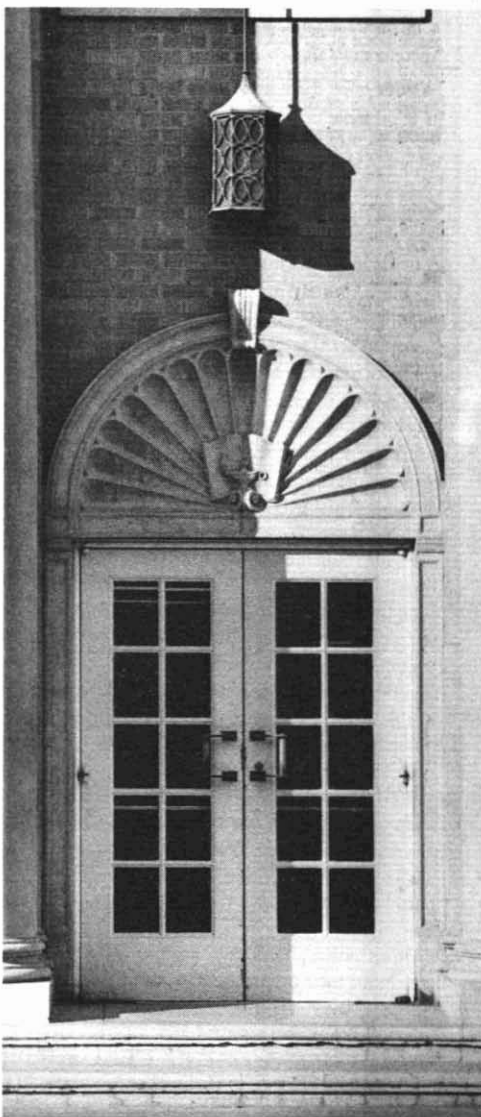
Honors students must maintain high standards of academic performance and show progress toward satisfying the requirements for graduation from the Program. Members of the Program will normally register for at least one honors course each semester. Students whose cumulative GPA falls below 3.25 will be placed on probation and will be withdrawn from the Program if they do not make reasonable progress in raising their cumulative GPA.

Transcript Recognition

Lower Division. Students completing lower-division (first 54 semester hours) work with 1) a 3.40 cumulative GPA and 2) 18 semester hours of honors courses meeting general studies requirements, including ENG 105 and LIA 171-172, may have the following notation placed on their official transcript: "Completed lower division work with honors."

Graduation from the Program. Students completing upper division work with 1) a 3.40 cu-

mulative GPA, 2) 18 semester hours of upper division honors work with a grade of B or better, and 3) a successfully defended honors thesis or project will graduate from the University Honors Program. The 18 semester hours of upper-division work must include at least 6 semester hours of honors courses outside the major and may include up to 6 semester hours credit for the honors thesis or project, including any preparatory research methods course. Graduation with honors requires that a student meet all other requirements for graduation from the University.



Special Programs for Advanced Placement and Credit

(Maximum of 3 hours of credit awarded for any course including APL completion credit for first examination)

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. No credit will be given for any examination with a score of 2 or 1.

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

Exam	Score	Semester 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 181 and 182)
	3	4 (BIO 181)
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 105
Classics: Vergil, Lyric Prose	To be evaluated upon receipt	
French, German or Spanish Language	5	14 FRE 201, 202, 311, 312; OR GER 201, 202, 311, 312, OR SPA 201, 202, 311, 312
	4	11 FRE 201, 202, 311; OR GER 201, 202, 311, OR SPA 201, 202, 311
	3	8 FRE 201, 202; OR GER 201, 202, OR SPA 201, 202
French, German or Spanish Literature	5	14 FRE 201, 202, 294, 321, 322; OR GER 201, 202, 294, 314; OR SPA 201, 202, 294, 325
	4	11 FRE 201, 202, 294; OR GER 201, 202, 294; OR SPA 201, 202, 294
	3	8 FRE 201, 202; OR GER 201, 202; OR SPA 201, 202
History: American or European	5 or 4	6 (HIS 103 and 104 or 101 and 102)
	3	Department will evaluate examination and recommend

30 SPECIAL PROGRAMS FOR ADVANCED PLACEMENT

Mathematics Calculus AB	5, 4 or 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 3	6 (PHY 111 and 112) 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	
Political Science	To be evaluated upon receipt	
Computer Science	5 4 3	6 (CSC 100 and CSC 101) 3 (CSC 100; additional credit to be recommended by the department.) 3 (CSC 100)

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 with Essay on which students must receive a standard score of 610/1978 scale or 500/1986 scale. *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 examinations.

General Examinations	Semester Hours	Equivalency
English Composition	None	With essay exempts ENG 101 and 102 to enter ENG 105
Humanities	6	General Studies Credit
Mathematics	3	MAT 106
Natural Sciences	8	General Studies or Major Credit
Social Science	6	Elective Credit

SPECIAL PROGRAMS FOR ADVANCED PLACEMENT 31

Subject Examinations	Semester 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)
Biology	8	BIO 181 and 182
Business Law	3	Elective Credit
Calculus	4	MAT 270
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
Macroeconomic Principles	3	ECN 111 (Dept. will accept credit for 111 or 112--
Microeconomic Principles	3	ECN 112 not both) No credit or advanced placement if major is Economics or any major in College of Business
Educational Psychology	3	EDP 310*
College Composition	None	With satisfactory essay exempts ENG 101 and 102 to enter ENG 105
English Literature	3	General Studies (Seniors may use ENG 221 or 222)
Freshman English	None	Recommend College Composition Subject Exam

* Lower division credit.

** See note, petition needed.

32 SPECIAL PROGRAMS FOR ADVANCED PLACEMENT

College French	8	FRE 101 and 102
College German	8	GER 101 and 102
College Spanish	8	SPA 101 and 102
Fortran IV	3	CSC 183
General Chemistry	9	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 3	Introduction to Marketing Elective (no credit if major is in College of Business)
Introduction to Sociology	3	SOC 101
Introduction to Business 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.)
Nursing (Anatomy, Physiology, Microbiology; Behavioral Sciences for Nurses; Fundamentals of Nursing; Medical Surgical Nursing)	None	Not acceptable toward BS in Nursing.
Statistics	3	MAT 226 or EDP 454*
Tests and Measurements	3	EDP 454*

* Lower division credit.

** See note, petition needed.

SPECIAL PROGRAMS FOR ADVANCED PLACEMENT 33

Trigonometry	2	MAT 118
Western Civilization (9)		
Ancient Near East to 1648	6	HIS 100 and 101
1648 to the Present	3	HIS 102

All equivalency is subject to future review and possible Catalog change

For further information regarding CLEP, contact the University Testing Service at Payne Hall, Ed B 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 decision on the suitability of course material for a comprehensive examination, the development of a comprehensive examination and the administration of an examination are strictly departmental functions. 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 chair of the department responsible for offering the course.

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.

34 PLACEMENT EXAMS FOR PROFICIENCY / ACADEMIC ADVISEMENT

Placement Examinations for Proficiency

English. New students are placed in First Year Composition courses according to their scores on the ACT English or SAT Verbal test. 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. Other students may attempt to qualify for ENG 105 by achieving appropriate scores on the CLEP General Examination in English Composition with Essay or the CLEP Subject Examination in College Composition with Essay.

Foreign Language. For information regarding foreign language placement, see page 92 (Foreign Languages), and page 29 (Advanced Placement).

Mathematics. All students registering for 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.

Academic Advisement

Effective academic advisement of students is an essential aspect of the educational experience at Arizona State University. Faculty, staff and administrators share a commitment to provide quality academic advisement to students. To assure swift and sound advisement to their majors, each college has advisors to assist students in developing programs of study, assessing educational alternatives; examining academic goals, and understanding rules, procedures, and curriculum requirements. Advisement is one of each faculty member's responsibilities, and faculty are evaluated, in part, on the quality of their work as advisors.

An additional unit, the University Academic Advising Center, is a central advising, referral, and information facility ready to assist students in their academic careers at Arizona State University. The Center provides special advising services to prospective, undecided, undeclared, unclassified and visiting students. Information is available at the Center concerning program standards; general studies and ion requirements, tutoring and other support services; probation, disqualification, and retention procedures; trans-

ferring between colleges, as well as times and places for various forms of general testing (including Mathematics and English placement and aptitude testing).

Students are strongly encouraged to seek academic advisement at the earliest possible time and regularly throughout their programs of study at ASU. Academic offices may be contacted at:

University Academic Advising Center

Social Science 101 965 4464)

Hours	M TH	8:00	6:30
	F	7:00	4:00
	Sat.	9:00	12:00

College of Architecture and Environmental Design

Architecture 16 (965 3584

Hours:	M F	8:00	12:00
		1:00	5:00

College of Business

Business Administration West 140 (965-4227)

Hours	M F	9:00	4:00
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College of Education

Payne Education B7 965 3877

Hours	M F	8:00	5:00
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College of Engineering and Applied Sciences

Engineering Center G 115 (965 5150)

Hours	M F	8:00	5:00
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College of Fine Arts

Gammage Hall 127 (965 6647)

Hours:	M F	8:00	12:00
		1:00	5:00

Graduate College

Wilson Hall Lobby 965 3521

Hours	M Th	10:00	7:00
	F	10:00	2:00

College of Law

Law 102 (965 7207

Hours:	M F	8:00	5:00
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College of Liberal Arts and Sciences

Social Science 111 (965 6506

Hours:	M F	8:00	5:00
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College of Nursing

Nursing 108 (965 2987

Hours	M F	8:00	5:00
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College of Public Programs

Wilson 203 965 1058

Hours	M F	8:00	12:00
		1:00	5:00

School of Social Work

West Hall 113 965 6081

Hours:	M F	8:00	12:00
		1:00	5:00

ASU West Campus
 Student Services, Alhambra (965-5555/279 5485)
 Call for appointment

Registration

All persons attending a class must be registered for that class. 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 has been admitted or readmitted to the University (see Admissions, pages 22 and 46).

Proof of Identification. In order to receive university services, photo identification must be presented. Each admitted student who completes 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 17 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 published each semester and distributed

without charge. The Schedule lists the semester's course offerings, dates, times, places, and procedures for registration, along with other important information relating to the semester.

Course Loads. A minimum full-time course load for an undergraduate student is 12 semester 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 Architecture and Environmental Design). A student wishing to register for more than the maximum must petition the standards committee of the college in which enrolled and must have an approved overload petition on file with that college before registering.

Concurrent Enrollment. Provided that the other university regulations concerning enrollment, graduation requirements or transfer of credits are not violated, a student may be enrolled at other institutions and/or in correspondence courses, and/or classes while enrolled at Arizona State University. However, the student is urged to seek advisement prior 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 above).

Attendance. The instructor has full authority to make decisions whether class attendance is required

Enrollment Verification Guidelines. The following general guidelines are used only 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			
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

Cooperative Education

Cooperative Education at Arizona State University is any educational program that requires *alternating classroom and work experience* in government or industry. The work experience exists for its educational value

1. Full time Status of Co op Students

A Co op student, during a work semester, is identified as both Co op and full time by the University if he/she was full time during 'cooperative education' course.

2. Rights and Privileges of Co-op Students

During their work semester, Co op students have the rights, privileges and protections, with regard to University matters, accorded to full time students, except financial aid assistance. They will maintain catalog continuity and have student access to University facilities and events

3. Financial Aid for Co op Students

Co op students will not be identified to lenders (including ASU) as being in loan repayment status. They will have an 'In School' Full time Enrollment Status. Co op students will not receive any financial aid disbursement during their Co-op semester *nor will such awards be transferred to another semester.* The student is responsible for notifying the Office of Student Financial Assistance as soon as plans for a Co-op term are made but no later than ten days before the Co op term begins. The department or school is responsible for notifying the Office of Student Financial Assistance of students approved for Co op terms

Traveling Scholar Program. The Traveling Scholar Program is a cooperative program between the three State universities designed to enable students to take advantage of programs or special resources that are not available at their own institution. Any undergraduate student with a 2.50 GPA or graduate student with a 3.00 GPA enrolled *full time* at Arizona State University, 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 additional information and the application form.

Interdisciplinary Studies

Adult Development and Aging Program.

Course work related to aging is currently offered in ten departments. An interdisciplinary Certificate in Gerontology may be earned by stu-

dents who wish to study the psychological, sociological and biological aspects of aging and the economic, political, legal, social, 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 student 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 Director, 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 techniques. 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, Family Resources and Human Development).

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 and Environmental Design, 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.

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 and Sciences 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 the Chair of the Interdisciplinary Linguistics Committee.

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 and Sciences. 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 and 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 and Sciences.

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

Classification of Courses

Information about courses appears in two places, the *General Catalog*, published annually, and the *Schedule of Classes*, published before the beginning of every semester.

The course numbering system is as follows:

100-299 ("Lower-Division" Courses) are designed primarily for freshman and sophomore 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 designed primarily for juniors and seniors and other advanced students. Prerequisites and other restrictions should be noted before registration. Courses at the 400 level apply to graduate degree requirements for an individual program of graduate study when approved by the Graduate College.

500-799 ("Graduate-Level" Courses) are designed 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 Catalog* or page 402.)

Special Topics 294, 394, 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 instructional departments or divisions of the colleges at the undergraduate

38 CLASSIFICATION OF COURSES / STUDENT RECORDS

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 specialization on an individual basis with a minimum of supervision or direction.

An Independent Study course is 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, 171H, 172H are interdisciplinary courses offered by the College of Liberal Arts and Sciences. LIA 100 (University Adjustment and Survival) and LIA 101 (Use of Research Libraries) are open to all students; LIA 171H, 172H (The Human Event) is restricted to students in the Honors Program.

Honors Courses. The courses listed in the schedule as 298 and 492 (Honors Individual 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 available 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 semester hours
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
F87, S 88	Course offered every other year on semester indicated
N	Course not regularly offered
	Further prerequisites

Student Records

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, local 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 attendance, 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, 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 *Directors*.

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 Undergraduate Admissions, Career Services, Student Financial Assistance, Residence Life, and University Testing Service; Deans of the Colleges; Chairs of the Departments and Academic Advisors; Dean of Student Life; International Student Advisor; NCAA Faculty Representative; Directors of Intramurals and Orientation.

The Custodian of Educational Records at Arizona State University is the Office of the Registrar. Copies of this policy will be available in the following offices: Reserve Section of Hayden Library and the Noble Science and Engineering Library, the Office of the Registrar, the Offices of Undergraduate and Graduate Admissions and the Office of the Dean of Student Life. The Office of the Registrar will also maintain a directory which lists all education records maintained on students by Arizona State University.

Grading System

Scholarship Grades and Marks. All grades and marks will appear on the grade report and/or the permanent record.

They are indicated by the following letters:

A Excellent	NR No Report
B-Good	P Pass
C Average	RC Remedial Credit
D-Passing	RN Remedial No Credit
E Failure	W Withdrawal
I Incomplete	X Audit
Y Satisfactory	

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.*

40 GRADING SYSTEM

Credit Enrollment. The semester hour is the unit on which credit is computed. It represents one fifty-minute class exercise per week per semester. To obtain credit, a student must be properly registered and pay fees for the course.

Audit Enrollment. A student may choose to audit a course, in which case the student attends regularly scheduled class sessions but no credit is earned. The student should 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. This grading option may not be changed after the close of drop add. The 'X' is not included in earned hours and is not computed in the grade point average.

Pass/Fail Enrollment. 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. P is included in earned hours, but is not computed in the grade point average.

Remedial Enrollment. A mark of "RC" (Remedial Credit) or "RN" (Remedial No Credit) may be assigned for this grading option. The course appears on the grade report, but not on the official transcript and is not included in earned hours.

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.

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" should be granted only when the student can complete the unfinished work with the same instructor. However, an incomplete (I) 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. A student does not re-register or pay fees for a course for which an incomplete "I" has been received in order to complete the course.

Unrestricted Withdrawal. During the first four weeks of a semester a student may withdraw from any course with a mark of "W." Unrestricted withdrawal deadline dates pertinent to summer enrollment are displayed in the *Summer Session Bulletin*.

Restricted Withdrawal. Between the fourth week and up to the end of the tenth week of a semester students may withdraw with a mark of "W" only from courses in which the instructor certifies that they are passing at the time of the withdrawal. Restricted withdrawal deadline dates pertinent to summer enrollment are displayed in the *Summer Session Bulletin*.

The number of restricted withdrawals with the mark of "W" is limited: During freshman standing 3; during sophomore standing 2; during junior and senior standing a total of 2. The preceding limits do not prevent students from processing a complete withdrawal from the University with marks of "W" and/or "E". Complete withdrawal counts as one withdrawal for purposes of applying the above limits. The preceding does not apply to audit enrollment.

Instructor Initiated Withdrawal. An instructor may only withdraw a student from a course with a mark of "W" or a grade of "E" in cases of disruptive classroom behavior. A student may appeal an instructor-initiated withdrawal to the standards committee of the college in which the course is offered. The decision of the committee is final. Restricted withdrawal limits do not apply to withdrawals initiated by an instructor.

Withdrawal from the University. In order to withdraw from all classes after having paid registration fees, a student must initiate Complete Withdrawal from the University by appearing in person or by addressing a signed request to the Office of the Registrar. No one will be permitted to withdraw from the University or conduct any registration transaction in the last two (2) weeks of the semester. Complete with

drawal deadline dates pertinent to summer enrollment are in the *Summer Session Bulletin*.

The date of the official withdrawal is always the date the withdrawal form or letter is received.

Grade Points. For the purpose of computing the grade point average, grade points are assigned to each of the grades for each semester hour as follows: A, 4 points; B, 3 points; C, 2 points; D, 1 point; 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 total 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 is 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 in 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 Incomplete (I) (See *University Policy for Student Appeal Procedures on Grades*, Appendix B, page 501.)

Repeating Courses. An undergraduate course taken at ASU may be repeated for credit if the grade of 'D' or 'E' or 'W' or a mark of 'X' is received. 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 average will reflect only the higher grade.

After completing the course with a satisfactory grade, the student must then file a Deletion Form with the Office of the Registrar. To be eligible for the deletion of 'D' or 'E' grades, the course must be repeated at ASU. When an undergraduate student repeats 300 or 400-level courses, the student's cumulative grade point average and the transcript will reflect both grades. Undergraduate courses in which grades of 'D' or 'E' are received may be repeated only once.

This policy does not apply to seminar and independent study courses with different content

each semester. This policy affects only undergraduate students and undergraduate courses.

Mid-Term Deficiency Report. Instructors are required to evaluate students at mid-term for scholarship deficiencies. A student who has been evaluated for a 'D' or 'E' at mid semester will receive a deficient scholarship report. The mid term 'D' and 'E' grades are not recorded on the student's permanent record. Mid 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 'Financial Records Hold' on the records of a student when an outstanding financial obligation or disciplinary action has been reported.

When a hold is placed on a record, the following results may occur: (1) An official or unofficial transcript will not be issued; (2) Registration privileges will be suspended; (3) 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 dates of attendance. No transcript will be issued in case of a 'Financial 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, any Registrar Site, or by mail if a signed release 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

42 RETENTION AND ACADEMIC STANDARDS

- 4 Senior, 87 or more hours earned
- 5 Graduate, Bachelor's degree from accredited institution

Academic Good Standing. Academic 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

A student who does not maintain the minimum GPA standard will be placed on academic probation or be disqualified. A student on academic probation is in conditional good standing and is permitted to enroll.

In order to transfer from one college to another within the University, or to be eligible for readmission, 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. If a college does not set standards for retention that are higher than the University standards, the University standards will prevail. See the college sections of this catalog or contact the college deans' offices for statements regarding college retention standards.

Satisfactory Academic Progress. The University is required to publish and enforce standards of satisfactory academic progress for certain students (e.g., student athletes, students receiving financial aid or students receiving veterans benefits).

Certification of satisfactory progress is verified by the academic advisor and the dean's designee for certifying satisfactory progress for student athletes. Certification of satisfactory progress for students receiving financial aid or veterans benefits is verified by the Student Financial Assistance Office or the Veterans Affairs Office respectively. Students should contact their advisors or the appropriate office for additional information on satisfactory progress requirements.

Dean's List. Undergraduate students who earn 12 or more graded semester 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 only 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 who is disqualified may not attend as an unclassified student.

Reinstatement.

- 1 If a student with a GPA of 2.00 or greater has been disqualified by one college and seeks to transfer to another college at ASU, the student may apply at the Readmissions Office (Moeur 114) or directly to the college to which the student wishes and is qualified to transfer.
- 2 To be reinstated into an ASU college different from the disqualifying college, the student must submit an application for reinstatement to the University Undergraduate Admissions Board.
- 3 To be reinstated into the same college from which the student was disqualified, the student must submit an application for reinstatement to the disqualifying college.

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.

Suspension/Expulsion for Academic Dishonesty. Students who have been expelled from a school, college, or other academic unit within the University may not re-enroll in the University. Students who are suspended for more than ten days from a program within a department, school, or college are also automatically suspended from the University.

All decisions relating to expulsion or suspension that are concerned with academic dishonesty are the sole prerogative of the dean of the school or college in which the student has

been admitted. These decisions of suspension or expulsion for ten days can be appealed to the University Hearing Board in accordance with Code of Conduct procedures.

After the specified period of suspension, application for reinstatement may be made to any of the academic units within the University. Merely having remained in a suspended status for a period of time does not, in itself, constitute a basis for reinstatement.

Academic Renewal

An undergraduate who has been readmitted to the University after an absence of at least five years, and who has satisfactorily completed a minimum of twelve additional semester hours in residence at ASU, may, upon petition to the dean of the college, have former record treated in the same manner as transfer credits. Credit will be granted for up to 64 hours in courses in which a grade of C or better was earned. The original cumulative grade point average will be listed separately rather than included as part of the ASU grade point average. 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 grade point average, most graduate and professional schools may average the two records together.

The University General Studies Requirement

The General Studies Program is based on four principles. The first is the distinction between skill and knowledge—the instrumental skills by means of which knowledge is acquired and communicated, and the knowledge itself in the sense of fact, information, or conclusions. Second is the distinction between skill in the use of language and skill in the use of figures—literacy and numeracy. Third is the conventional division of knowledge into the humanities, the social sciences, and the natural sciences. And fourth is the concept of the university graduate as a person who is not only prepared for advanced study or a particular profession, but also is amply prepared to lead a constructive and satisfying personal, social, and civic or political life. This principle implies a commonality of knowledge (that is, knowledge shared with others), skill in learning and in communicating with others, and a diversity of learning which frees the person to enjoy the diversity of human

potentiality. In addition to the four principles, the Program recognizes the value of sustained experience in the acquisition of a skill or the mastery of a body of knowledge, the increasing importance of literacy and numeracy skills because of the rapid growth of modern knowledge, the utility of historical perspective, and the internationalization of modern life.

The General Studies Program consists of five "core" areas and two "awareness" areas. The core areas are:

Literacy and Critical Inquiry
Numeracy
Humanities and Fine Arts
Social and Behavioral Sciences
Natural Sciences

These areas provide training in basic academic skills and assure that students are introduced to the traditional branches of knowledge. The two awareness areas are:

Global Awareness
Historical Awareness

These contribute to the development of an international perspective and foster an understanding of current human events by study of the past.

The courses approved by the University General Studies Council for meeting General Studies requirements are noted in the *General Catalog* following course descriptions and in the *Schedule of Classes* each academic term, and are listed annually in a pamphlet, the *General Studies Course Guide*. All students enrolled in a baccalaureate degree program must successfully complete a minimum of 35 semester hours of approved General Studies courses. The required distribution of General Studies courses among the core areas and awareness areas is described below. It is important to note that **35 semester hours must be taken in the five core areas. Fulfillment of the requirements in Global Awareness and Historical Awareness does not oblige the student to exceed the 35 semester-hour total since a large number of approved courses within the five core areas concurrently satisfy the Global or the Historical requirement as well.**

Although a course may satisfy a core area requirement and an awareness area requirement concurrently, **a course may not be used to satisfy requirements in two different core areas simultaneously or in both the awareness areas**, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirements and the major program of study. Students transferring from approved institutions of higher education ordi

44 UNIVERSITY GENERAL STUDIES REQUIREMENT

narily 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.

Specific patterns of General Studies requirements are established by the colleges within the overall program. First Year English is a University requirement of all students that is separate from and in addition to the General Studies Program.

Core Areas

1. Literacy and Critical Inquiry

Literacy is here defined broadly as communicative competence in written and oral discourse. Critical inquiry involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills which have little to do with language in the usual sense (words), but the use of spoken and written evidence pervades university study and everyday life. The General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skills become more expert, as well as more secure, as the student learns to read, hear, analyze, and write or speak using increasingly challenging subject matter. *Thus, the Literacy and Critical Inquiry requirement stipulates a sequence of two courses beyond First Year English*

Requirement (6 semester hours):

(1) **One course at the intermediate level** (typically at the sophomore level) devoted primarily to development of skill in reading, writing, listening, speaking, or critical analysis of discourse; this course includes a series of formal, graded, written or spoken assignments in composing critical discourse.

(2) **One upper-division course** with advanced subject matter and rigorous critical-writing assignments in a specialized discipline. This course can be taken in the student's major discipline and count toward the major's semester hour requirements.

2. Numeracy

Numeracy includes not only an understanding of the basic tenets of mathematics, but also statistical procedures and concepts and the ability to assimilate and interpret quantitative data. It

also includes the use of computer software in facilitating analytical thinking. Fundamental to the development of numeracy skills at the university level are the principles and practices taught in courses widely known as College Algebra. These courses are designed to develop the minimal level of mathematical ability required for an understanding of the sciences, statistical methods, and quantitative analysis. In addition, algebraic logic offers one of the simplest approaches to the development of a rational process of thinking and reasoning in daily life. Contemporary developments in computer hardware and software have substantially enhanced the application of mathematical and statistical models to a wide variety of physical and social situations.

Requirement (6 semester hours):

One course must be selected from the mathematics category; a second course must be selected from either of the remaining two categories listed below. However, if competence is demonstrated in College Algebra by passing an exemption examination, six semester hours are still required, and one course in the mathematics category that has College Algebra as a prerequisite may be selected, or all six semester hours may be taken in one or both of the two remaining categories.

(1) **Mathematics:** A course in College Algebra (i.e., MAT 115 or 117) or any other mathematics course for which College Algebra is a prerequisite. MAT 106 also will meet the Mathematics requirement (N1) for students who enroll under the 1987-88 Catalog

(2) **Statistics and Quantitative Reasoning:** Courses that emphasize the use of statistics or other mathematical methods in the interpretation of data and in describing and understanding quantitative relationships. The course selected can be taken in the student's major discipline and count toward the major's semester hour requirements.

(3) **Computer Applications:** Courses that involve the use of computer programming languages or software in the development of skills in analytical thinking. The course selected can be taken in the student's major discipline and count toward the major's semester hour requirements

3. Humanities and Fine Arts

The humanities are concerned with questions of human existence and the universality of human life, questions of meaning and the nature of thinking and knowing, and questions of moral, aesthetic, and other human values. The humani-

ties investigate these questions in both the present and the past and make use of philosophy, foreign languages, linguistics and communication studies, religious studies, literature, and fine arts. The fine arts constitute the artist's creative deliberation about reality, meaning, knowledge, and values. The Humanities and Fine Arts core area enables students to broaden and deepen their consideration of basic human values and their interpretation of the experiences of human beings.

Requirements (6-9 semester hours)

A total of 15 semester hours must be completed in the following two core areas: Humanities and Fine Arts and Social and Behavioral Sciences. A minimum of 6 semester hours must be taken in one core area and 9 hours in the other core area. In addition, three conditions must be satisfied:

- (1) In one of these two core areas, two courses must be in the same department; and
- (2) In one of these two core areas, courses from at least two departments must be taken. These two conditions may, but need not, be satisfied in the same core area.
- (3) At least one course within the 15 semester hours must be at the upper division level

4. Social and Behavioral Sciences

The social and behavioral sciences provide scientific methods of inquiry and empirical knowledge about human behavior, both within society and individually. The forms of study may be cultural, economic, geographic, historical, linguistic, political, psychological, or social. The courses in this area address the challenge of understanding the diverse natures of individuals and cultural groups who live together in a world of diminishing economic, linguistic, military, political, and social distance.

Requirement (6-9 semester hours):

A total of 15 semester hours must be completed in the following two core areas: Social and Behavioral Sciences and Humanities and Fine Arts. A minimum of 6 semester hours must be taken in one core area and 9 hours in the other core area. In addition, three conditions must be satisfied:

- (1) In one of these two core areas, two courses must be in the same department; and
- (2) In one of these two core areas, courses from at least two departments must be taken. These two conditions may, but need not, be satisfied in the same core area.
- (3) At least one course within the 15 semester hours must be at the upper-division level.

5. Natural Sciences

Courses in the Natural Sciences core area help the student to develop an appreciation of the scope and limitations of scientific capability, of the potential for uncertainty in the results of scientific inquiry, of the time required to conduct such inquiries, of their cost in terms of human and financial resources, and of the risks involved. Above all, however, the courses stress mastery of basic scientific principles and concepts, in particular those that relate to matter and energy in living and non living systems, and a knowledge of the methods of scientific inquiry. Because the concepts, principles, and even the vocabulary of science may be meaningless in an introductory course without firsthand exposure to scientific phenomena, laboratory work is required. The Natural Sciences core area requires at least one laboratory course that includes a substantial introduction to the fundamental behavior of matter and energy in physical or biological systems. This requirement derives from the fact that the natural sciences trace all physical and biological phenomena to fundamental principles governing the behavior of matter and energy. These principles have proven to be of value in reliably predicting and rationalizing a broad range of phenomena in the natural sciences and in other fields as well.

Requirements (8 semester hours):

- (1) **One laboratory course in the natural sciences** that includes a *substantial* introduction to the fundamental behavior of matter and energy in physical or biological systems.
- (2) **A second laboratory course in the natural sciences** selected, for example, from Astronomy, Botany, Chemistry, Experimental Psychology, Geology, Microbiology, Physical Anthropology, Physical Geography, Physics, or Zoology.

Awareness Areas

1. Global Awareness

Human organizations and relationships have evolved from being family- and village-centered to the modern global interdependence which is apparent in many disciplines for example, contemporary art, business, engineering, music, and the natural and social sciences. Many serious local and national problems are world issues and require solutions which exhibit mutuality and reciprocity. These problems occur in a wide variety of activities such as food supply, ecology, health care delivery, language planning, information exchange, economic and

46 UNIVERSITY GENERAL STUDIES REQUIREMENT / READMISSION

social developments, law, technology transfer, and even philosophy and the arts. The Global Awareness area recognizes the need for an understanding of the values, elements, and social processes of cultures other than the culture of the United States. The Global Awareness area includes courses which recognize the nature of other contemporary cultures and the relationship of the American cultural system to generic human goals and welfare.

Courses which meet the requirement in Global Awareness are of one or more of the following types: (1) area studies which are concerned with an examination of culture-specific elements of a region of the world; (2) the study of foreign language; (3) studies of international relationships, particularly those in which cultural change is facilitated by such factors as social and economic development, education, and the transfer of technology; and (4) studies of cultural interrelationships of global scope such as the global interdependence produced by problems of world ecology.

Requirement: One of the approved courses in the Global Awareness course list, either in the group of courses which simultaneously satisfy a core area requirement or in the group of courses which satisfy the Global Awareness requirement only. Courses which are listed for a core area and Global Awareness may satisfy both requirements concurrently.

2. Historical Awareness

The Historical Awareness area aims to develop a knowledge of the past which can be useful in shaping the present and future. Because historical forces and traditions have created modern life and lie just beneath its surface, historical awareness is an aid in the analysis of present day problems. Also, because the historical past is a source of social and national identity, historical study can produce intercultural understanding by tracing cultural differences to their origins in the past. Even the remote past may have instructive analogies for the present.

The Historical Awareness area consists of courses which are historical in method and content. In this area the term "history" designates a sequence of past events or a narrative whose intent or effect is to represent such a sequence. The requirement presumes that these are human events and that history includes all that has been felt, thought, imagined, said, and done by human beings. History is present in the languages, art, music, literature, philosophy, religion, and the natural sciences, as well as in the social science traditionally called History

Requirement: One of the approved courses in the Historical Awareness list, either in the group of courses which simultaneously satisfy a core area requirement or in the group of courses which satisfy the Historical Awareness requirement only. Historical Awareness courses which are also listed for a core area concurrently satisfy both requirements.

Core courses are regularly reviewed. To determine whether a course meets one or more General Studies Core course credit requirements, see the *General Studies Course Guide* available prior to registration for courses. General Studies courses are also identified following course descriptions according to the following key:

Key to General Studies Core Credit Abbreviations

- L1 Literacy and Critical Inquiry Core Courses (Intermediate level)
- L2 Literacy and Critical Inquiry Core Courses (Upper division)
- N1 Numeracy Core Courses (Mathematics)
- N2 Numeracy Core Courses (Statistics and Quantitative Reasoning)
- N3 Numeracy Core Courses (Computer Applications)
- HU Humanities and Fine Arts Core Courses
- SB Social and Behavioral Science Core Courses
- S1 Natural Science Core Courses (Introductory)
- S2 Natural Science Core Courses (Additional Courses)
- G Global Awareness Core Courses
- H Historical Awareness Core Courses

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 in which re-enrollment is intended. 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 42) 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 complete a Health History Questionnaire, available at Student Health, in order to receive services at the Student Health Center.

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.

University Degree Requirements

Program of Study Requirements. Students must file an Undergraduate Program of Study for graduation within the semester they earn their 87th hour. The intention of the Policy is to guide the student in accomplishing successful completion of degree requirements in a timely manner. Students who have not met the above requirement will be prevented from further registration.

Programs of Study and procedural information are available from the Graduation Office, Moer Building 134, or any Registrar's Site.

Application for Graduation Requirements. The following steps are required to complete the graduation process:

1. Register for your final semester.
2. Apply for graduation. Pay graduation fee at the University Cashier's Office, Admin 101. Note deadline date listed in University Calendar.
3. Submit the fee receipt to the Graduation Office, Moer 134. Your program of study will be reviewed at this time and your graduation date and eligibility to graduate will be verified.

Students failing to comply with the above requirements will not graduate.

The Application for Graduation along with the Program of Study will be reviewed to verify graduation eligibility.

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 is 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.

First Year Composition Requirement. ENG 101 and 102 (or ENG 105) are required for graduation from Arizona State University in any baccalaureate program (see page 34). International students from non English speaking countries may meet the First Year Composition requirement by taking ENG 107 and 108 in place of ENG 101 and 102.

Transfer students from other Arizona colleges or universities can determine the acceptability of their composition courses by referring to the most recent Arizona Commission for Postsecondary Education *Course Equivalency Guide*. Composition courses transferred from out of state institutions must be evaluated in the First Year Composition Office. The transfer student must file a Petition for Adjustment of Freshman English Requirements, along with a transcript and catalog descriptions of the composition courses to be transferred. The Petition, available in the First Year Composition Office, should be filed immediately so that the student will 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 University 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 annually. Department, college and university requirements may change and often are upgraded. In determining graduation requirements, a student may use only one catalog.

1. Provided their college attendance has been continuous, students will be permitted to follow the degree requirements specified in the ASU *Catalog* in effect at the time they were initially admitted to ASU or to an Arizona community college (though a student may elect to graduate under any

subsequent catalog issued while the student is in continuous enrollment).

Example A. (F–Fall, S–Spring) A student attends an Arizona community college F84, S85, F85, S86. The student then enrolls at ASU F86 and is a continuing student. The student may select the 1983–85 or any subsequent catalog. If the above student attends an Arizona community college in S87, and reenrolls at ASU in F87, the student still may select the 1983–85 or any subsequent catalog.

Example B: (F–Fall, S–Spring) A student enrolls at ASU in F85, S86; enrolls at an Arizona community college during F86; and returns to be in continuous enrollment. The student may select the 1985–87 or any subsequent catalog.

2. A student who has been readmitted after a period of nonattendance, or after attending an institution other than ASU or an Arizona community college, will graduate under the curriculum, course requirements, and regulations for graduation as stated in the catalog at the time of readmission. While in continuous enrollment, a student may choose to graduate under any catalog issued subsequent to readmission.

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.

All petitions must originate with the student's advisor. See pages 47–48 for University degree requirements. See the college sections of this *Catalog* for college and department requirements.

University Standards Committee. This committee advises the Office of the Vice President for Academic Affairs regarding undergraduate student petitions which concern university-wide 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 credit 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 after conferral of the first baccalaureate degree 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.

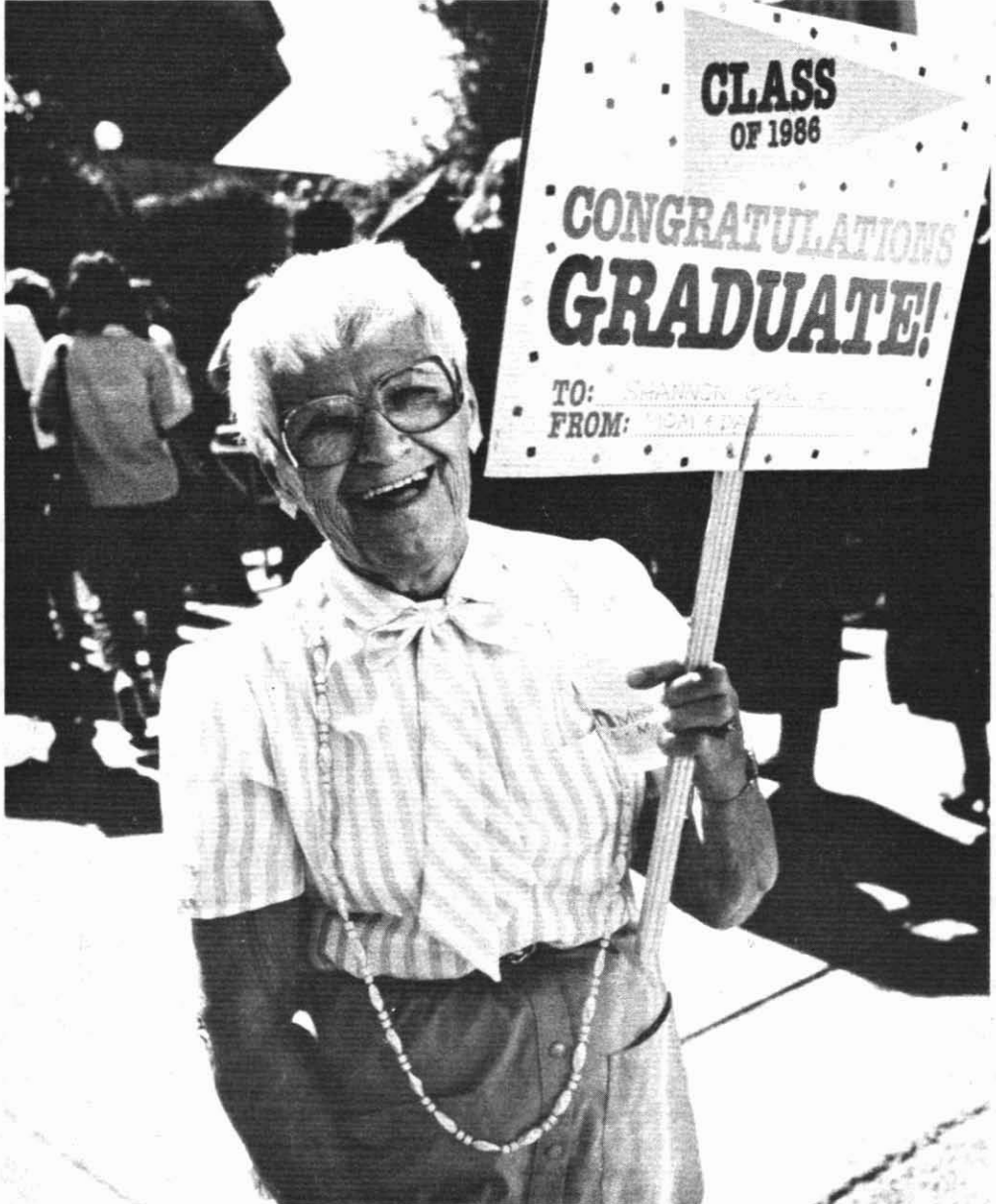
Applications for teaching certificates should be obtained from the office of the Director of Student Services in the College of Education.

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 Elliott, Certification Officer, Arizona Board of Regents, 3030 N. Central Ave., Suite 1400, Phoenix, Arizona 85012, 602/255-4082, or Dr. Brice W. Corder, Assistant Dean, College of Liberal Arts and Sciences, SS 107, 602/965-2365.



Student Services: The Campus Ecology

The University is committed to the belief that an education involves more than attending classes. While the assimilation of information is a central part of the University experience, learning about others, about independence and leadership, and about moving and living in a complex society are equally important. This view is reflected in the eleven areas of Student Affairs and in the service and developmental programs offered by each.

Undergraduate Admissions

For many undergraduates, the first introduction to Arizona State University is through the recruitment and/or admission programs of Undergraduate Admissions. This office works with high schools and community colleges within the United States and in other countries to provide information about the academic programs and support services available at ASU. It provides information on admission requirements, policies, and procedures. Various orientation programs are conducted to ease the student's (and parents') transition to the large ASU campus. This office also coordinates and supports the ASU Parents Association. (For additional information call 965-3251.)

Student Financial Assistance

Approximately two thirds of the full time students at ASU rely on some form of financial assistance to meet their educational expenses. The purpose of Student Financial Assistance is to review, award, and disburse financial resources from a variety of private, federal, and institutional sources. Information about, and applications for, scholarships, grants, loans, and student employment are coordinated by this office.

Computerization and an understanding of students' needs have contributed to the efficient

and responsive operation of this student resource. Assistance in student loan counseling and debt management services are innovative programs offered through this agency. ASU is nationally recognized for providing this unique financial aid service. (For additional information call 965-3355.)

Registrar

Management of the registration system and maintenance of academic records are the primary responsibilities of the registrar. An on line registration system, accessed at any of four campus locations, eases the enrollment process and makes ASU a national leader in the use of computerized registration. The Student Information System stores academic records and improves the quality of data used in academic advising. Coordinated through this office are applications for graduation, course changes and scheduling, veteran certification, transcript services, dispersion of student identification cards, and applications for residency. (For additional information call 965-7302.)

Residence Life

Arizona State University has on campus residential facilities for approximately 5,700 students. Housing arrangements include non coed residences, coed residences, and facilities used by the majority of the 22 fraternities and 14 sororities which comprise the Greek System. Residence Life strives to provide a safe, clean, economical, and convenient living environment and to implement a comprehensive student development program.

There is a variety of room plans available. Choices of facilities range from small group housing to high rise living. Suite arrangements including single, double, and triple rooms; apartments; and special accommodations for dis-

abled and graduate students provide additional options.

Residence hall living presents a unique opportunity for students to live and grow in a community consisting of individuals diverse in background, values, and aspirations, yet sharing the University experience and education. While an academic atmosphere conducive to study is fostered, the residence hall experience is strengthened through a variety of activities designed to meet the emotional, intellectual, social, physical, and career needs of the individual. In addition, opportunities for leadership through the Residence Hall Association, Interfraternity Council, and Panhellenic Council are fostered in this community lifestyle.

Skilled professionals and paraprofessional staff living in the residence halls are trained to implement these activities. Residence hall directors, their assistants, and peer advisors are available to help individual students receive necessary education and support in residential living. They also strive to facilitate development of a sense of community within the living groups.

Residence hall application information may be obtained from the Residence Life Office, Memorial Union, Room 110. Students are *strongly encouraged to apply early* at least six months in advance. Demand for on-campus housing exceeds supply. While students must be admitted to the University to live in a residence hall, applications are accepted prior to official admission to the University. Actual assignment will not be made, however, until a student is officially admitted to the University. Residence hall assignments are made based upon the date of receipt in the Residence Life Office of the completed application and a \$50 deposit. Application materials contain the Residence Life License Agreement and a description of residence hall meal service options. Requests for specially modified rooms for disabled students should be noted on the application. (For additional information call 965 3515.)

Educational Development

Educational Development is dedicated to meeting the educational and personal developmental needs of students whose backgrounds require special attention in order to meet, and overcome, the academic challenges they face. Within Educational Development is the Educational Opportunity Center, a community service which focuses on low-income individuals. The Center has a main office in south Phoenix and satellite

offices around Maricopa County. It offers vocational testing and guidance, as well as assistance in application for admission and financial assistance at a post-secondary institution suited to particular individuals' needs. Services are free.

The Disabled Student Resource Office provides and coordinates a broad range of educational support services which include academic, career and personal counseling; orientation and mobility for the blind; campus orientation, as well as assistance with registration, financial aid, and housing. In addition, the following direct academic support services are provided as appropriate: readers, interpreter/notetakers, library research aides, lab aides, test accommodations (proctors, scribes, readers), and assistance with adapting coursework materials.

The Disabled Student Resource Office houses the Access Learning Lab which helps students develop individualized strategies for mathematics, writing, study skills, and time management. The Lab coordinates closely with other campus resources such as the Writing Center, the Math Center, and the Educational Support Services Tutoring Center. An Adapted Computer Lab with many of the latest high technology devices for persons with disabilities is also available through the Disabled Student Resources Office. An intra-campus cart transportation system and off-campus vans are available for academic and medical needs. Adapted recreational facilities and physical education classes are provided for students with disabilities through the Recreation and Physical Education Departments. Students are fully integrated into campus life and all activities. (For additional information call 965 1234 (TTD).)

The Upward Bound Program works with eligible high school students and recent high school graduates to provide the academic foundation for successful transition to the college campus.

Veterans Upward Bound, also a unit of Educational Development, directs its efforts to identify veterans who have not completed their secondary education or are not pursuing a post-secondary education because of inadequate preparation and motivation. GED and college preparatory classes in the basic subject areas are available for veterans who need special training. Interest inventory assessments plus career advisement are also available. (For additional information on any of these programs call 965 7220.)

Student Life

Working closely with a variety of student populations, Student Life strives to enrich the overall student experience at ASU. Opportunities for leadership and community involvement help students prepare for their roles as responsible citizens. Through their involvement in student activities and student governance, students earn the qualities of democratic leadership.

The special needs of such nontraditional populations such as commuter students, international students, adult re-entry students, and evening students are also concerns of Student Life. Other programs and service areas include student leadership, REACH (Research, Educate, Assist, Counsel, and Help), ASU Student Foundation, minority student organizations, Understanding the University Experience (Hispanic Mother/Daughter Program), academic honoraries, registration of student organizations, student conduct, and withdrawal exit interviews.

Student Life works closely with the academic and student support service areas of the University to make sure students are aware of, and use available resources. Staff members act as advisors, ombudspersons, and as liaisons with other departments. (For additional information call 965 6547.)

Counseling and Consultation

Moving away from home for the first time and returning to school after a change in life circumstances, are similar situations. The psychologists and counselors at Counseling and Consultation are available to help students understand and adjust to such experiences. Through participation in either individual or group counseling, students are given assistance and support as they examine areas of personal importance. Career exploration, study habits, stress management, relationship difficulties, substance abuse, and eating habits are a few examples of concerns students may bring to Counseling. Professionals assist students in identifying paths of growth. Students may arrange for individual and group counseling over the telephone or in person. Day time and evening sessions are offered. (For additional information call 965 6146.)

Student Health

The Student Health center emphasizes wellness through health education. This agency's focus on health is apparent throughout its many units, but is most obvious in the Health Dimensions program. With an eye toward prevention and health care, Health Dimensions hosts a wide va-

riety of seminars, workshops, discussions, lectures, activities, and displays through which wellness related information is exchanged.

If medical care is needed, Student Health provides fully accredited, outpatient care services and is staffed by physicians, nurse practitioners, registered nurses, psychiatrists, and health educators. A consultant dermatologist, gynecologist, neurologist, orthopedic surgeon and ear, nose and throat physician are available by appointment after referral by a staff physician. X ray, laboratory, pharmacy, allergy clinic, health education resource center, and women's health care services are also available. There is also a mental health unit staffed by trained psychiatrists.

Services are available during posted hours Monday-Saturday. Appointments are strongly recommended for the most efficient use of the services; however, urgent care is available. Physician, nurse and nurse practitioner services are free of charge to full-time students. Nominal fees are charged for less than full-time students. There are also charges for lab tests, x-rays, and prescriptions. The expense of off-campus consultants and hospitalization is the responsibility of the student.

Student Health Insurance is not required for students to be eligible for services at Student Health. However, health insurance is strongly recommended for all students and is required if students desire help in meeting costs of off-campus consultants, emergency care for accidents, after hours illness or any necessary hospitalization. For students without other types of health insurance, an insurance policy is available through Student Health. 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 Student Health. Dependents are not eligible for treatment at Student Health but are eligible for student health insurance coverage.

Appointment, drop-in and evening services are available. (For additional information call 965 3349.)

Student Publications

The activities of Student Publications are most visible in the *State Press*. This campus newspaper, the eighth largest daily newspaper in Arizona, is published five days a week by a staff of ASU students who make editorial decisions with the support of an experienced University staff director.

Work on the *State Press* is an important part of the education of tomorrow's journalists, providing students with on-the-job training in news writing, photography, editing, advertising, and the production work. The *State Press* also meets many informational needs of the University community, not only through stories about campus and other local/national events, but also through paid advertisements by area merchants, campus groups, and University faculty, students, and staff.

In addition to the *State Press*, Student Publications sponsors an annual literary journal entitled *Hayden's Ferry Review*. This journal is published each spring and includes fiction, poetry, photography, and illustrations submitted from writers throughout the country. The *Student Handbook* is also published annually through Student Publications. This product is produced by student editors, writers, and photographers and serves as an ASU guidebook, answering the questions most often asked by new and continuing students. Student Publications also makes typesetting and composition services available to the University community. (For additional information call 965 5936.)

Memorial Union

The Memorial Union is a major center of campus activity. The Union serves thousands of students, faculty, and staff, as well as many campus visitors each day. Diversified dining for individual and group needs, the University information desk, student lounges (both TV and study), an art gallery, reserved meeting rooms, conference services, a lost and found department, ballroom, bowling, billiards and amusement games, and the Memorial Union Activities Board are all found in the MU. Seven student committees serve advisory and program development functions for the Memorial Union. The MU, in turn, provides opportunities for students to contribute to their community and develop leadership skills. This facility meets the needs of many diverse student populations. (For additional information call 965 5728.)

Career Services

Whether one is an entering freshman, a graduating senior, or a returning graduate, most students have an interest in career planning and job placement. The Career Services Center offers information about numerous career fields and permanent positions. Hiring agents from hundreds of businesses and industries, government and social service agencies, health organizations, and schools come to ASU to interview students

seeking permanent employment. The Career Services Center schedules interviews and screens employers and students' needs and interests. The office helps students prepare for interviews and keeps permanent placement files for both students and alumni. Workshops and classroom presentations on interviewing skills and resume writing seminars are offered. Current job listings are maintained and published on a regular basis throughout the year. A Career Development Center has available computerized career planning systems to assist students in making and evaluating career choices. Students are encouraged to register at least two semesters before graduating to fully participate in career and employment decision activities. (For additional information call 965 2350.)

Veterans Affairs

This office is a complete educational service center for U.S. veterans and their eligible dependents. Counseling is available regarding admissions, registration, and veterans benefits. Veterans programs service 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.

Veterans must make adequate grade point averages and semester hour progress toward their academic program for continued educational benefits. The University must report this progress each semester. The Veterans Affairs Office is located in Moeur Building 127. (For additional information call 965 7723.)

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 and Sciences 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.

54 STUDENT SERVICES: THE CAMPUS ECOLOGY

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.

Minority Student Recruitment Services

Arizona State University is committed to the active recruitment of all underrepresented, ethnic minorities. On site visitations, personal contact, college fairs, mail and/or phone follow up, and the awarding of limited numbers of scholarships for eligible applicants are the tools used by this office.

Assistance in the completion of applications for admission, on campus housing and financial aid is provided along with information about orientation, registration, and other support services. (For additional information call 965 3040.)

Other Opportunities for Student Involvement

Associated Students (ASASU)

The Associated Students of Arizona State University (ASASU) is the student government for the University. 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, Graduate Student Association, Faculty Course Evaluation Program, Minority Affairs Board, Lecture Series, Tenants and Commuter Students Association, Association Graphics and Advertising, Bike Co op, Campus Services, Political Union, Homecoming, Club Sports, Public Relations, State Relations, Book Exchange, Safety Escort Service, Student Counseling and Consultation Advocacy Committee, Student Health Advisory Committee, Insuring Tomorrow Lead

ership Program, College Councils, the Student Senate, the Executive Committee, Intramurals and Recreation (including 60 intramural sports for men and women), and Student Legal Services.

Student Organizations

Student organizations offer all students the opportunity to participate in leadership experiences and to explore areas of specific interest to them. Students are encouraged to consider the values of membership in an organization or group of their choice. 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 Student Life Office or by calling 965 6547.

Fraternities and Sororities. Fourteen sororities and 22 fraternities offer a range of opportunities for interested students. Programs are coordinated by the Interfraternity Council and Panhellenic Council to foster communication between chapters, reward scholastic achievement, and promote university and community service projects. For more information call 784 0692.

Music. Performing organizations with the School of Music provide opportunities for involvement and credit, including symphony or chestra, 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 groups are available near the campus 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, Division I, and the Pacific Athletic Conference (PAC 10). Under the regulations of the Board of Regents, the respective association or conference listed above, and the University, intercollegiate athletics at Arizona State Uni-

versity 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 Intercollegiate Athletics and coordinated with the Student Financial Assistance Office.



College of Liberal Arts and Sciences

Samuel A. Kirkpatrick, Ph.D.
Dean

The College of Liberal Arts and Sciences provides an essential balance between a broad education in the natural sciences, social sciences, and humanities, and a deeper specialization in one or more fields of knowledge. The interests of the College include the preservation, transmission, and expansion of knowledge. At the core of these interests lies the intent of fostering continuous learning and freedom of inquiry, necessary ingredients for personal growth and for achievement in both the public and the private sectors.

The College of Liberal Arts and Sciences consists of 21 academic departments, several interdisciplinary programs, 6 centers, and several research institutes and laboratories. There are 34 programs leading to either a Bachelor of Science or a Bachelor of Arts degree. There are also 24 programs leading to a Master of Arts or Master of Science degree and 15 programs leading to a Doctor of Philosophy degree.

The interplay of quality teaching, research, and service is part of the mission of the College to provide an outstanding undergraduate education. The College has a commitment to undergraduate excellence in a variety of ways, including active participation in the Honors Program and comprehensive advisement services related to diverse career patterns or preparation for graduate education and a wide range of professional careers, such as law or medicine.

In addition to caring for its own majors, the College provides the foundations of learning in several core areas for the other undergraduate colleges. In more ways than one, the College stands at the heart of undergraduate education in the University.

Admission to College of Liberal Arts and Sciences

Any student who has met the minimum requirements for admission to the University (see

pages 22-27) and who wishes to major in a subject offered within the College of Liberal Arts and Sciences, or who is undecided about a major and has less than 60 semester hours, will be admitted to the College of Liberal Arts and Sciences.

Any student with a cumulative grade point average of at least 2.00 who is currently registered (in good standing) in another college at Arizona State University and who wishes to major in a subject offered within the College of Liberal Arts and Sciences and follow a program of study in the major may transfer into the College by making application in the Office of Student Academic Affairs, Social Science Building, Room 111.

Transfer Students

The University standards for evaluation of transfer credit are listed under "Undergraduate Admissions" (page 25). Transfer students are urged to contact the relevant academic department and/or the Office of Student Academic Affairs, Social Science 111, to insure a smooth transition to the College of Liberal Arts and Sciences.

Courses transferred from two-year (community) 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 25).

Five-Year Liberal Arts-MBA Plan

A capable and academically well-qualified Liberal Arts and Sciences freshman may, by careful selection of electives, plan a course of study which will lead to the Master of Business Administration degree with only one year of additional study beyond the Bachelor of Arts or

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

Minors. Special minors are available in some departments. Please check department program descriptions for details.

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
Clinical Laboratory Sciences	(B.S.)	Botany and Microbiology
Computer Science†	(B.S.)	Computer Science
Economics*	(B.A.,B.S.)	Economics
English	(B.A.)	English
Family Resources and Human Development	(B.A.,B.S.)	Family Resources and Human Development
French	(B.A.)	Foreign Languages
Geography	(B.A.,B.S.)	Geography
Geology	(B.S.)	Geology
German	(B.A.)	Foreign Languages
History	(B.A.,B.S.)	History
Humanities	(B.A.)	Humanities Program
Interdisciplinary Studies	(B.A.,B.S.)	Interdisciplinary
Italian	(B.A.)	Foreign Languages
Mathematics	(B.A.,B.S.)	Mathematics
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
Religious Studies	(B.A.)	Religious Studies
Russian	(B.A.)	Foreign Languages
Sociology	(B.A.,B.S.)	Sociology
Spanish	(B.A.)	Spanish
Speech and Hearing Science	(B.S.)	Speech and Hearing Science
Wildlife Biology	(B.S.)	Zoology
Women's Studies	(B.A.,B.S.)	Women's Studies Program
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 Sciences and the College of Engineering and Applied Sciences. Requirements differ according to college (see page 79 and page 237)

* The Department of Economics is located administratively in the College of Business. The baccalaureate degree with a major in Economics is offered by both the College of Liberal Arts and Sciences and the College of Business. Requirements differ according to college (see pages 79-80 and page 182)

58 COLLEGE OF LIBERAL ARTS AND SCIENCES

Bachelor of Science degree in a Liberal Arts and Sciences subject. For more detailed information, consult an advisor in the Office of Student Academic Affairs, Social Science 111, or telephone 965 6506.

Teacher Certification for Liberal Arts and Sciences

Majors-Secondary Education. A student may obtain a Bachelor of Arts or a Bachelor of Science degree in Liberal Arts and Sciences 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 pro-

gram in the College of Liberal Arts and Sciences. For further information regarding the curriculum or certification the student may consult the Office of Educational Services in Payne Hall (Ed B 7). The curriculum leading to the Bachelor of Arts in Education is described in this *Catalog* on pages 203-204.

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 and Sciences, Social Science Building 111.

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 Sciences, 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 or field of study.

Special advisement is available for students planning to enter the following fields.

Professional Field

Dentistry*
Foreign Service
Health Physics
Law
Master of Business Administration
Medicine*
Ministry
Occupational Therapy*
Optometry*
Osteopathy*
Pharmacy*
Physical Therapy*
Podiatry*

Office Where Advisor Is Located

Pre Health Professions, SS 107
Department of chosen major
Pre Health Professions, SS 107
Student Academic Affairs Office, SS 111
Student Academic Affairs Office, SS 111
Pre Health Professions, SS 107
Department of Philosophy
Pre Health Professions, SS 107
Pre Health Professions, SS 107
Pre Health Professions, SS 107
Pre Health Professions, SS 107
Pre Health Professions, SS 107
Pre-Health Professions, SS 107

The pre professional programs are not majors in themselves that is, there are no majors at the pre medical, pre law, etc. In each program the student must eventually select an established major in the College of Liberal Arts and Sciences 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 Social Science Building 111

"Undecided" or "Undeclared" Majors. Students in the College of Liberal Arts and Sciences are not required to select a major upon entering the college as freshmen or at any time thereafter 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 located in Social Science 111 or the University Academic Advising Center in Social Science 101. During the semester in which they earn 60 semester 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.

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 or the University Academic Advising Center; 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 3.00 and must file a petition in the Student Academic Affairs Office, Social Science 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 re-

moved 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 their equivalents, will be presumed to have demonstrated the necessary degree of writing proficiency. Students who receive a "D" in any First Year Composition 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. The College of Liberal Arts and Sciences 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, pages 29 and 92. 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.

The foreign language requirement can be met in languages not taught at Arizona State University either by transferring credit from another institution or by passing a proficiency examination. When possible, the Department of Foreign

60 COLLEGE OF LIBERAL ARTS AND SCIENCES

Languages will recommend an appropriate source for such examinations, and will proctor them. Grading will be done by the institution that provides the examination, and the student will pay any costs incurred. The examination can be used only to demonstrate proficiency; it does not produce semester hours.

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.

College Graduation Requirements

To graduate from the College of Liberal Arts and Sciences, a student must satisfy requirements of three kinds: 1) proficiency requirements, which indicate a minimal level of competence in communication, quantitative reasoning, and foreign language; 2) major requirements, which involve concentrated course work in one field, and 3) distribution requirements, which insure that the student is exposed to disciplines outside the major field.

I. Proficiency Requirements. Each student is required to demonstrate proficiency in English, foreign language, and mathematics.

Each student must demonstrate proficiency by passing an examination or by completing the courses specified below with a grade of 'C' or better in each course. Courses used to meet a proficiency requirement may not ordinarily be used to satisfy the distribution requirement; the two exceptions are specified below under III.A and III.C.

- A. English
1. ENG 101 and 102, or
 2. ENG 105, or
 3. ENG 107 and 108 for foreign students.
- B. Foreign Language
1. completion of a foreign language at the intermediate level (202 or equivalent), or
 2. a foreign language course at the 300 level or above taught in the foreign language, or
 3. completion of secondary education at a school in which the language of instruction is not English.

C. Mathematics

1. MAT 106, or 115, or 117, or
2. any MAT course for which MAT 106, 115 or 117 is a prerequisite.

II. Major Requirements. Each student is required to select a major from among the fields of study offered by the College of Liberal Arts and Sciences. The requirements for completion of the major are described under departmental listings.

- A. The major department may require up to 45 semester hours of course work. A maximum of 18 additional hours may be required in related courses and prerequisites. No more than 63 semester hours of course work may be required to complete the major, related courses, and prerequisites. Additionally, three college algebra credits (MAT 115 or MAT 117), if required for natural sciences or mathematics majors, are not included in the 63 hours limit. Some departments require calculus level mathematics; up to 5 of these hours may be excluded from the 63 hour maximum because they satisfy the mathematics proficiency requirement.
- B. 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.'
- C. Major fields of study are classified into the following divisions:

Humanities and Fine Arts

Asian Languages
(Chinese/Japanese)
English
French
German
Humanities
Italian
Philosophy
Religious Studies
Russian
Spanish

Social and Behavioral Sciences

Anthropology
Economics
Family Resources and Human Development*
Geography
History
Physical Education*
Political Science

Psychology
 Sociology
 Speech and Hearing Science*
 Women's Studies*

Natural Sciences and Mathematics

Biology
 Botany
 Chemistry
 Clinical Laboratory Sciences
 Computer Science*
 Geology
 Mathematics
 Microbiology
 Physics
 Wildlife Biology
 Zoology

* Students majoring in these fields must satisfy the distribution requirements in all three divisions.

In addition, the Departments of Aerospace Studies and Military Science offer programs leading to commissions in the armed forces, but they do not offer majors.

D. Interdisciplinary Studies Major. For students who wish to pursue a coherent course of study involving more than one department, an interdisciplinary studies major is available.

Admission requirements: Completion of 32 semester hours with a grade point average of at least 3.00 and three letters of recommendation from ASU faculty members. Degree requirements include:

1. 18-30 semester hours to meet the core requirements in one discipline,
2. 15-27 semester hours that complement the disciplinary core, and
3. 6 semester hours of thesis formation, contact the Office of Student Academic Affairs, Social Science 111.

III. Distribution Requirements. The purpose of the distribution requirement is to insure that the student is introduced to a methodology outside the division of the major.

Major fields are classified according to division as Humanities, Social and Behavioral Sciences, and Natural Sciences and Mathematics. A list of major fields is given above under II.B.

Unless the major field is starred in II.B, students will be considered to have fulfilled the distribution requirement in the division of the major

Starred major fields: Students majoring in Family Resources and Human Development, Physical Education, Speech and Hearing Science, and Women's Studies must satisfy distribution requirements in Social and Behavioral Sciences as well as in the other two divisions.

Cross-listed Departments: Students majoring in cross-listed departments (Anthropology, Geography, and Psychology) may not use ASM courses in the case of Anthropology majors, GPH courses in the case of Geography majors, or PSY courses in the case of Psychology majors to satisfy the Natural Sciences and Mathematics requirements, nor may respective majors count ASM, GPH, or PSY courses toward the Social and Behavioral Sciences distribution requirements.

A. Humanities and Fine Arts (15 credits). Each student is required to complete five courses of at least three semester hours each. Course prefixes are identified below.

At least three of the five courses must be taken in the Departments of English, Foreign Languages, Philosophy, and Religious Studies. Two of these must be at the 300 level or above.

Exception: Literature or 'civilization' courses (300 level or above) taught in a foreign language may be used to satisfy the Humanities distribution requirement, even if they are also used to demonstrate foreign language proficiency.

Course prefixes for the Humanities distribution requirement
 ENG, HUM (English Department: Any course except ENG 101, 102, 105, 107, 108)
 CHI, FLA, FRE, GER, GRK, ITA, JPN, LAT, POR, RUS, SPA (Foreign Language Department.
 FLA 150 or any literature or 'civilization' course at the 300 level or above)

PHI (Philosophy Department)
 REL (Religious Studies Program)
 - APH (College of Architecture and Environmental Design)
 ARH, DAH, MHL, MUS, THE (College of Fine Arts)

B. Social and Behavioral Sciences (15 credits). Each student is required to

62 COLLEGE OF LIBERAL ARTS AND SCIENCES

complete five courses of at least three semester hours each

Courses used to fulfill the Social and Behavioral Sciences distribution requirement must be taken from at least two departments, but from no more than three departments.

At least two courses must be at the 300 level or above.

Course prefixes for the Social and Behavioral Sciences distribution requirement:

- ASB (Anthropology Department)
- ECN (Economics Department, College of Business Administration)
- GCU (Geography Department)
- HIS (History Department)
- POS (Political Science Department)
- PGS (Psychology Department)
- SOC (Sociology Department)
- WST (Women's Studies Department, WST 100 only)

C. Natural Sciences and Mathematics (14 credits)

Part A—(8 semester hours). Two courses (either lecture courses with an included laboratory, or lecture courses with appropriate accompanying laboratory) to be taken in the Departments of Botany/Microbiology, Chemistry, Physics, or Zoology. See departmental listings.

Part B—(6 semester hours). Two courses to be taken from the Departments of Anthropology (ASM only), Botany/Microbiology, Chemistry, Computer Science, Geography (GPH only), Geology, Mathematics, Physics, Psychology (PSY only) or Zoology. See departmental listings. Students who completed Part A using courses from only one department may not use courses from that department in Part B.

Exception: Only mathematics courses for which MAT 106, 115 or 117 or a higher level mathematics course is a prerequisite can be used to satisfy Natural Sciences and Mathematics distribution requirement. Mathematics courses for which MAT 106, 115 or 117 is a prerequisite may be used to satisfy distribution requirement in Natural Sciences and Mathematics, even if they were

also used to demonstrate mathematics proficiency.

IV. Transfer Students. Transfer students should contact their major department, the College of Liberal Arts and Sciences, the Office of Student Academic Affairs (Social Science 111), or the University Academic Advising Center (Social Science 101) to plan their courses of study.

V. University General Studies Core Requirements. A well planned program of study will enable students to articulate University General Studies Core Requirements with the College of Liberal Arts and Sciences Graduation Requirements. Core courses are regularly reviewed. To determine whether a course meets one or more General Studies Core course credit requirements, see the *General Studies Course Guide* available prior to registration for courses. (See pages 43-46 for specific requirements.)

Key to General Studies Core Credit Abbreviations

- L1 Literacy and Critical Inquiry Core Courses (Intermediate level)
- L2 Literacy and Critical Inquiry Core Courses (Upper division)
- N1 Numeracy Core Courses (Mathematics)
- N2 Numeracy Core Courses (Statistics and Quantitative Reasoning)
- N3 Numeracy Core Courses (Computer Applications)
- HU Humanities and Fine Arts Core Courses
- SB Social and Behavioral Science Core Courses
- S1 Natural Science Core Courses (Introductory)
- S2 Natural Science Core Courses (Additional Courses)
- G Global Awareness Courses
- H Historical Awareness Courses

VI. General Electives. In addition to meeting University general studies and College graduation requirements, the remainder of the minimum of 126 hours required for graduation are general electives that may be selected from any of the departments of the College of Liberal Arts and Sciences and from the offerings of other colleges.

VII. Program of Study. The program of study, which is required by University regulations within the semester students earn their 87th hour, must be filed and

approved at least two weeks prior to the pre-registration period for the subsequent semester. Students should contact the College graduation office (Social Science 111) regarding College graduation rules.

Special Credit Options

Pass/Fail Grade Option

- I. The Pass/Fail option is intended to broaden the education of Liberal Arts and Sciences 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 and Sciences students with 60 hours of credit may take courses under the Pass/Fail option.
- III. The option may be used under the following conditions:
 1. Enrollment for Pass/Fail must be indicated 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 Proficiency and Distribution requirements of the College or the University General Studies requirement.
 3. A maximum of 12 hours taken for Pass/Fail may be counted toward graduation
- IV. The above option is not available to Liberal Arts and Sciences students for courses offered by other colleges except for courses in Economics offered by the College of Business.

Academic Standards and Retention

The standards for grade point average (GPA) and the terms of probation, disqualification, reinstatement, and appeal are identical with those of the University as set forth on pages 41-43 of this *Catalog*, except that the disqualified

student in the College of Liberal Arts and Sciences is suspended for at least two regular semesters at the University. Disqualified students should contact the Office of Student Academic Affairs, Social Science 111, regarding the procedures for returning to good standing.

Academic discipline is one of the functions of the Office of Student Academic Affairs, Social Science 111. All students who are having academic difficulties of any kind should contact this Office. Also available in this Office is information on policies and procedures of the College on academic honesty, student grievances with respect to grades, and various petitions regarding College standards and graduation requirements.

Special Programs

Honors Program. The College of Liberal Arts and Sciences provides a full four-year Honors Program for the University. The Honors Program affords superior undergraduates opportunities for enhanced educational experiences in the major field. For a complete description of the Honors Program requirements and opportunities, see the description of the University Honors Program in this *Catalog*, pages 27-28.

Interdisciplinary Studies. An Interdisciplinary Studies major leading to the B.A./B.S. degree provides students of outstanding ability in the humanities, social sciences, and natural sciences the opportunity to pursue courses of studies that cut across departmental boundaries and focus on specific topics or problem areas. For more information about degree requirements, see Section II.D under the College Graduation Requirements or contact the Office of Student Academic Affairs in the College of Liberal Arts and Sciences, Social Science 111.

Certificate Programs

Asian Studies. The Center for Asian Studies has developed interdisciplinary programs to prepare both undergraduate and graduate students for governmental or private employment or for admission to graduate programs at other institutions.

At the undergraduate level, programs can be developed 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. Fulfillment of requirements will be recognized on the transcript by a bachelor's degree with a major in (Discipline) Asian Studies. Contact the Director of the Center for Asian Studies for details.

Health Physics. The curriculum of Health Physics involves work in the College of Liberal Arts and Sciences and in the College of Engineering and Applied Sciences. The purpose of the concentration is to serve undergraduate 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 and life science which follows a prescribed program. Inquiries about the program should be addressed to the Pre Health Professions Office, Social Science 107, where academic advisement is available.

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, and 5) stand as an example of the University's commitment to a program of meaningful ethnic studies on a firm academic base.

The Certificate of Concentration in Jewish Studies may be combined with a major in any college. For information about the program, refer to the Department of History or the Department of Religious Studies.

Latin American Studies. 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, as well as the College of Business. In this program the students major in one of the cooperating departments, completing the degree re-

quirements 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 hours in other disciplines. A reading knowledge of Spanish or Portuguese is required.

For detailed information about program requirements, consult the Office of the Center for Latin American Studies, Social Science 213.

Russian and East European Studies. Any undergraduate major can earn a Certificate in Russian and East European Study by successfully completing one of the following options: Option 1: three years of Russian or two years of Russian and one year of another East European language and 30 upper-division semester hours in Russian/East European course work; Option 2: two years of Russian and 26 upper-division hours in Russian/East European course work. Fulfillment of these requirements will be recognized on the transcript by a bachelor's degree with a major in (Discipline) Russian/East European Studies.

For further details consult the Coordinator of the Russian and East European Consortium, Department of History.

Women's Studies. The curriculum of Women's Studies involves courses from colleges throughout the University. The program is designed to: 1) examine the central issues of the quality and shape of women's lives, 2) provide a model for interdisciplinary teaching and research; 3) generate and facilitate research on women'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.

A Certificate of Concentration in Women's Studies will be awarded for the successful completion of either WST 100 or WST 300, plus WST 498 and an additional 15 semester hours from the list of approved Women's Studies courses, only 6 hours of which may also be applied toward the student's major.

Inquiries about the program should be addressed to the Women's Studies Office, Social Science 104, where the current list of approved courses is available.

Research Centers

To expand educational horizons and to enrich curriculum, the College of Liberal Arts and Sciences maintains the following research centers:

Arizona Center for Medieval and Renaissance Studies
 Cancer Research Institute
 Center for Asian Studies
 Center for Latin American Studies
 Center for Meteorite Studies
 Center for Solid State Science
 Hispanic Research Center

See the *Graduate Catalog* of the University for a description of these research centers.

Aerospace Studies

(Air Force ROTC)

PROFESSOR:

CARR GAN (MAIN 340)

ASSISTANT PROFESSORS:

BUTER STALEY, SW GERT,

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 Professional 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 commissioning); (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 26 1/2; 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 semes-

ter hours of credit for each AES 100 and 200 class completed; a total of 8 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 interview 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 attend a four week field training course at an Air Force base normally 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 graduate work.

Two-Year Program (POC). The basic requirement 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.

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.

66 AEROSPACE STUDIES / ANTHROPOLOGY

Scholarships cover full college tuition for resident and nonresident students as well as an allowance for books, fees, supplies and equipment, plus a monthly tax free allowance of \$100. Scholarships are available on a 4, 3 1/2, 3, 2 1/2, and 2 year basis. To qualify for the four year scholarship, students must be U.S. citizens and submit an application prior to December 1 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, 36112-6663 Male and female students enrolled in AFROTC at Arizona State University are eligible for 3-1/2, 3, 2-1/2-, 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. Cadets designated to enter U.S. Air Force Undergraduate Pilot Training after graduation participate in the Flight Instruction Program (FIP) during their junior year in college unless they already have a private pilot's license. Each cadet receives 14 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 U.S. Air Force Organization. (2) F
Introduction to U.S. Air Force organization missions doctrine offensive and defensive forces. One lecture, 1 hour Leadership Practica Application (101L).

102 Nature of U.S. Air Power. (2) S
Background on strategic missions defense forces, general purpose and aerospace support forces in national defense. One lecture 1 hour Leadership Practica Application (102L)

201 Aerospace History to WWII. (2) F
Historical survey of events, trends, and processes leading to the emergence of air power through WW I. One lecture 1 hour Leadership Practica Application (201L) [Satisfies General Studies Requirements SB, H]

202 Aerospace History: WWII to Present. (2) S
Development of aerospace power from WW I to the present emphasizing the impact of limited war and technology on roles and missions. One lecture 1 hour Leadership Practica Application (202L) [Satisfies General Studies Requirements SB H]

301 U.S. Air Force Communication Management and Leadership. (3) F
An integrated management course emphasizing the individual as a manager in an Air Force medium and individual motivational and behavioral processes. Leadership communication and group dynamics are covered. Two lectures 1 hour Leadership Practica Application (301L). [Satisfies General Studies Requirement SB]

302 U.S. Air Force Management and Leadership. (3) S
Organizational and personal values management of forces in change organizational power, politics, managerial strategy and tactics. Two lectures 1 hour Leadership Practica Application (302L) [Satisfies General Studies Requirement SB]

401 National Security Institutional Policy and Strategy. (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 Practica Application (401L) [Satisfies General Studies Requirement SB]

402 Topical and Regional Security Issues. (3) S
Formulation and implementation of U.S. defense policies; impact of technological and international developments on strategic preparedness in the overall defense policy making processes. Two lectures 1 hour Leadership Practica Application (402L) [Satisfies General Studies Requirement SB]

403 Flight Instruction. (0) F S
Flight instruction 14 total hours of dual and solo instruction; 12 hours ground school. Prerequisite: Enrollment in POC.

Anthropology

PROFESSORS:

REDMAN (ANTH A 124), BAHR CLARK,
FOSTER, MERBS, MORRIS SCHOENWETTER,
STARK, TURNER

ASSOCIATE PROFESSORS:

AGUILAR BRANDT, EDER, FIRESTONE,
GARNES, MARTIN, NASH, WILLIAMS

ASSISTANT PROFESSORS:

CARR HEDLUND, MARZKE, STEADMAN

PROFESSORS EMERITI:

DITTERT RUPPÉ, STEWART

Departmental Major Requirements Bachelor of Arts Degree Curriculum

Anthropology—Consists of 45 semester hours of credit of which 36 must be in anthropology and 9 in related fields to be approved by the advisor in consultation with the student. Course requirements are distributed as follows: (1) ASM 101 and ASB 102; (2) six hours including one 400-500 level course in each of (a) social cultural anthropology, (b) physical anthropology, (c) archaeology; (3) three hours in each of (a) linguistics (b) ethnographic area course, (c) archaeology or physical anthropology area

course. Three of the nine hours in related fields must be in statistics. Each student's program of study must be approved by the advisor in consultation with the student. At least 18 semester hours must be in upper-division courses. For details see Departmental brochure. (See Foreign Language requirement, page 59).

Latin American Studies Combined Degree Program. (See Latin American Studies, page 64.)—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 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 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.

	<i>Semester Hours</i>
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 programs 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

Physical anthropology and archaeology. Evidence and processes of human evolution and of culture change. Primate fossils, hominids and the roots of race, variation and heredity. Environment and human biology. Prehistoric culture and society. [Satisfies General Studies Requirements: SB, H]

241 Biology of Race. 3 F, S

Human variation and its interpretation in an evolutionary context.

338 Anthropological Field Session. (2-8) SS

Anthropological field techniques, analysis of data and preparation of field reports. May be repeated for credit. Prerequisite: approval of instructor.

341 Human Osteology. (4) F

Osteology, human paleontology, osteometry. Description and analysis of archaeological and contemporary human populations. Three lectures, 3 hours laboratory. Prerequisite: ASM 101 or approval of instructor.

342 Human Biological Variation. (4) S

Evolutionary interpretations of biological variation in living human populations with emphasis on anthropological genetics and adaptation. Nutrition and disease, and their relation to genetics and behavior. Three lectures, 3 hours laboratory. Prerequisites: ASM 101, MAT 106 or equivalent, or approval of instructor. [Satisfies General Studies Requirement: S2]

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. [Satisfies General Studies Requirement: H]

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. [Satisfies General Studies Requirement: H]

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. [Satisfies General Studies Requirement: H]

346 Human Origins. (3) S

Human typology, nature, fossil, historic and recent concepts of human races, influence of culture on human evolution. [Satisfies General Studies Requirement: H]

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. [Satisfies General Studies Requirement: SB]

68 ANTHROPOLOGY

365 Laboratory Methods in Archaeology. 4 N

Techniques of artifact analysis. Basic archaeology research techniques, methods of report writing. May be repeated for credit for total of 8 hours. Prerequisite: ASM 101 or approval of instructor.

435 Archaeological Pollen Analysis. 3 F

Theory, methodology, and practice of pollen analytical techniques. Compares uses in botany, geology, and archaeology. Two lectures, 3 hours laboratory. Possible credits. Prerequisite: approval of instructor.

452 Dental Anthropology. 4) F

Human and primate dental morphology, growth, evolution, and genetics. Within and between group variation. Dental pathology and behavioral/cultural dietary factors. Three lectures, 3 hours laboratory. Prerequisite: approval of instructor.

454 Comparative Primate Anatomy. 4 S

Functional anatomy of the cranial, dental and locomotor apparatus of primates including humans, emphasizing the relationship of morphology to behavior and environment. Lectures and laboratory dissections and demonstrations. Three lectures, 3 hours laboratory. Prerequisite: approval of instructor.

455 Primate Behavior Laboratory. (3) N

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. Directed readings and 6 hours laboratory. Prerequisites: ASM 343† and approval of instructor.

465 Quantitative Methods. (3) N

Statistical techniques available as descriptive and analytical tools useful in processing and interpreting anthropological data. Presentation of the concepts underlying parametric statistical and nonparametric methods. Prerequisites: introductory statistics course and ASB 330, or approval of instructor.

466 Computer Archaeology. (3) F

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

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

Analysis and identification of pottery wares, types and varieties. Systems for ceramic classification and cultural interpretation. Two lectures, 3 hours laboratory. Prerequisite: approval of instructor.

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. One lecture, 6 hours laboratory. Prerequisite: ASM 341† or approval of instructor.

566 Advanced Computer Applications. (3) S

Advanced applications utilizing a variety of software packages for managing and manipulation of large data sets. Graphic techniques are emphasized as research aids. Prerequisite: ASM 466.

591 Seminar. (3) N

Selected topics in archaeology and physical anthropology.

- (a) Physical Anthropology
- (b) Primate 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, regional aesthetics and language. [Satisfies General Studies Requirements. SB G]

210 Sex, Marriage and Evolution. (3) F

Examination of the sexual nature and behavior of humans from both a biological and an anthropological point of view.

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. [Satisfies General Studies Requirement G]

222 Buried Cities and Lost Tribes: Our Human Heritage. (3) S

Archaeology through its most important discoveries: Human origins, Pompeii, King Tut, the Holy Land, Southwest Indians and methods of field archaeology.

231 Archaeological Field Methods. (4) S

Excavation of archaeological sites and recording and interpretation of data. Includes local field experience. Two lectures, 8 hours laboratory. Prerequisite: ASM 101 or approval of instructor. [Satisfies General Studies Requirement S2]

279 The Anthropology of Peasant Peoples. (3) N

Description, comparison and theories pertaining to the social and community structure and world views of peasant peoples. Prerequisite: ASB 102.

311 Principles of Social Anthropology. (3) S

Comparative analysis of domestic groups and economic and political organizations in primitive and peasant societies. [Satisfies General Studies Requirement SB]

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.

319 The North American Indian. (3) A

Archaeology, ethnology and linguistics relationship of the Indians of North America. Does not include Middle America. 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 Indians of the Southwest. (3) S

Cultures of the contemporary Indians of the Southwestern United States and their historical antecedents. Prerequisite: ASB 102 or approval of instructor.

322 Indians of Mesoamerica. (3) S

Historic tribes and folk cultures. Prerequisite: ASB 102 or approval of instructor. [Satisfies General Studies Requirement G]

324 Peoples of the Pacific. (3) N

Peoples and cultures of Oceania focusing particularly on societies of Melanesia, Micronesia and Polynesia. Prerequisite: ASB 102 or approval of instructor [Satisfies General Studies Requirement G]

325 Peoples of Southeast Asia. (3) F

A cultural-ecological perspective on the peoples of mainland and insular Southeast Asia. Substantive modes, social organization and the impact of modernization. Prerequisite: ASB 102 or approval of instructor. [Satisfies General Studies Requirement G]

330 Principles of Archaeology. (3) F

Prehistoric societies. Survey of dating methods field techniques and artifact inventories. Geographic, climatic and geological relationships. [Satisfies General Studies Requirement SB]

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 [Satisfies General Studies Requirement H]

332 Old World Prehistory II. (3) S

Transition from hunting and collecting societies to domestication economies; establishment of settled village life, emphasizing the Near East, Egypt, SW Europe. Prerequisite: ASM 101 or approval of instructor [Satisfies General Studies Requirement H]

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. [Satisfies General Studies Requirements: L2 SB, H]

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 [Satisfies General Studies Requirement: G]

335 Southwestern Anthropology. (3) N

Past cultures in the Southwest and their relation to present peoples using archaeological, ethnographic, and linguistic evidences. Environmental and resource utilization from earliest times to the present. [Satisfies General Studies Requirements: SB H]

337 Prehispanic Civilization of Middle America. (3) S

Pre-conquest cultures and civilizations of Mexico. The Aztecs, Mayas and their predecessors. Prerequisite: ASM 101 or approval of instructor. [Satisfies General Studies Requirement: H]

338 Archaeology of North America. (3) N

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. [Satisfies General Studies Requirement: H]

350 Anthropology and Art. (3) A

Art forms of people in relationship to their social and cultural setting. Prerequisite: ASB 102 or approval of instructor

351 Psychological Anthropology. (3) S

Approaches to the interrelations between the personality system and the socio-cultural environment. Prerequisite: ASB 102 or approval of instructor [Satisfies General Studies Requirement: SB]

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.

383 Linguistic Theory: Phonetics and Phonology.

(4) F
Basic articulatory phonetics and contemporary theories of the sound system of language. Three hours lecture 1 hour laboratory. [Satisfies General Studies Requirement: SB]

411 Kinship and Social Organization. (3) S

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

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 [Satisfies General Studies Requirement SB]

416 Economic Anthropology. (3) F

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

417 Political Anthropology. (3) A

Comparative examination of the forms and processes of political organization and activity in primitive, peasant and complex societies. Prerequisite: ASB 102 or approval of instructor.

426 Historical Archaeology. (3) NR

Principles, techniques, and important sites. Use of ethnography, laboratory techniques, and artifact analysis. Discussion of value to historical understanding. Prerequisite: one course in archaeology or approval of instructor.

480 Introduction to Linguistics. (3) F

Descriptive and historical linguistics. Survey of theories of human language, emphasizing synchronic linguistics. [Satisfies General Studies Requirement SB]

481 Language and Culture. (3) S

Application of linguistic theories and findings to non-linguistic aspects of culture: language change; psycholinguistics. Prerequisite: ASB 102 or approval of instructor [Satisfies General Studies Requirement SB]

483 Sociolinguistics and the Ethnography of Communication. (3) N

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 [Satisfies General Studies Requirement: SB]

530 Ecological Anthropology. (3) A

Relations among the population, dynamics, social organization, culture, and environment of human populations, with special emphasis on hunter-gatherers and extensive agriculturalists.

70 ANTHROPOLOGY / BIOLOGICAL SCIENCES

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. May be repeated for credit. Prerequisites: ASM 338† or equivalent and approval of instructor.

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. Fieldwork. Prerequisite: approval of instructor.

535 Public Archaeology. 4 N
Theoretical and practical applications of cultural resources, legislation and administrative requirements, conservation development and management of cultural resources. CRM research design for museum. Seminar and fieldwork. Prerequisites: regular graduate student status, 12 completed graduate hours in archaeology, approval of instructor.

540, 541 Method and Theory of Social and Cultural Anthropology. 3 F S
Development and theoretical basis of social and cultural anthropology, placed in the context of science in general and social science in particular. Prerequisite: approval of instructor.

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 animals. Impact of this shift on 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.

- Cultural Anthropology
- Social Anthropology
- Problems in Southwestern Ethnology
- Culture and Personality
- Linguistics
- Museology
- Problems in Southwestern Archaeology

- Archaeology
- Evolution and Culture (Same as ASM 591)
- Interdepartmental Seminar (Same as ASM 591)

See page 38 for special courses which may be offered by this academic unit.

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 specialized majors in the degree programs of the individual departments. The major consists of 43 hours and 20 hours in supplementary areas, plus a mathematics proficiency. Required major courses (31 hours) are BIO 181, 182, 320, 340; BOT 300; MIC 205 or 220; MIC 206, ZOL 350; BOT 360 or ZOL 360; the remaining 12 hours are to be selected so that the total major hours reflects a balance between the two departments. Required supplementary courses are CHM 113, 115; CHM 231 (or CHM 331, 332, 335, 336); PHY 101 (or PHY 111, 112, 113, 114), CSC 181 or 183, and MAT 210 (or any calculus).

Bachelor of Arts in Education Degree Curriculum Departmental Major Teaching Field Requirements (Secondary Education)

Biological Sciences—A combined offering by the faculties of Departments of Botany, Microbiology and Zoology. The major consists of a minimum of 42 hours of credit, plus at least 9 hours in supporting courses. Required major courses are BIO 181, 182, 320, 340; BOT 300 or 370; BOT 360; MIC 205 or 220; MIC 206, ZOL 350, 360. The remaining courses in the major (7 hours minimum) must include one from each of the two departments. Required supporting courses are: CHM 113, 115, 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 181, 182, 340; MIC 205 or 220; MIC 206; and 8 additional hours in courses listed under Biology, Botany, 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 hours credit in biological sciences.

Botany and Microbiology

PROFESSORS:

SOMMERFELD (LS C 210) ARONSON,
JOHNSON NASH PATTEN, PINKAVA,
REEVES SCHM DT, TRELEASE

ASSOCIATE PROFESSORS:

BIRGE BURKE, CLARK, KLOPATEK,
LEATHERS, SZAREK, TOWILL

ASSISTANT PROFESSORS:

CICHAN HOFFMAN JACOBS, SCHREIER,
SWAFFORD, VERMAAS

PROFESSORS EMERITI:

CANR GHT NORTHEY

FACULTY ASSOCIATES:

DOWNES, MASS, ROBERTS WATSON

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 181, 182, 320, 340, 420; MIC 205 or 220, MIC 206; 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, 361 or the sequence 331, 332, 335 and 336; MAT 210; STP 420 or BIO 415.

Microbiology Students majoring in microbiology are required to take the following courses: BIO 181, 182, 340; CHM 331, 332, 335, 336, 361, 367; MIC 206, 220, 302, 360, 420, 470,

plus a minimum of 7 credits of upper division electives in microbiology or approved related fields. The 7 credits must include one laboratory course. Total 46 semester hours. In addition, the students are required to fulfill the University numeracy requirement with one course chosen from MAT 210, 270, 290, or STP 420 and with one course chosen from CSC 100, 181, or any class having those courses as a pre requisite. The required supplemental courses are: CHM 113⁺, 115; PHY 111⁺, 112, 113, 114.

Clinical Laboratory Sciences—The goal of the Clinical Laboratory Sciences program is to prepare individuals to practice in the field of clinical laboratory sciences, which includes the major disciplines of Clinical Chemistry, Hematology, Immunohematology and Microbiology. Employment opportunities exist in hospital, private, physician and research laboratories, government; sales; management; and education. After obtaining a B.S. in Clinical Laboratory Sciences, the graduate is eligible for national certification by examination.

A student majoring in Clinical Laboratory Sciences is required to take 44 hours of Clinical Laboratory Sciences courses. Also required are CHM 113, 115, 361; MIC 205, 206, 420. Students must consult with the Clinical Laboratory Sciences advisor to select the appropriate courses to meet the Natural Sciences and Mathematics Distribution Requirements for the College of Liberal Arts and Sciences, and to select general electives courses. Completion of the degree is dependent upon acceptance of the student into the accredited Professional Study Program which consists of 44 hours of Clinical Laboratory Sciences courses. The University does not guarantee that all students will be accepted into the Professional Study Program due to space limitations at the clinical affiliates and restrictions of program accreditation. To obtain further information regarding acceptance procedures and program standards, contact the Department for a program brochure. For proper course planning, students must meet with a Clinical Laboratory Sciences advisor.

Departmental Graduate Programs

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

72 BIOLOGICAL SCIENCES

BIOLOGY

BIO 100 The Living World. (4) F S

Principles of biology. Cannot be used for major credit in the biological sciences. Three lectures, 3 hours laboratory. [Satisfies General Studies Requirements. S1, S2]

181, 182 General Biology. (4) (4) F S

A comprehensive treatment of biological concepts emphasizing fundamental principles of biology and the interplay of structure and function at the molecular, cellular, organ, and population levels of organization. For majors in biological sciences and preprofessional students in health-related sciences. Secondary school chemistry strongly recommended. (BIO 181 is a prerequisite for BIO 182). Three lectures, 3 hours laboratory. [Satisfies General Studies Requirements S1 (181), S2]

217 Introduction to Fisheries and Wildlife Management. (3) F

Principles relating to management of cold and warm water fisheries and terrestrial wildlife emphasizing management of ecosystems. Designed for prospective wildlife biologists. Prerequisites: 8 semester hours of biological sciences.

218 History of Medicine. (1) F

Development of medical concepts.

300 Natural History of Arizona. (3) F

Plant and animal communities of Arizona. Cannot be used for major credit in the biological sciences. Prerequisite: junior standing.

301 Field Natural History. (1) F, S

Organisms and the natural environment. Two weekend field trips and a field project. Cannot be used for major credit in the biological sciences. Prerequisite: BIO 300 or concurrent enrollment.

310 Special Problems and Techniques. (1) (3) F S

Qualified undergraduates may investigate a specific biological problem under the direction of a faculty member. May be repeated for a total of 6 credits. Prerequisites: formal conference with the faculty member and approval of the problem by the faculty member and of the department chair.

318 History of Biology. (2) N

Development of biological concepts. Prerequisite: 12 semester hours of biological sciences.

320 Fundamentals of Ecology. (3) F, S

Basic concepts in ecology. Organization, functioning and development of ecological systems. energy flow, biogeochemical cycling, environmental relations. population dynamics. Prerequisites: BIO 182 or equivalent 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 biological sciences. [Satisfies General Studies Requirement G]

332 Cell Biology. (3) F

Survey of major topics in cell biology, including structure, biochemistry, and molecular aspects of cell function. Prerequisite: BIO 182.

340 General Genetics. (4) F, S, SS

Science of heredity and variation. 3 hours lecture, 1 hour recitation. Prerequisite: BIO 182.

415 Biometry. (4) F

Statistical methods applied to biological problems, including design of experiments, estimation, tests of significance, analysis of variance, regression, correlation, chi-square and bioassay, the use of computers. This

course will not satisfy laboratory requirements for the Liberal Arts General Studies program. 3 hours lecture, 3 hours laboratory. Prerequisite: MAT 210 or equivalent. [Satisfies General Studies Requirement N2]

420 Computer Applications in Biology. (3) F

Computer analysis techniques in biology emphasizing data entry, management and analysis and graphic portrayal. Employs mainframe and microcomputers. Prerequisites: MAT 115 and BIO 182 or permission of instructor. [Satisfies General Studies Requirement N3]

424 Ecosystems. (3) F 88

Structure and function of terrestrial and aquatic ecosystems, with emphasis on productivity, energetics, biogeochemical cycling and systems integration. Prerequisite: BIO 320 or equivalent.

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 distributional patterns of animals and plants, emphasizing terrestrial life. Prerequisite: BIO 182 or equivalent, junior standing.

429 Advanced Limnology. (3) S

Recent literature, developments, methods and limnological theory field and laboratory application to some particular topics in limnology. Prerequisite: BIO 426†

430 Advanced Developmental Biology. (3) S

Current concepts and experimental methods involving differential and biosynthetic activities of cells and organisms with examples from microorganisms, plants and animals. Prerequisite: ZOL 330†.

432 Biochemical Cytology. (3) S

Eukaryotic cell functions as affected by intracellular compartmentation. Emphasis on the application of electron microscopy, analyses, cell fractionation and selected biochemical procedures. Prerequisites: BOT 360 or ZOL 360 or BIO 332 or equivalent; CHM 231 or 331 or equivalent.

435 Biomembranes. (3) F

Structure and function of biological membranes emphasizing synthesis, fluidity, exocytosis, endocytosis and cell responses to hormones and neurotransmitters. Prerequisites: BIO 332 or equivalent; CHM 231 or 331 or equivalent.

441 Cytogenetics. (3) F 88

Chromosomal basis of inheritance. Prerequisite: BIO 340†

442 Cytogenetics Laboratory. (2) F 88

Microscopic analysis of meiosis, mitosis and aberrant cell division. 6 hours laboratory. Prerequisite: BIO 441† or concurrent enrollment.

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 and adaptive change and speciation in sexual populations. Prerequisite: BIO 340† or ZOL 241†

464 Photobiology. (3) S

Principles underlying the effects of light on growth, development, and behavior of plants, animals and microorganisms. Prerequisites: 12 hours of courses in life sciences. CHM 231† or 331†

480 Methods of Teaching Biology. (3) F S
Methods of instruction, experimentation organization and presentation of appropriate content in biology. 2 lectures, 3 hours laboratory. Prerequisites: either SED 311† or concurrent enrollment in SED 311 and 20 hours in the biological sciences.

512 Transmission Electron Microscopy. (4) F S
Theory use and methods of preparing biological materials for transmission electron microscopy. Materials fee 2 lectures, 6 hours laboratory. Prerequisite: approval of instructor.

515 Scanning Electron Microscopy. (2) SS
Theory and use of scanning electron microscope for biological materials. Intensive five week mini course. Materials fee. Three hours lecture 6 hours laboratory. Prerequisite: approval of instructor.

520 Biology of the Desert. (2) N
Factors affecting plant and animal life in the desert regions and adaptations of the organisms to these factors. Prerequisite: 10 hours of biological sciences and/or approval of instructor.

526 Quantitative Ecology. (3) N
Sampling strategies spatial pattern analysis species diversity, classification and applications of multivariate techniques to ecology. 2 lectures 3 hours laboratory. Prerequisites: 1 course in ecology, BIO 415† or equivalent.

See page 38 for special courses which may be offered by this academic unit.

BOTANY

BOT 108 Plants and Society. (4) F, S SS
The study of plants in relation to human affairs. Emphasis on edible, medicinal and commercial 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. [Satisfies General Studies Requirements S1 S2]

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. Three hours lecture, 3 hours laboratory. Prerequisite: one of the following: BIO 100, 182 BOT 108 ZOL 110, or equivalent. [Satisfies General Studies Requirement S2]

301 Economic Botany. (3) F
Plants and plant products used by man throughout the world including the cultivation processing and uses in modern life: fibers medicinal, 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. Three lectures 3 hours laboratory. Prerequisite: BIO 182 or equivalent.

360 Plant Physiology. (4) F, S
Plant growth and development nutrition, water relations, reproduction, metabolism and photosynthesis. Three lectures, 3 hours laboratory. Prerequisites: BIO 182 or equivalent, CHM 115†

370 The Flora of Arizona. (4) S
Principles of taxonomy identification of Arizona plants. 2 lectures, 6 hours laboratory. Prerequisite: BIO 182 or equivalent, or approval of the instructor.

410 Lichenology. (3) F '88
Chemistry, ecology, physiology and taxonomy of lichens. 2 lectures 3 hours laboratory. Prerequisite: BIO 182 or equivalent.

420 Plant Ecology. (4) S
Plants in relation to environments. 3 lectures 3 hours laboratory or field trip 1 weekend field trip. Prerequisite: BIO 320† or equivalent.

425 Plant Geography. (3) F '88
Plant communities of the world and their interpretation emphasizing North American plant associations. Prerequisite: BIO 182 or equivalent or approval of instructor.

434 General Mycology. (3) F '88
Various groups of fungi their morphology, identification procedures and economic significance. 2 lectures 3 hours laboratory. Prerequisites: BIO 182 or equivalent and/or MIC 206†

445 Morphology of the Vascular Plants. (4) S '88
Comparative form and evolutionary trends in the major groups of vascular plants. Three lectures 3 hours laboratory. Prerequisite: BOT 300† or equivalent.

448 Palynology. (2) F '87
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. Morphology, ecology and economic aspects of the algae. Three lectures 3 hours laboratory. Prerequisite: BIO 182 or approval of instructor.

461 Physiology of Lower Plants. (3) F '88
Cellular physiology and biochemistry of algae and fungal responses of these organisms to chemical and physical stimuli and their process or morphogenesis. Prerequisite: BIO 182 or equivalent. CHM 231†

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

475 Angiosperm Taxonomy. (3) S '89
Principles underlying angiosperm phylogeny. 2 lectures, 3 hours laboratory. Prerequisite: BOT 370† or approval of instructor.

480 Plants: Pleasures and Poisons. (3) SS
Poisonous medicinal and other drug plants. Plant products and their effects on man. Historical and modern perspectives. Prerequisites: BIO 100 182 BOT 108 or equivalent, CHM 231† or equivalent.

490 Paleobotany. (4) S '89
A broad survey of plant life of the past including the structure of plant fossils, the geological ranges geographic distribution and paleoenvironment. Three lectures, 3 hours laboratory or field trip. Prerequisite: BIO 182 or equivalent.

510 Experimental Design. (3) S '89
ANOVAS, one way classification of factorial and partially hierarchical designs, introductory multivariate statistics. One 3 hour lecture at night. Prerequisite: BIO 415† or equivalent.

520 Biophysical Ecology. (2) F '88
Principles of physical microenvironments and effects on plant growth. Analytical methods used in the study of energy exchange and soil plant atmosphere water relations. Prerequisite: BIO 320 or equivalent.

74 BIOLOGICAL SCIENCES

525 Ecophysiology. 3 F 87

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 87

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 88

Biosynthesis and distribution of plant natural products within various plant taxa. 3 lectures. Prerequisites: CHM 331† 332† or equivalent.

576 Experimental Plant Systematics. 3 S 88

Interpretation of taxa, utilizing cytological, genetic, ecological, morphological and anatomical techniques and data. 2 lectures. 3 hours laboratory. Prerequisite: BOT 370 or 470 or approval of instructor.

591 Seminar. (1 F S

Topics may be selected from the following:

- Biosystematics
- Ecology
- Nonvascular Plants Protists
- Plant Physiology

See page 38 for special courses which may be offered by this academic unit.

MICROBIOLOGY

MIC 205 Microbiology. 3 F S, SS

Basic course for nonmajors emphasizing general principles of the role of microorganisms in health, ecology and related applied fields. Prerequisites: CHM 101 and any one of the following: BOT 108, BO 100 or approval of instructor. [Satisfies General Studies Requirement S2]

206 Microbiology Laboratory. 1 F, S SS

Principles and laboratory techniques used in identifying and handling microorganisms. Three hours laboratory. Prerequisite: credit or concurrent enrollment. MIC 205 or 22. [Satisfies General Studies Requirement S2]

220 General Bacteriology. 3 S

Detailed study of the bacterial cell structure, genetics, physiology and taxonomy. Intended for microbiology majors and others with similar preparation. Not open to students with credit in MIC 205. Prerequisites: BO 182 and CHM 115†.

302 Advanced Bacteriology Laboratory. 2 F

Advanced laboratory techniques in bacterial growth, physiology, genetics, microscopy and biochemistry. Required microbiology major or minors laboratory. Prerequisites: either group A or B. A: MIC 206 and 220. B: MIC 205 and 206 and approval of instructor. [Satisfies General Studies Requirement L2]

360 Bacteria Physiology. 3 F

Mechanisms and control of cellular metabolism, structures and functions. Prerequisites: MIC 220, credit or concurrent enrollment in CHM 331 or approval of instructor.

380 Plant Pathology. 3 F 87

Botanical and abiotic agents of disease, including field observations and methods of control. Prerequisite: BOT 360 or approval of instructor.

420 Introductory Immunology. (3 F

Fundamental concepts in research and medical. Cellular immunity, antibody and antigen, immunogenetics, immunoregulation, hypersensitivity, clinical immunology, nervous immune system interactions. Prerequisites: MIC 205 or 220, CHM 231 or 331 or approval of instructor.

421 Introductory Immunology Laboratory. 2 F S

An introduction to the basic techniques, methods and assays used in immunology. Six hours laboratory. Prerequisites: MIC 206 or 302, CHM 231 or 331, MIC 420 or concurrent) or approval of instructor.

425 Advanced Immunology. 3 S

A survey of recent advances in immunology including lymphocyte membranes, lymphokines/biochemistry, molecular genetics, theoretical immunology, immunoregulation, neuroimmunology, immunologic diseases. Prerequisite: MIC 420 or consent of instructor.

434 Medical Mycology. (3) S

Fungal causal agents of diseases of man, including pathology and epidemiology. Emphasizing techniques of diagnosis. Two lectures, 3 hours laboratory. Prerequisite: MIC 206 or equivalent.

441 Bacterial Genetics. 3 S '89

Survey of genetic exchange and regulatory processes in bacteria and the viruses. Bacteria and viruses as tools in genetic engineering. Prerequisites: MIC 205† or 220 and BO 340† or approval of instructor.

442 Bacterial Genetics Laboratory. 1 S '89

Techniques of mutagenesis, mapping, and strain construction. 4 hours laboratory. Prerequisites: MIC 206 and credit or concurrent enrollment in MIC 441†.

470 Systematic Bacteriology. 3 S

Classification and identification of bacteria. One lecture, 6 hours laboratory. Prerequisites: MIC 206, 5 hours of microbiology.

481 Diagnostic Bacteriology. 3 N

Biochemical and immunological methods for characterization of pathogenic bacteria. Two lectures, 3 hours laboratory. Prerequisites: MIC 206, CHM 231† or CHM 331†.

485 General Virology. 3 F

Fundamental nature of viruses, their replication, pathogenesis and ecology. Prerequisites: BO 340, CHM 331 or consent of instructor.

486 General Virology Laboratory. 2 F

An introduction to the growth, assay and detection of viruses. Six hours laboratory. Prerequisite: MIC 302, MIC 485 or concurrent enrollment.

530 Bacteria Differentiation. 3 S

Molecular biology of sporulation and germination in bacteria. Emphasis on the control of cellular differentiation. Prerequisite: MIC 441 or BO 443 or approval of instructor.

545 Recombinant DNA Methodology. 3 F

Principles of genetic engineering using *in vitro* DNA recombination, characterizations, plasmid and phage vectors, recombinant selection and physical characterization. Prerequisites: MIC 441 and BO 443 or approval of instructor.

546 Recombinant DNA Laboratory. 2 F

Basic techniques in isolation of chromosomal plasmid, and bacteriophage DNA, transformation and gene splicing methods. Prerequisites: Concurrent enrollment in MIC 545.

560 Microbial Enzymology. 3 N

Discussion of techniques and methods for the assay, isolation and characterization of microbial enzymes and

the utilization of these methods in the laboratory. Two lectures, 3 hours laboratory. Prerequisites: 5 hours of microbiology, CHM 33† or equivalent approval of instructor.

581 Selected Topics in Host-Bacterial Relationships.

3) S
Pathogenic mechanisms and host responses in bacterial diseases. Prerequisites: MIC 481† or approval of the instructor; M/C 420†.

591 Seminar. 1 3 F S

Topics may be selected from the following:

- (a) Molecular Biology
- (b) Virology
- (c) Enzymology
- (d) Genetics
- (e) Genetic Engineering
- (f) Immunology
- (g) Neuroimmunology
- (h) Bacterial Ecology
- (i) Pathogenic Bacteriology

See page 38 or special courses which may be offered by this academic unit.

CLINICAL LABORATORY SCIENCES

CLS 100 Introduction to Clinical Laboratory Sciences. (1) F

Introduction to the field of clinical laboratory technology. Required for Clinical Laboratory Sciences majors.

300 Clinical Laboratory Instrumentation. (3) F

Principles, structure and application of clinical laboratory instruments including electron spectroscopy, spectrophotometric analysis, quality control, laboratory mathematics and automated analysis. 2 lectures, 3 hours laboratory. Prerequisites: CHM 115† and PHY 101 or equivalents.

Enrollment for the following C.L.S. classes is restricted to students admitted to the Clinical Laboratory Sciences Professional Study Program.

310 Principles of Clinical Chemistry I. (6) S

Theory and application of principles of clinical chemistry with emphasis on laboratory techniques, pathophysiology, methods of analysis, assessment of procedure. Three lectures, 9 hours laboratory.

320 Principles of Clinical Microbiology I. (6) S

Emphasizes disease mechanisms, soot action, identification of medically significant fungi and bacteria. Includes principles of laboratory safety and quality control. Three lectures, 9 hours laboratory.

330 Principles of Clinical Hematology I/Body Fluids.

(3) F
Theory and application of principles in hematology with emphasis on techniques to evaluate blood dyscrasias and analyze body fluids. Two lectures, 3 hours laboratory.

410 Principles of Clinical Chemistry II. (2) SS

Continuation of Clinical Chemistry with emphasis on principles of automation, laboratory computers and method evaluation. One lecture, 3 hours laboratory.

411 Advanced Applications of Clinical Chemistry.

(4) F,
Clinical application of theory, techniques from Principles of Clinical Chemistry. Emphasis on operation of common laboratory instrumentation, clinical correlation, and radioimmunoassay. Minimum 180 hours practicum.

420 Principles of Microbiology II. (2) SS

Disease mechanisms, identification of medical significance of parasitic Mycobacteria, Actinomycetes, Chlamydia, Rickettsia, Mycoplasma viruses. 1 lecture, 3 hours laboratory.

421 Advanced Applications of Clinical Microbiology. (4) S

Practical laboratory application of the principles of specimen collection, processing, detection, identification, and antimicrobial testing of medically significant bacteria, fungi, and parasites. Minimum 180 hours practicum.

430 Principles of Clinical Hematology II Hemostasis.

(3) F
Theory and applications of principles in hematology with emphasis on etiology, pathophysiology, clinical manifestations and treatment of blood dyscrasias, hemostatic defects. Two lectures, 3 hours laboratory.

431 Advanced Applications of Clinical Hematology.

(4) S
Practical laboratory application of methods, techniques used to evaluate and diagnose blood dyscrasias/hemostatic defects. Applied techniques. Body Fluid Analysis. Minimum 180 hours practicum.

440 Principles of Clinical Immunology Immunohematology. (4) F

Theoretical and practical application of clinical immunology and immunohematology. Emphasizes serology, clinical techniques which aid disease diagnosis and blood donor selection. Three lectures, 3 hours laboratory.

441 Advanced Applications of Clinical Immunology Immunohematology. (3) S

Practical laboratory application of the principles of serology, clinical methods used in diagnosis of disease and selection of blood components for transfusion therapy. Minimum 135 hours practicum.

450 Principles of Clinical Laboratory Administration.

(2) F S
Principles of management with emphasis on the clinical laboratory. Basic management process, personnel supervision, identification and allocation of resources.

460 Principles of Clinical Laboratory Education. (1) S

Principles of learning with application to the development of instructional objectives, strategies and evaluation for teaching-learning situations in the laboratory.

Chemistry

PROFESSORS:

- GLAUNSINGER (PS D 102), BIEBER, BRK,
- T. BROWN, BUSECK, CRONIN, EYRNG,
- FUCHS GUST, HARRIS, HOLLOWAY, JUVET,
- L N, L U, C. MOORE, T. MOORE, MUNK,
- O KEEFFE, PETT T, WAGNER WHITEHURST,
- WILLIAMS, YUEN ZASLOW

ASSOCIATE PROFESSORS:

- BLANKENSHIP, LOHR, PETUSKEY, ROSE

ASSISTANT PROFESSORS:

- BALASUBRAMANIAN HUNGATE, McMLLAN
- SKIBO, STEIMLE, WOLF

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 59.)

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 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. MAT 274 and an appropriate course in computer science are strongly 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 59.)

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 Federation 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. [Satisfies General Studies Requirements: S1, S2]

113 General Chemistry.* (4) F, S, SS
Principles of chemistry. Adapted to the needs of students in the physical, biological and earth sciences. 3 lectures, 1 quiz, 2 hours laboratory. Prerequisite: Three semesters of high school algebra or MAT 106. One year of high school chemistry recommended. [Satisfies General Studies Requirements: S1, S2]

114 General Chemistry for Engineers.* (4) F, S
One semester college chemistry with emphasis towards engineering. Three lectures, 1 quiz, 2 hours laboratory. 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. [Satisfies General Studies Requirements S1 S2]

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. Three lectures, two quizzes, 4-hour laboratory. Prerequisite: CHM 113† or two years of high school chemistry. [Satisfies General Studies Requirements S1 S2]

116 General Chemistry.* (4 F, S)

Continuation of CHM 113. Equilibrium theory, chemistry of metals, nonmetals and metalloids, introduction to organic chemistry. Three lectures, 1 quiz, 2-hour laboratory. Prerequisite: CHM 113† or two years of high school chemistry. [Satisfies General Studies Requirements S1, S2]

117, 118 Advanced General Chemistry.* (4, 5 F, S)

Topics include atomic and molecular structure, properties and physical states of matter, thermodynamics, kinetics, acids and bases, chemical analysis and stoichiometry. CHM 117: 3 lectures, 1 conference, 2-hour laboratory. CHM 118: 3 lectures, 1 quiz, 2-hour laboratory. Prerequisite: CHM 117 for CHM 118. Corequisite: MAT 290† (or 270†) for CHM 118†. [Satisfies General Studies Requirements S1, S2]

225 Analytical Chemistry.* (3 F, S, SS)

Principles and methods of chemical analysis. Primarily for students in agriculture, premedicine, pre dentistry, and medical technology. Prerequisite: CHM 115† or 116†.

226 Analytical Chemistry Laboratory.* (2) F, S, SS

Experiments in chemical analysis. One conference, 5-hour laboratory. Corequisite: CHM 225†

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. 3 lectures, 1 quiz, 2-hour laboratory. 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.

301 Chemistry and Society. (3) F, S

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. One conference, 3-hour laboratory. Prerequisite: CHM 317†.

320 Organic Chemistry Laboratory II for Majors.* (2) S

Continuation of CHM 319. One conference, 7-hour laboratory. Prerequisite: CHM 318†.

331, 322 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 chemistry experiments in separation techniques, synthesis, analysis and identification and relative reactivity. 4-hour laboratory. Prerequisite: CHM 335† for CHM 336†. Corequisites: CHM 331† for CHM 335†, CHM 332† for CHM 336†.

341 Elementary Physical Chemistry.* (3) F

Thermodynamics, equilibrium states of matter, solution chemistry, kinetics. For students in premedical, biological and educational curricula. Not open to students who have taken CHM 441. Prerequisites: CHM 114† or 118† or 225† and CHM 231† or 331†, and MAT 210†.

343 Physical Chemistry Laboratory.* (1) F

Physical chemistry experiment. Three-hour laboratory. Corequisite: CHM 341† or 441†.

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. Not open to students who have taken CHM 461. Prerequisite: CHM 231†, 318† or 332†.

367 Elementary Biochemistry Laboratory. (1) F, S

Experiments include qualitative and quantitative analyses of constituents of biological systems, measurement of enzyme activities and metabolic studies. Three-hour laboratory. Prerequisite: CHM 361† or approval of instructor.

392 Introduction to Research Techniques. (1, 3) F, S, SS

Instrumental methods and philosophy of research by actual participation in chemical research projects. May be repeated for a total of 6 credits. Prerequisite: approval of advisor and research supervisor.

401 Chemical Literature. (1) S

The special information tools available in libraries which permit the researcher to perform an efficient literature search. Topics will include Chemical Abstracts, Science Citation Index, National Standard Reference Data Series, patents, computer search services and others. Prerequisite: CHM 318† or 332† or approval of instructor.

421 Instrumental Analysis.* (3) S

Principles of instrumental methods in chemical analysis. Electroanalytical and optical techniques. Prerequisites: CHM 225† and 226†. Prerequisite: CHM 442†.

422 Instrumental Analysis Laboratory.* (1) S

Experiments in chemical analysis by electroanalytical and optical techniques. Three-hour laboratory. Corequisite: CHM 421†.

424 Separation Methods and Quantitative Organic Analysis. (3) F

Theory and practice of gas, liquid ion exchange, and gel permeation chromatography, countercurrent distribution, electrophoresis, and distillation, qualitative and quantitative interpretation of IR, mass and NMR spectroscopy, quantitative methods of organic analysis via functional groups. Two lectures, 4-hour laboratory. Prerequisite: CHM 318† or 332†, and 442†, or approval of instructor.

425 Chemical Analysis. (2) F

Principles of chemical equilibria, separations, and analyses. Chemical instrumentation. Prerequisite: CHM 341† or 441†.

78 CHEMISTRY

426 Chemical and Instrumental Analysis.* (3) S

Instrumental techniques for chemical analysis; methods for the interpretation of analytical data. Prerequisite: CHM 425†

427, 428 Chemical and Instrumental Analysis Laboratory.* (2, 2) F, S

Classical and instrumental techniques in chemical analyses with emphasis on accuracy and precision. One conference, 5 hours laboratory. Pre- or corequisites: CHM 425† or CHM 427† or CHM 426† or CHM 428†

431 Qualitative Organic Analysis. (3) F

Systematic identification of organic compounds. 1 lecture, 6 hours laboratory. Prerequisites: CHM 118† or 226† and CHM 320† or 336† or approval of instructor.

438 Polymers. (2) S

Chemistry and properties of natural and synthetic polymers. Prerequisite: CHM 318 or 332

441, 442 General Physical Chemistry. (3, 3) F, S

Laws of thermodynamics and their applications; properties of gases, solids, liquids and solutions, reaction kinetics, wave mechanics, molecular spectroscopy, statistical thermodynamics. Not open to students who have taken CHM 341. Prerequisites: PHY 112† or 116† or ECE 202†

444 General Physical Chemistry Laboratory.* (2) S

Physical chemistry experiments. 1 conference, 5 hours laboratory. Prerequisite: CHM 441†

447 Radiochemistry.* (2) F

Radioactivity, natural and artificial radioisotopes, nuclear reactions, separation of isotopes, nuclear energetics, measurement of radioactivity, tracer techniques and other applications. Prerequisite: CHM 118† or CHM 225† or PHY 361†

448 Radiochemistry Laboratory. (2) N

Radiation measurements, tracer methods, quantitative identification of isotopes, and other procedures applicable to chemical, physical, engineering and biological problems. One conference, 5 hours laboratory. Corequisite: CHM 447†

452 Inorganic Chemistry Laboratory. (2) S

Preparation and purification of typical inorganic substances emphasizing methods and techniques. 1 conference, 5 hours laboratory. Prerequisite: approval of instructor.

453 Inorganic Chemistry. (3) F, S

Principles and applications of inorganic chemistry. Prerequisites: CHM 341† or 441†

461, 462 General Biochemistry. (3, 3) F, S

Structure, chemistry and metabolism of biomolecules and their role in biochemical processes of living organisms. Not open to students who have taken 361. Prerequisites: CHM 318† or 332† and CHM 341† or 441† or approval of instructor.

467, 468 General Biochemistry Laboratory. (2, 2) S, F

The application of modern chemical and physical methods to biochemical problems; purification and characterization of biological macromolecules; quantitative measurement of enzyme activity and properties; evaluation of metabolic processes. One conference, 5 hours laboratory. Prerequisites: CHM 461† with 467†, 462† with 468†.

471 Solid State Chemistry. (3) F

Crystal chemistry, thermodynamics and electrochemistry of solids, nonstoichiometric compounds, diffusion and solid state reactions, crystal growth and selected topics. Pre- or corequisite: CHM 441†, or approval of instructor.

480 Methods of Teaching Chemistry. (3) N

Organization and presentation of appropriate content of chemistry; preparation of reagents, experiments, demonstrations, organization of stock rooms, laboratories; experience in problem solving. Prerequisite: approval of instructor.

481 Geochemistry. (3) F

Origin and distribution of the chemical elements. Geochemical cycles operating in the earth's atmosphere, hydrosphere and lithosphere. Prerequisite: CHM 341† or 441† or GLG 321 (Same as GLG 481)

482 Physical Geochemistry. (3) N

Applications of thermodynamic and kinetic principles to geochemical processes. Prerequisite: CHM 341† or 441† or GLG 321† (Same as GLG 482)

485 Meteorites and Cosmochemistry. (3) N

Chemistry and mineralogy of meteorites and their relationship to the origin of the earth-solar system and universe. Prerequisite: CHM 481† or 482† (Same as GLG 485.)

501 Current Topics in Chemistry. (1) F, S

Prerequisite: approval of instructor. May be repeated for credit.

521 Computer Interfacing to Chemical Instrumentation. (3) N

Assembly and machine language programming of laboratory size computers for data acquisition and online, real time control of chemical instrumentation. Digital logic and timing considerations in hardware interfacing of computers. No prior knowledge of computers or electronics assumed. Sound knowledge of chemical instrumentation desirable. Two lectures, 4 hours laboratory.

523 Advanced Analytical Chemistry. (3) A

Theoretical principles of analytical chemistry. Prerequisites: CHM 225†, and 442†, or the equivalents.

525 Spectrochemical Methods of Analysis. (4) N

Theoretical and practical considerations involving the use of optical instruments for chemical analysis emphasizing emission and absorption spectroscopy. Three lectures, 3 hours laboratory. Prerequisite: CHM 442†

526 X-Ray Methods of Analysis. (4) N

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

527 Electrical Methods of Chemical Analysis. (4) N

Theoretical and practical considerations of polarography, potentiometric, amperometric, and conductometric titrations. Two lectures, 6 hours laboratory. Prerequisite: CHM 442†

531 Theoretical Organic Chemistry. (3) F

Reaction mechanisms, reaction kinetics, 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 medicinal, and antibiotics. May be repeated for credit. Prerequisites: CHM 532†, 537† and approval of instructor.

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 the reactions over the entire periodic system. Prerequisites: CHM 442†, and CHM 453† or the equivalents.

554 Advanced Inorganic Chemistry. (3) N

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. Thermodynamic hydrodynamics, and spectroscopy of biopolymers and the 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 (Same as GLG 581.) Prerequisite: approval of instructor

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. May be repeated for credit. (Same as GLG 582. Prerequisite: approval of instructor.)

583 Phase Equilibria and Geochemical Systems. (3)

N

Study of natural reactions at high temperatures and pressures; sulfate, sulfide and oxide equilibria (Same as GLG 583.) Prerequisite: CHM 482†

See page 38 for special courses which may be offered by this academic unit.

* 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 361 or 461, 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

Majors in Computer Science are offered in both the College of Liberal Arts and Sciences or the College of Engineering and Applied Sciences. Faculty and course descriptions are listed on pages 236-242.

Departmental Major Requirements**Bachelor of Science Degree Curriculum**

Computer Science—The major in Computer Science consists of 30 hours of core coursework and 15 semester hours of senior level breadth courses in the major. Also required are 18 semester hours of technical elective and mathematics courses approved by the department in addition to college algebra. Students must consult with a department advisor to select the appropriate courses to meet the Natural Sciences and Mathematics distribution requirements of the College. The University requirement on literacy and critical discourse is to be met in part by either ECE 400 or ENG 301.

A 2.75 cumulative grade point average is required to begin upper division work in the major.

Economics

A major in Economics is offered in the College of Liberal Arts and Sciences or the College of Business.

Departmental Major Requirements**Bachelor of Arts Degree Curriculum**

Economics—Consists of 45 semester hours of credit, of which 24 must be in Economics and 21 in closely related fields to be approved by the advisor in consultation with the student.

The following lower-division courses are required and must be counted as part of the 45 hour major:

ECN 111 Macroeconomic Principles
 ECN 112 Microeconomic Principles
 STP 226 Elements of Statistics
 MAT 270 Calculus with Analytic
 Geometry I

A minimum grade of 'C' must be earned in each of the above courses in order to qualify for upper division courses in Economics. ECN 313 and ECN 314 are required and must be taken

80 ECONOMICS

after the completion of MAT 270 and prior to other upper division courses in Economics. Concurrent enrollment in ECN 313 and ECN 314 is permitted. Concurrent enrollment with one of the above and other upper division courses in Economics is subject to advisor approval. In addition, the Economics major must choose six hours of closely related field courses from a short list of courses selected by the Economics faculty. (See Degree Requirements, page 59.)

Bachelor of Science Degree Curriculum

Economics—Consists of 45-55 semester hours of credit, of which 24 must be in Economics and the remainder in closely related fields to be approved by the advisor in consultation with the student.

The following lower division courses are required and must be counted as part of the 45-hour major:

- ECN 111 Macroeconomic Principles
- ECN 112 Microeconomic Principles
- STP 226 Elements of Statistics
- MAT 270 Calculus with Analytic Geometry I

A minimum grade of 'C' must be earned in each of the above courses in order to qualify for upper division courses in Economics. ECN 313 and ECN 314 are required and must be taken after the completion of MAT 270 and prior to other upper division courses in Economics. Concurrent enrollment in ECN 313 and ECN 314 is permitted. Concurrent enrollment with one of the above and other upper division courses in Economics is subject to advisor approval. In addition, the Economics major must choose six hours of closely related field courses from a short list of courses selected by the Economics faculty. (See Degree Requirements, page 59.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

(Secondary Education)

Economics—Consists of 45 semester hours of credit, of which 24 must be in Economics and one course in methods of teaching a social science. The remainder will be in closely related fields as approved by the advisor in consultation with the student.

The following lower division courses are required and must be counted as part of the 45-hour major.

- ECN 111 Macroeconomic Principles
- ECN 112 Microeconomic Principles
- STP 226 Elements of Statistics
- MAT 270 Calculus with Analytic Geometry I

A minimum grade of 'C' must be earned in each of the above courses in order to qualify for upper division courses in Economics. ECN 313 and ECN 314 are required and must be taken after the completion of MAT 270 and prior to other upper division courses in Economics. Concurrent enrollment in ECN 313 and ECN 314 is permitted. Concurrent enrollment with one of the above and other upper division courses in Economics is subject to advisor approval. In addition, the Economics major must choose six hours of closely related field courses from a short list of courses selected by the Economics faculty.

Departmental Minor Teaching Field Requirements (Secondary Education)

Economics—Consists of 21 semester hours of credit. ECN 111 and 112, and MAT 210 are required. Remainder to be approved by the advisor in consultation with the student.

Latin American Studies Emphasis. (See Latin American Studies, page 64.)—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 hours 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 pages 193-194.

English

PROFESSORS:

SALERNO (LL B-504) BRACK, J BRINK
D ANGELO, B. DOEBLER, J. DOEBLER,
DONELSON, DUBIE, EVANS, FERRELL,
F SHER, FLETCHER, HABERMAN, M HARRIS,
HELMS, KEHL, LIGHTFOOT, NEBEKER, NEY
NILSEN, SANDS SHAFER, SH NN

ASSOCIATE PROFESSORS:

BENDER, BJORK, BOYER, D BR NK,
BUCKINGHAM DOVE, J. GREEN, M. GREEN,
GREENE, HAKAC JANSSEN, JOHNSON,
MORAN MURRAY, OJALA RANDALL,
R OS SCHWALM

ASSISTANT PROFESSORS:

ADAMS BAROODY BROSE, COLBY,
GUT ERREZ MORGAN, NELSON,
PEARSON, SENS BAR, W LKINS

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 59.)

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 200, 211 or 212, 221, 222, 312 or 314, 341, 342, 421 or 422, 471, 480, and 12 hours of electives (all chosen from English department courses, 9 of which must be upper division).

Departmental Minor Teaching Field Requirements

(Secondary Education)

(Recommended for Elementary Education)

English—Consists of 24 semester hours of credit. Required courses are ENG 200, 211 or 212, 221 or 222, 341 or 342, 312 or 314, 471 and 480, and an additional upper division elective in English.

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 and linguistics); a Master of Fine Arts (fiction, poetry, non fiction, and screenwriting); and Doctor of Philosophy (with numerous emphases).

English faculty currently serve as editors of *English Journal*, *Modern Scandinavian Literature in Translation*, *Studies in 18th Century Culture*, *Rough Draft*, and *WHIM*. Other faculty serve on the editorial boards of *English Literature in Transition*, *Metaphor and Symbolic Activity*, *An Interdisciplinary Journal of Empirical Inquiry*, *Modern Language Journal*, *Rhetoric Review*, *Resources for American Literary Study*, *Dickinson Studies*, *18th Century: A Current Bibliography*, and *Callaloo*.

ENGLISH

ENG 101 First-Year 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 First-Year 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 First-Year Composition. (3) F, S

A concentrated composition course for students with superior writing skills, intensive reading; research papers; and rhetorical effectiveness. Not open to students with credit in First-Year Composition. Prerequisite: see page 59.

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 demands of English. Intensive reading, writing, and discussion. Satisfies the graduation requirement of ENG 101.

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.

82 ENGLISH

110 Introduction to Literature. (3) F, S

Introduction to literature through literary types [Satisfies General Studies Requirements HU, H]

Completion of the First Year Composition requirement is a prerequisite for all English Department courses at the 200 level and above.

200 Critical Reading and Writing About Literature.

(3) F, S

Introduction to the terminology, methods, and objectives of the study of literature with practice in interpretation and evaluation. Prerequisite: one semester of First Year Composition [Satisfies General Studies Requirements. L1, HU]

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. [Satisfies General Studies Requirements: HU, H]

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. [Satisfies General Studies Requirements HU, H]

204 Literature of Today. (3) F, S

Poetry, short story, novel and drama. Not for English majors. Not open to freshmen [Satisfies General Studies Requirement HU]

210 Introduction to Creative Writing. (3) F, S

Beginning writing of poetry and fiction. Separate sections for each genre. May be taken once for poetry once for fiction

211 Advanced Composition. (3) F, S

Further training in organization and expression of ideas. Prerequisite for non-English majors. Prerequisite: ENG 102+ [Satisfies General Studies Requirement L1]

212 English Prose Style. 3 N

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. [Satisfies General Studies Requirement L1]

213 Introduction to the Study of Language. (3) F, S

Language as code: phonetics, phonology, morphology, and syntax; the lexicon; language acquisition; and sociolinguistics.

221 Survey of English Literature. (3) F, S

Medieval, Renaissance, and Eighteenth Century literature. Emphasis on major writers and their works in their literary and historical contexts [Satisfies General Studies Requirements. HU, H]

222 Survey of English Literature. (3) F, S

Romantic, Victorian, and Twentieth Century literature. Emphasis on major writers and their works in their literary and historical contexts [Satisfies General Studies Requirements HU, H]

260 Film Analysis. (3) N

Understanding and enjoyment of film and its correlation to literature, art, music and other disciplines [Satisfies General Studies Requirement HU]

A term paper or equivalent out of class written work is required in all upper-division 300-400 level ENG courses

301 Writing for the Professions. (3) F, S

Advanced practice in writing and editing expository prose. Prerequisite for preprofessional majors [Satisfies General Studies Requirement L1]

303 Classical Backgrounds of English Literature. (3) F

Selected readings of Greek and Latin literature in translation, emphasizing forms, ideas and myth, as they relate to literature in English [Satisfies General Studies Requirement HU]

307 Utopian Literature. 3 N

Selected works from the present to the classical period including *Walden*, *Utopia* and *The Republic*. Prerequisite for non-majors. [Satisfies General Studies Requirement HU]

310 Intermediate Creative Writing. (3) F, S

Lectures, writing assignments, discussion. Separate sections for fiction and poetry. May be taken once for poetry once for fiction. Prerequisite: ENG 210 or approval of instructor

312 English in Its Social Setting. 3 F, S

Introduction to the sociolinguistic study of the English language. Prerequisite: junior standing or permission of the instructor [Satisfies General Studies Requirement. HU]

314 Modern Grammar. (3) F, S

Modern descriptive models of English grammar. Prerequisite: junior or standing or permission of the instructor. [Satisfies General Studies Requirement HU]

321 Introduction to Shakespeare. (3) F, S

Shakespeare's major comedies, histories and tragedies. Not open to English majors [Satisfies General Studies Requirement HU]

341 American Literature. (3) F, S

From Colonial times to the Civil War including the growth of national and romanticism [Satisfies General Studies Requirements: HU, H]

342 American Literature. 3 F, S

From the Civil War to the present. Development of realism, naturalism, and modernism and contemporary trends in prose and poetry [Satisfies General Studies Requirements. HU, H]

345 Selected Authors or Issues. 3 4 N

Different topics may be offered. Form topics with ability 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. [Satisfies General Studies Requirement HU]

355 History of the Drama. (3) S

Development of European drama from the Greek to the Romantic Period [Satisfies General Studies Requirements HU, H]

356 Biblical Backgrounds of Literature. (3) F, S

Readings in Old and New Testaments emphasizing ideas, literary types and sources as they appear in literature [Satisfies General Studies Requirements HU, H]

357 Introduction to Folklore. (3) N

Survey of the history, genres and dynamics of folklore with emphasis on oral traditions [Satisfies General Studies Requirement HU]

358 Afro-American Literature. (3) N

Thematic and cultural study of Afro-American literature. [Satisfies General Studies Requirements L2, HU, H]

359 American Indian Literatures. (3) S

Selected oral traditions of American Indians and their influences on contemporary Native American literary works [Satisfies General Studies Requirements HU, H]

360 History of Film. (4) N

Emphasis on American film with some study of European film. Three lectures, four hours of screening [Satisfies General Studies Requirements HU, H]

361 Silent Film. (4) F

Development of motion pictures from 1850 through 1930. Three lectures, screenings [Satisfies General Studies Requirements HU, H]

362 Sound Film Genres. (4) S

Examination of the Western, the horror film, the comedy and other genres. Three lectures, screenings. [Satisfies General Studies Requirement HU]

400 History of Literary Criticism. (3) S

Major critics and critical traditions in the western world. Prerequisite: 6 hours of literature or approval of instructor [Satisfies General Studies Requirements L2, HU, H]

405 Style and Stylistics. (3) N

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

Fiction writing with a screenplay format. Lectures, conferences, film viewing, exemplary screenplays, and visiting writers from the film community.

411 Advanced Creative Writing. (3) F, S

Separate poetry and fiction workshops for experienced writers, emphasizing individual style. May be taken once for poetry, once for fiction. Prerequisite: ENG 310 or approval of instructor.

412 Professional Writing. (3) N

Lectures and conferences concerning techniques of writing for publication. Prerequisite: ENG 310 or approval of instructor

413 History of the English Language. (3) F, S

Development of English from the earliest times to the modern period. Prerequisite: junior standing or permission of instructor [Satisfies General Studies Requirement HU]

415 Medieval Literature. (3) F

Medieval English literature in transition from *Beowulf* to *Mary*, excluding Chaucer, emphasizing cultural and intellectual backgrounds. Includes continental works. [Satisfies General Studies Requirement HU]

418 Renaissance Literature. (3) F

Poetry and prose, 1485-1603, excluding the drama. Humanism, major genres. More Spenser, Spenser and other representative writers. Prerequisite: ENG 221 or consent of instructor. [Satisfies General Studies Requirement HU]

419 English Literature in the Early Seventeenth Century. (3) S

Prose and poetry, exclusive of Milton and the drama. Metaphysical Cavalier neo-classical verse, Donne, Jonson, Bacon, and other representative writers. Pre-

requisite: ENG 221 or consent of instructor [Satisfies General Studies Requirements L2, HU, H]

420 Renaissance Drama. (3) S

Sixteenth and seventeenth century drama. Marlowe, Kyd, Jonson and other representative writers, exclusive of Shakespeare. Prerequisite: ENG 221 or consent of instructor [Satisfies General Studies Requirements HU, H]

421 Shakespeare I. (3) F, S

A selection of comedies, histories, and tragedies including *Midsummer Night's Dream*, *Henry IV*, *Hamlet*, and *Macbeth* [Satisfies General Studies Requirements: HU, H]

422 Shakespeare II. (3) F, S

A selection of comedies, histories, and tragedies including *Twelfth Night*, *King Lear*, *The Tempest*, and *Othello* [Satisfies General Studies Requirement HU]

423 Milton. (3) F, S

Selected prose and poetry, emphasizing *Paradise Lost*, *Paradise Regained*, and *Samson Agonistes*. Prerequisite: ENG 221 or consent of instructor [Satisfies General Studies Requirement HU]

424 Chaucer. (3) F, S

Chaucer's language, poetry and intellectual background [Satisfies General Studies Requirement: HU]

425 Romantic Poetry. (3) F

Poetry of Wordsworth, Coleridge, Shelley, Keats, Byron. [Satisfies General Studies Requirements L2, HU]

426 Victorian Poetry. (3) S

Poetry of the second half of the 19th century. Special study of Tennyson, Browning, Arnold. [Satisfies General Studies Requirements L2, HU, H]

427 Age of Johnson. (3) S

Chief writers, movements, and books during Johnson's career as a dominant literary figure, together with their most important relationships to predecessors and followers [Satisfies General Studies Requirements L2, HU, H]

428 Age of Dryden, Swift, and Pope. (3) F

Chief writers and movements in the nondramatic literature of the Restoration and early 18th century. [Satisfies General Studies Requirements: L2, HU, H]

430 19th Century British Cultural Backgrounds. (3) N

Selected works by writers such as Burke, Lamb, Carlyle, Ruskin, Mill, Morris, Darwin, Pater, and Yeats. Prerequisite: ENG 222 or approval of instructor [Satisfies General Studies Requirements L2, HU, H]

435 19th Century American Poetry. (3) F

Themes and developments in American poetry to 1900, including Poe, Whitman, and Dickinson. [Satisfies General Studies Requirements HU, H]

439 Drama from Dryden to Sheridan. (3) S '88

English drama of the Restoration and 18th century, especially critical theories and social forces affecting the stage [Satisfies General Studies Requirements L2, HU]

440 American Literature to 1815. (3) N

Thought and expression from the time of the first English speaking colonies to 1815 [Satisfies General Studies Requirements: HU, H]

84 ENGLISH

- 441 20th Century American Drama.** 3) N
American drama since World War , especially experimental techniques [Satisfies General Studies Requirements: L2 HU]
- 442 20th Century British Poetry.** 3) F
Major British poets of the period techniques, aims and significance
- 443 American Poetry, 1900-1945.** (3) F
Developments in theory and practice of major poets [Satisfies General Studies Requirements HU H]
- 444 American Romanticism, 1830-60.** 3 F
Art and ideas of major American transcendentalists and romantics [Satisfies General Studies Requirements HU, H]
- 445 American Realism, 1860-1900.** 3 S
Writers and influences that shaped the development of literary realism [Satisfies General Studies Requirements HU, H]
- 448 20th Century British Novel.** (3) S
Twentieth century British novels since 1914. [Satisfies General Studies Requirement: HU]
- 451 The Novel to Jane Austen.** (3) F
From origins of prose fiction through the 18th century [Satisfies General Studies Requirements: L2 HU, H]
- 452 The 19th Century Novel.** 3 S
From Scott to Conrad [Satisfies General Studies Requirements L2 HU, H]
- 453 The American Novel to 1900.** (3) F
The rise and development of the novel to Dreiser [Satisfies General Studies Requirements L2, HU H]
- 454 The American Novel, 1900-1945.** (3) F
Developments in theory and practice of major novels [Satisfies General Studies Requirements. HU, H]
- 455 The Form of Verse: Theory and Practice.** 3) N
Types history, criticism and schools of theory of metrical form Analysis of lyric narrative and dramatic poetry
- 457 American Poetry Since 1945.** 3) S
Major American poets of the period developments in theory and practice [Satisfies General Studies Requirement HU]
- 458 American Novel Since 1945.** 3 S
Major novels of the period developments in theory and practice [Satisfies General Studies Requirements: L2 HU]
- 460 Western American Literature.** 3) S
Critical examination of ideas and traditions of the literature of the western United States including the novel [Satisfies General Studies Requirements HU, H]
- 461 Women and Literature.** 3 N
Selected topics in literature by or about women May be repeated for credit when topics vary [Satisfies General Studies Requirements HU H]
- 462 Twentieth Century Women Authors.** 3 F
Critical examination of literature by women writers who reflect twentieth century perspectives in British, American and world literature Prerequisite Approval of instructor
- 463 European Drama from Ibsen to 1914.** 3 N
Chief continental and British dramatists of the period of the beginnings and development of realism [Satisfies General Studies Requirements HU H]
- 464 European Drama from 1914 to the Present.** 3 N
Chief continental and British dramatists of the period emphasizing experimental techniques [Satisfies General Studies Requirements HU, H]
- 471 Literature for Adolescents.** 3 F, S
Prose and poetry which meet the interests and capabilities of junior high and high school students. Recent literature stressed [Satisfies General Studies Requirement HU]
- 480 Methods of Teaching English.** 3 F S
Methods of instruction organization and presentation of appropriate content in English. Prerequisite: ENG 312 or 314 or 413
- 485 Teaching of English as a Second Language.** (3) F
Nature of language learning, testing, analysis of differences between two languages as a basis of instruction on *Problems of cultural orientation*. Prerequisite: teaching experience or approval of instructor
- 500 Research Methods.** 3 F
Methodology and resource materials for research Analysis of criticism and scholarly publication including evaluation of sources. Special sections for literature and for linguistics
- 501 Introduction to Comparative Literature.** 3) N
Problems methods and principles illustrated by selected critical essays and literary texts
- 505 American English.** 3 S
Development of the English language in America including a survey of geographical and social aspects.
- 507 Old English.** 3 F
Elements of Old English grammar, with selected readings
- 508 Old English Literature.** 3) N
Intensive literary linguistic and cultural study of Old English literature with special emphasis on *Beowulf* Prerequisite: ENG 507
- 509 Middle English.** 3 S
A study of the principal aspects of the language with selected readings Prerequisite: Graduate Status
- 510 The Structure of English.** 3) F
Grammatical patterns of English, particularly current linguistic approaches. Prerequisite: ENG 314 or its equivalent
- 511 English Phonetics and Phonology.** 3 S
Current trends in phonological theory and its basis in acoustic and articulatory phonetics. Prerequisite: ENG 510 or its equivalent or permission of instructor
- 512 The Teaching of Composition.** 3 N
The theory and practice of teaching writing at all levels. Emphasis on current research Prerequisite: teaching experience and approval of instructor
- 513 Semantic Theory.** 3 F
Current approaches to linguistic meaning with particular attention to English Prerequisite: ENG 510 or its equivalent or permission of the instructor
- 514 Advanced Grammar.** (3) S
The analysis of English grammatical structure with contemporary theoretical models Prerequisite: ENG 510, or its equivalent or permission of the instructor

515 Middle English Literature. (3) N

English literature from the 12th through the 15th century, exclusive of Chaucer. Prerequisite: ENG 509 or approval of instructor.

520 Renaissance Literature. (3) S

Poetry and prose of the English Renaissance, excluding drama

521 Shakespeare. (3) F

A selection of comedies, histories, and tragedies presented in the context of literary history and critical theories with an emphasis on class and medieval backgrounds

525 American Literary Criticism. (3) N

Analysis and discussion of leading historical and critical interpretations of American literature from the beginning to the present

530 Classical Rhetoric and Written Composition. (3) F

Relationship of major texts in classical rhetoric to developments in composition theory and literary theory and practice through the nineteenth century

531 Rhetorical Theory and Literary Criticism. (3) S

Intensive study of major rhetorical theorists of the 20th century in such areas as literary criticism discourse theory, and composition theory

532 Composition Theory. (3) N

Intensive study in the rhetorical categories of invention, arrangement, style, aims, modes, and forms of written discourse.

545, 547, 548, 549. (3) N

Selected authors or issues. May be repeated for credit

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. May be repeated for credit when content varies.

571 Advanced Study in Literature for Adolescents. (3) N

History and criticism of adolescent literature. Prerequisite: ENG 471 or consent of instructor.

572 Language Acquisition in Reading and Writing. (3) F

Studies in the application of research in language acquisition to the teaching of language reading, and writing

573 Censorship and Literature. (3) N

The history of censorship, primarily in the United States and significant court decisions that affected writers and books

591 Seminar. (3) F, S

Selected topics regularly offered in the various areas of English studies

See page 38 for special courses which may be offered by this academic unit.

HUMANITIES

HUM 110 Contemporary Issues in Humanities. (3) F
Contemporary issues and problems as reflected primarily in literature. [Satisfies General Studies Requirements HU, G, H]

301, 302 Humanities in the Western World. (4-4) F, S
Introduction of arts and ideas in Western Civilization HUM 301, Hellenic through Medieval; 302 Renaissance to the present. Three lectures, 1 discussion meeting per week. [Satisfies General Studies Requirements: HU, H]

413 Comedy: Meaning and Form. (3) S
Nature and characteristics of the experience of comedy in classical, Renaissance and modern. [Satisfies General Studies Requirement: HU]

414 Tragedy: Meaning and Form. (3) A
Nature and characteristics of literary and artistic expressions called tragedy. Prerequisite: HUM 301 and 302 or equivalent. [Satisfies General Studies Requirement: HU]

Family Resources and Human Development

PROFESSORS:

HOOVER, MORGAN

ASSOCIATE PROFESSORS:

HUGHSTON (HEC 106), BAKER, MONTE, ROOSA, VAUGHAN

ASSISTANT PROFESSORS:

CHRISTOPHER, CREIGHTON, FABES, HARTWIGSEN, HUNTER, JOHNSTON, MANORE, PETERS

Departmental Major Requirements

The Department of Family Resources and Human Development awards the Bachelor of Arts or Bachelor of Science degree upon successful completion of a four year curriculum of 126 semester hours. Course FRD 330 is required of all majors.

For either the B.A. or B.S. degree (see CLAS requirements page 59), students must select one of the following areas of concentration:

Family Resources and Human Development in Business with an option in:

- 1) Food Service Management,
- 2) Consumer Service in Foods, or
- 3) Textiles and Clothing

Family Studies/Child Development

Human Nutrition-Dietetics with an option in:

- 1) Nutritional Science or
- 2) Dietetics

Integrated Studies

Home Economics Education

86 FAMILY RESOURCES AND HUMAN DEVELOPMENT

When field experience is included in the curriculum to complete requirements for graduation, students should register for FRD 451 Field Experience, identifying it with the area of specialization. PASS/FAIL credit will be awarded upon completion.

Family Studies Child Development—Consists of 33 hours of core Family Studies Child Development classes plus 15 hours of classes within one of these options: Family Interaction, Family Economics/Management, Child Development). Required core courses include: FAS 330, 331, 357-, 361-, 435+, 454, 436†, 498, CDE 232*, 337†, and one of the following statistics courses: EDP 454, PSY 230*, or SOC 390.

Family Interaction Option Requires FAS 330†, 430, 431, 432, and 440. FAS 332 and FRD 451 are recommended.

Child Development Option Requires CDE 430†, 437-, 498†, FAS 430 and 431.

Family Economics Management Option Requires FAS 354, 440, FRD 451-, 472 or 476, and GNB 233. FAS 494 is recommended.

The American Dietetic Association has accredited the General, Management, Clinical and Community options of the Dietetics concentration as meeting their Plan IV requirements. In addition to the required courses specified below, 18 hours consisting of MIC 205 and 206, ZOL 201 and 202, MGT 301 and EDP 310 or equivalent are required by both the ADA and the Department of Family Resources and Human Development. Additional courses required by the American Dietetic Association for completion of Plan IV requirements are to be selected upon consultation with Advisor. Most of the Plan IV requirements also satisfy College of Liberal Arts and Sciences Graduation Requirements. Completion of any of these four options prepares the student for an accredited Dietetics Internship.

Human Nutrition-Dietetics—There are 22 hours of required departmental courses: FON 141, 142, 440, 441, 442, 444 and FRD 451 (maximum 3 credits).

General Dietetics Option Additional departmental courses, totaling 19 hours, which are required are FON 341, 343, 344, 445, 446, and 448.

Management Dietetics Option Additional departmental courses, totaling 9 hours which are required are FON 341, 343, and 344.

Clinical Dietetics Option Additional departmental courses, totaling 7 hours, which are required are FON 446 and 448.

Community Dietetics Option Additional departmental courses, totaling 10 hours, which are required are FON 341, 446, and 448.

Human Nutrition Option Additional departmental course, totaling 4 hours, which is required is FON 446.

Integrated Studies—Consists of 45 hours of required courses: CDE 232, FAS 331, 354, 357, 432, FON 141, 450, 451, FRD 272, 494, 498, TXC 223, 424, ECN 111, 112, CSC 180. In addition, 3 credits are required from one of the following: SOC 390, PSY 230, EDP 454, QBA 221, BIO 415.

Family Resource and Human Development in Business

Food Service Management Option—Consists of 18 hours of required departmental courses: FON 141, 142, 341, 343, 344, and 445. In addition, credits are required from the following: MIC 205 and 206, HES 494 Foodborne Diseases or Micro Ecol of Foods, AGB 364, ACC 211 and 212, MGT 301, 311, 423 and MGT 413 or 422 or 468. Additional business courses are to be selected upon consultation with advisor.

Consumer Service in Foods Option—Consists of 19 hours of required departmental courses: FON 141, 142, 341, 442, 451 and FAS 354. Other courses required for this degree totaling 24 credits are: MKT 300, 304, 310, 321, ACC 498 or equivalent, MGT 301, AGB 364, and HES 494: Foodborne Diseases or Micro Ecol of Foods.

Textiles and Clothing Option—Consists of 21 hours of required courses: TXC 122, 123, 223, 323, 424, 425 and 426. The student, with approval of the advisor, must select at least 14 semester hours from the following: TXC 321, 423, 429, 494, 498, FRD 451, and one COM course. A minimum of 4 courses must be from TXC. In addition, 15 semester hours will be selected with approval of advisor from the following: ECN 111 or FAS 354, ACC 211, GNB 233, GNB 320, ADV 301, MGT 301, MGT 311, MKT 300, MKT 302, MKT 304, MKT 310, MKT 321, MKT 325, MKT 424.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree

Family Resources and Human Development—Consists of 51 semester hours of credit in Family Resources and Human Development. Major courses required are: TXC 122 or 123, 223, FON 141, 142, FAS 331, 357, FRD 272,

FAMILY RESOURCES AND HUMAN DEVELOPMENT 87

330, 451, CDE 232, 337, HEE 461, 480, 481, DSC 212, 347, HEE 153 or another Family Resources and Human Development course, POS 110 or 300, 311.

Departmental Graduate Programs

The Department of Family Resources and Human Development offers programs leading to the degree of Master of Science. Consult the *Graduate Catalog* for requirements.

CHILD DEVELOPMENT

CDE 232 Human Development. (3) F S
Lifespan development from conception through adulthood with emphasis on family influences. Recognition of individuality within the universal pattern of development. Prerequisites: PGS 100 SOC 101 [Satisfies General Studies Requirement. SB]

337 Guided Interaction with Children. 3 F, S
Discussion and application of methods for communication with children and for guiding young children in cognitive and social learning experiences. Participation in the Child Development Laboratory. 1 lecture, 6 hours laboratory. Prerequisite: CDE 232 or equivalent.

430 Infant/Toddler Development in the Family. 3 F
An examination of the development of infants/toddlers, the socialization processes of families, and the interactions of these processes. Prerequisite: CDE 337† or equivalent. [Satisfies General Studies Requirement. SB]

434 Organization and Administration of Preschools. 3 N
Planning, operation and evaluation of programs for young children as related to national/regional needs of the child/family and community. Investigation of exemplary programs. May include field trips. Prerequisite: CDE 337† or approval of instructor.

437 Analysis of Child Behavior. 3 S
Use of a holistic perspective including family and environmental factors as well as observation of the child. Two lectures, 3 hours laboratory. Prerequisite: CDE 430† plus 6 semester hours of psychology. [Satisfies General Studies Requirement. SB]

531 Theoretical Issues in Child Development. 3 F
Major developmental theories related to research and their application to family interaction. Prerequisites: CDE 430† and CDE 43† or permission of instructor.

533 Research Issues in Child Development. 3 S
An in-depth exploration and critique of research focusing on child development in a family setting. Prerequisites: HEC 500, CDE 531†.

534 Integration of Child Development Research and Theory. 3 F
Integrated approach to understanding the developmental, family, and environmental influences on children's behavior. Prerequisites: FRD 50, CDE 531†.

FAMILY STUDIES

FAS 330 Personal Growth in Human Relationships. 3 F, S
Personal development and behavior as related to competency in interpersonal relationships within the family. Processes of family interaction. Prerequisites: SOC

101 and PGS 100 or equivalent. [Satisfies General Studies Requirement. SB]

331 Family Relationships. (3) F S
Issues, challenges and opportunities relating to present day family living. Factors influencing interactions within the family. Prerequisite: course in psychology or sociology. [Satisfies General Studies Requirement. SB]

332 Human Sexuality. (3) F S
Relationship of sexuality to family life and to major social issues. Emphasis on developing healthy positive and responsive ways of integrating sexual and other aspects of human living. Prerequisite: PGS 100.

354 Consumer Economics: Issues. 3 F S
Relationship of the consumer to the economy as a determinant of the family pattern of living. Current consumer problems and sources of protection. [Satisfies General Studies Requirement. SB]

357 Management in the Family. (3) F, S
Management as a means to realization of individual and family values and goals; creation, allocation and use of resources. Focus on decisions on making. Prerequisites: SOC 101 and PGS 100 or equivalent. [Satisfies General Studies Requirement. SB]

361 Introduction to Family Child Research Methods. (3) S
Examine basic methods applied to family child research, critique current research literature, apply methods in current topics. Prerequisites: CDE 232, FAS 331, FRD 357.

390 Supervised Research Experience. 1-3 F, S, SS
Practical first-hand experience with current faculty research projects in family studies or child development. Y grade only. May be repeated for total of 6 hours. Prerequisite: 3.00 GPA in major, approval of supervising faculty member prior to registration. FAS 361†.

430 Parent-Child Relationships. 3 S
Needs of parents and children and the dynamics of parent-child interaction centering on the years in the family cycle through the children's elementary school experience. Prerequisite: CDE 232† or FAS 330† or 331†.

431 Parent-Adolescent Relationships. 3 F
Dynamics of the relationships between parents and adolescents. Developmental characteristics of adolescence and the corresponding adult stage. Prerequisites: CDE 232†, FAS 331†.

432 Family Development. 3 N
Normative changes in families over time from formation until dissolution. Emphasis on the marital subsystem in middle and later years. Prerequisites: CDE 232† and FAS 331† or approval of instructor.

435 Advanced Family Relationships. 3 F
Recent research issues and trends relating to family interaction, influence of family composition, physical environment, family patterns and value on family dynamics. Prerequisite: FAS 331† [Satisfies General Studies Requirement. SB]

436 Conceptual Frameworks in Family Studies. 3 S
Significant organizing approaches to study of the family with particular focus on the ecosystem, interactional and developmental frameworks. Application to diverse individual and family situations. Prerequisites: FAS 33†, 357 or 454†, and CDE 232†.

440 Fundamentals of Counseling. (3) S
Counseling in relation to family interaction; attention to communication skills relevant to a variety of helping relationships.

88 FAMILY RESOURCES AND HUMAN DEVELOPMENT

454 Consumer Economics: Family Finance. (3) S
Major family income and expenditure alternatives
attainment of family goals

531 Family Theory Development. (3) S
Historical and current approaches to theory develop-
ment evaluation and application in family studies Pre-
requisites: FAS 435 and/or approval of instructor

**535 Family Relationships in the Middle and Later
Years.** (3) N

Developmental processes and generational relation-
ships of the family in the middle and later stages of the
family life cycle. Prerequisites: CDE 232† FAS 331† or
approval of instructor.

536 Family Crises and Resources. (3) N
Special problems encountered in the family and dual
and community resources for approaching them Pre-
requisites: FAS 330† CED 522 or equivalent

537 Individual Development in the Family Milieu. (3)
N

The family as a framework for human development. Re-
ciprocal influence between individual and family develop-
ment Prerequisites: CDE 232† FAS 331†

538 Approaches to Marriage and Family Counseling.
(3) N

Methods currently used in marriage and family coun-
seling and consideration of theoretical bases underlying the
methods Prerequisite: approval of instructor

539 Research Issues in Family Interaction. (3) F
Critical review of current and past research in the area of
family dynamics Emphasizes interactional processes
within the family Prerequisites: FAS 435 or equivalent or
approval of instructor

551 Family Decision-Making. (3) F
Theory and research focusing on centrality of decision
to management in family settings Ecological systems ap-
proach to family decision issues Prerequisite: FAS
357† or approval of instructor.

554 Family Economics. (3) N
Analysis of public policy affecting family economic be-
havior with respect to divorce, taxation, credit, popula-
tion, and other issues Prerequisite: FAS 354 or ECN
201 or ECN 500†

591 Seminar. (3) N
May be repeated for credit Topics may be selected from
the following areas: a) Consumer Education b) Cross
Cultural Management; c) Issues of Scarce Resources
d) Values

FOOD AND NUTRITION

FON 141 Human Nutrition. (3) F, S
Basic principles of human nutrition as they relate to
health and well-being of individuals and families Empha-
sis on the nutrients and factors which affect the nutri-
tation in the human body

142 Applied Food Principles. (3) F, S
Applied scientific principles of food preparation and pro-
duct on Two lectures, 3 hours laboratory

341 Food: Management and the Consumer. (3) S
Factors affecting the food supply, consumer protection,
buying and management of human and maternal re-
sources Laboratory Planning organizing preparing and
serving food; management of time, money and energy
consideration of nutrient needs, food quality and con-
sumer acceptability. Two lectures, 3 hours laboratory.
Prerequisites: FON 141 142

343 Food Service Systems Procurement. (3) F
Food purchasing for institutions cost factors food laws
quality standards, and basic manufacturing processes
Two lectures, 3 hours laboratory Field trips may be ta-
ken Prerequisite: FON 341† or approval of instructor.

344 Food Service Systems Management. (3) S
Organization administration, and management of food
service in hospitals and other institutions. Two lectures,
3 hours laboratory Field trips may be included Pre-
requisite: FON 343† or approval of instructor

440 Advanced Human Nutrition I. (3) F
Metabolic reactions and interrelationships of vitamins,
minerals and water Prerequisites: FON 141, ZOL 202†
and CHM 361† CHM 332† recommended.

441 Advanced Human Nutrition II. (3) S
Metabolic reactions and interrelationships of carbohy-
drate, lipid, and protein. Prerequisites: FON 141 ZOL
202† and CHM 361† CHM 331† 332 recommended

442 Experimental Foods. (4) F
Food product development techniques food evaluation
and testing and investigation of current research into
food composition Two lectures, 6 hours laboratory Pre-
requisites: FON 142, CHM 231†

444 Diet Therapy. (3) S
Principles of nutritional support for prevention and treat-
ment of disease. Prerequisites: FON 141 and ZOL 202.

445 Quantity Food Production. (3) F
Standard methods of food preparation on quantity opera-
tion of institutional equipment, menu planning for insti-
tution Experience in quantity food service One lecture 6
hours laboratory May require field trips Prerequisites:
FON 141, 343† and 344†, or approval of instructor

446 Human Nutrition Assessment Laboratory. (4) N
Clinical and biochemical evaluation of nutritional status
One lecture 9 hours laboratory. Prerequisites: CHM
367† and FON 440† or 441†

448 Community Nutrition. (3) F
Food related behaviors community organization and
delivery of nutrition services program design, implemen-
tation and evaluation on strategies, and nutritional as-
sessment of population groups Prerequisite: FON 141
SOC 101 and PGS 100 are recommended

450 Nutrition in the Life Cycle I. (3) F
Emphasis on nutritional needs and problems during preg-
nancy lactation, infancy and childhood Prerequisite:
FON 141

451 Nutrition in the Life Cycle II. (3) S
The nutritional requirements and nutrition related disor-
ders of adolescence, middle adulthood, and later life. Pre-
requisite: FON 141

462 Consumer Service in Foods. (3) N
Organization economics, and marketing as related to the
food and equipment industries Prerequisite: FON 142

531 Recent Developments in Nutrition. (3) N
Survey of research. Prerequisite: FON 440† or 441† or
approval of instructor

532, 533 Current Research in Nutrition I, II. (3) N
I Vitamins and Minerals I Carbohydrates, Lipids and
Proteins Prerequisite: FON 141 or equivalent or approv-
al of instructor

538 Recent Developments in Foods. (3) N
Discussion and critique of current research Pre-
requisites: FON 142 and CHM 232†

540 Advanced Micronutrient Metabolism. (3) F
The metabolism of vitamins and minerals, primarily as
applied to humans with research literature emphasized.

FAMILY RESOURCES AND HUMAN DEVELOPMENT 89

Prerequisites: a course in basic nutrition and one in biochemistry

541 Advanced Macronutrient Metabolism. (3) S
The metabolism of protein, fat and carbohydrate primarily as applied to humans with research literature emphasis. Prerequisites: a course in basic nutrition and one in biochemistry

542 Advanced Food Product Development. (4) F
Principles of food product development and testing, including current government regulations. 2 lectures 6 hours laboratory. Prerequisites: FON 142, Inorganic Chemistry

544 Therapeutic Nutrition. (3) S
Current theories of the nutritional prevention or treatment of various diseases. Prerequisites: a course in basic nutrition and one in physiology.

545 Recent Developments in Institutional Feeding. (3) F
Current practices in institutional feeding including supervised practicum with occupational food operation. 1 hour lecture 6 hours laboratory. Prerequisites: FON 142, 343, 344 or approval of instructor

546 Assessment Techniques in Nutrition Research. (3) S
Current techniques in human nutrition research will be explored. Research literature will be reviewed and critiqued. Prerequisites: advanced nutrition and biochemistry.

546L Laboratory Techniques in Nutrition Research. (2) S
Laboratory techniques required in nutrition research including spectroscopy, chromatography and RIA, will be taught. Prerequisites: advanced nutrition and biochemistry

548 Nutrition Program Development. (3) F
The planning, development, implementation and evaluation of community nutrition programs, including the process of grant applications. Prerequisites: a course in basic nutrition and one in sociology

550 Advanced Maternal and Child Nutrition. (3) F
Metabolic characteristics and nutritional needs of the pregnant woman, lactating woman, infant and child will be reviewed in depth. Prerequisites: a course in basic nutrition on physiology and biochemistry

551 Advanced Geriatric Nutrition. (3) S
Metabolic characteristics and nutritional requirements of the elderly will be reviewed in depth. Prerequisites: one course in basic nutrition, physiology and biochemistry or approval of instructor

FAMILY RESOURCES AND HUMAN DEVELOPMENT

FRD 271 Creative Textiles. (3) N
Ancient textile techniques and the relationship to today's life style. Create 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, economic and financial trends. *[Satisfies General Studies Requirement SB]*

330 Research Issues in the Family. (3) F S SS
Study of current research issues in various areas which affect family life and individuals within families. For majors only. Prerequisites: Jun or standing or above

451 Field Experience. (1-12) N
Supervised study in the area of student's specialization (CDE, FAS, FON, HEE, TXC) in cooperation with community business institutions. Students must make arrangements with instructor 1 semester in advance of enrollment. Prerequisite: completion of 60 hours and approval of instructor. For Family Management (FAS) majors prerequisite: FAS 357. May be repeated for a total of 3 hours. For Textiles and Clothing (TXC) majors intern program (credit 12 hours prerequisite: grade point average of 3.00 senior standing the semester of program participation, TXC 122, ECN 111 or 112, MKT 300.

472 Housing and Society. (3) S
Family housing as affected by legislation with application to contemporary housing.

476 Socio-Psychological Aspects of Housing. (3) N
Social and psychological factors affecting individual and family housing decisions on making. Prerequisite: FRD 272

500 Research Methods. (3) F
Purposes of research, experimental design, methods of data collection, thesis proposal development

572 Current Housing Issues. (3) N
Focuses on selected current housing issues, the relationship to and effect on the family.

HOME ECONOMICS EDUCATION

HEE 153 Analysis of Home Equipment. (3) S
Equipment for the home. Principles of construction, operation, selection and effective use of equipment. Two lectures, 3 hours laboratory. May include field trips

453 Advanced Analysis of Home Equipment. (3) N
Current trends in home appliances. Adaptations for individual's having special needs. Kitchen and laboratory planning. Two lectures 3 hours laboratory. May include field trips. Prerequisite: HEE 153 or approval of instructor

461 Presentations in Home Economics. (1-3) S
Application of demonstration principles I, Multimediated presentations, II. Development of audiovisual materials for home economics. One hour lecture 6 hours laboratory for each module. Prerequisites: Jun or standing and approval of instructor

480 Methods of Teaching Home Economics. (3-4) F
Instruction organization presentation and evaluation of subject matter in home economics. HEE students register for 4 credits. Dietetic students register for 3 credits

481 Teaching Occupational Home Economics. (3) S
Career orientation related to home economics, cooperative work related instruction programs and youth club advancement associated with secondary home economics programs. Open only to home economics majors or minors. May include field trips

582, 583 Program Planning and Evaluation in Home Economics. (3, 3) N
Process of planning and providing accountability for individual progress

584 Current Trends of Teaching Home Economics. (3) N
Focus on teaching home economics related to current issues and problems facing families and society. Open only to home economics majors or minors

585 Administration and Supervision of Home Economics Education. (3) N
Development of individuals for state, city, school, and college leadership roles. Emphasis on supervision of student teachers

586 Current Trends of Teaching Home Economics. (3) N

Focus on teaching home economics related to current issues and problems facing families and society. Open only to home economics majors or minors.

TEXTILES AND CLOTHING

TXC 122 Clothing and Human Behavior. (3) F, S
Emphasizes cultural influences, human behavior and design. [Satisfies General Studies Requirement SB]

123 Clothing Construction. (3) F, S
Construction processes related to fabrics, design and fashion. Course may be waived on successful completion of a placement test given each semester during orientation 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
Patterns used to develop fundamental principles in design and individualized garments. One lecture, 4 hours studio. Prerequisites: TXC 122, 123.

323 Advanced Textiles. (3) F, S
Textile technology, fiber science, dyeing, finishing and other topics. Two lectures, 3 hours laboratory. May include field trips. Prerequisites: TXC 223, CHM 101, CHM 231†s recommended.

423 Apparel Analysis. (3) F, S
Specified processes used with a wide variety of apparel fabrics. Interrelationships between fabric properties and apparel design. Two lectures, 2 hours studio. May include field trips. Prerequisite: TXC 321†

424 History of Costume. (3) F, S
Evolution of costume from ancient Egypt to the 20th century. May include field trips. Prerequisites: TXC 122 and an ARH course. [Satisfies General Studies Requirement SB H]

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 112.

429 Textile Analysis. (3) N
Introduction to textile testing equipment and evaluation of data. Two lectures, 3 hours laboratory. May include field trips. Prerequisite: TXC 323†.

521 Experimental Textile Analysis. (3) N
Current textile research and methods. Individual projects relating to textile performance. May include field trip. Prerequisite: approval of instructor.

523 Sociopsychological Aspects of Clothing. (3) N
Sociopsychological theories applied to the selection and use of clothing. Prerequisite: TXC 122; SOC 101 ECN 112.

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 2 textile courses.

See page 38 for special courses which may be offered by this academic unit.

Foreign Languages**PROFESSORS:**

HORWATH (LL B 404), ALARCON, ALEXANDER, BNINGER, CARLSON, COUCH, CURRAN, EKMANIS, FLYS, FOSTER, FRIEDMAN, GROBE, KELLER, MARTINEZ, VALDIVIESO, VIRGILLO, VOLEK

ASSOCIATE PROFESSORS:

AHERN, BALDINI, CARVER, COTA-CARDENAS, CROFT, GUNTERMANN, HENDRICKSON, KNOWLTON, LOSSE, RADKE, REAMAN, RIEGELHAUPT, BARKIN, RODD, SENNER, VASQUEZ, WXTED, WOLLAM

ASSISTANT PROFESSORS:

BURTON, CACHEY, GRUZINSKA, LAETZ, LAFFORD, NIGRO, SIMMONS, TPTON, WILLIAMS

INSTRUCTORS:

HABERMAN, MORGAN, SCHUBACK, TU

**Departmental Major Requirements
Bachelor of Arts Degree Curriculum**

Asian Languages (Chinese or Japanese), French, German, Italian, 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 59.

Departmental Minor Requirements

Asian Languages (Chinese or Japanese), French, German, Italian, Russian, Spanish—Consists of 18 hours, of which 12 hours must be upper division. Specific required courses for each area are listed in a brochure in the department.

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 or must be completed. Fulfillment of these requirements will be recognized on the transcript as a major in Asian Languages (Chinese or Japan

ese)—Asian Studies emphasis. (For an Asian Studies emphasis in other disciplines, see Asian Studies, page 63)

Latin American Studies Emphasis (See Latin American Studies, page 64.)—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 or 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 semester hours in each of two semesters (ten hours weekly, for 10 semester hours in Chinese and Japanese).

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 semester 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

92 FOREIGN LANGUAGES

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 semester 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

The College of Liberal Arts and Sciences 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.

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 59.)

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. (See page 59.)

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 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; or (3) by achieving a grade of at least "C" in a course at the next higher level.

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 are expected to 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. [Satisfies General Studies Requirements: HU, GI]

323 Survey of Soviet Literature in Translation. (3) F, S
Knowledge of Russian is not required. Survey of the major literary movements, prominent authors, and the most significant works of prose, poetry and drama of the Soviet period (1917 to present). [Satisfies General Studies Requirement: HU]

400 Linguistics. (3) S
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. [Satisfies General Studies Requirements: HU, SB]

401 Translation Theory and Practice. (3) N
Translation theories and professional practices and ethics, bibliography, computer technology and sample texts for natural and social sciences and humanities. Prerequisite: fourth year composition or approval of instructor in respective language area.

415 Bilingualism and Languages in Contact. (3) F
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. [Satisfies General Studies Requirement: SB]

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 | (d) German |
| (b) Chinese | (e) Greek |
| (c) French | (f) Italian |

- | | |
|----------------|---------------------|
| g) Japanese | k) Soviet |
| (h) Latin | l) Spanish |
| (i) Portuguese | m) Spanish American |
| (j) Russian | |

[Satisfies General Studies Requirements HU G, H]

425 Cultural Heritage. (3 F, SS)

Aspects of political, intellectual, social and artistic development of a foreign culture. Not for language majors except as a related area course. Graduate students by permission.

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 and Sciences 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. [Satisfies General Studies Requirement SB]

481 Technical and Scientific Translation. (3) N
Resources, practices, strategies, and execution for translation of professional texts: engineering architecture, agriculture, computer technology, electronics, physics and biological sciences, etc. Prerequisite: FLA 401†

482 Business and Financial Translation. (3) N
Resources, practices, strategies and execution 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: medical, 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
Description and analysis of second language acquisition and learning simultaneous 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.

See page 38 for special courses which may be offered by this academic unit.

CHINESE

CHI 101, 102 Elementary Chinese. (5, 5) F '87 S '88
Pronunciation, grammar, elementary conversation, development of basic reading and writing skills. Standard dialect. Five lectures plus arranged laboratory.

107 Chinese for International Professions I. (10) F '88

Accelerated program alternative to CHI 101, 102 sequence. Functional approach to needs of international professions. Ten class hours plus arranged laboratory.

201, 202 Intermediate Chinese. (5, 5) F '87, S '88
Systematic review of grammar. Development of vocabulary through reading, writing. Drill in aural/oral skills. Five lectures, 1 hour laboratory. Prerequisite: CHI 102† or equivalent. [Satisfies General Studies Requirement G]

205 Chinese Calligraphy. (1) F '87 S '88
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 '89
Continuation of CHI 107, alternative to CHI 201-202 sequence. Expansion of communication proficiency in specific areas of international professions. Prerequisite: CHI 107 or approval of instructor. Ten lectures, plus arranged laboratory. [Satisfies General Studies Requirement G]

309, 310, 311, 312 Chinese Conversation. (2, 2, 2, 2) F '87 S '88, F '88, S '89
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† [Satisfies General Studies Requirement G]

313, 314 Advanced Chinese. (3, 3) F '87 S '88
The modern language in general, or specific areas depending on the student's needs or interests. Three lectures plus arranged laboratory. Prerequisite: CHI 202† or equivalent. [Satisfies General Studies Requirement G]

321, 322 Chinese Literature. (3) F '87 S '88
Selected representative works of the various genres and periods. Prerequisite: CHI 202† or approval of instructor. [Satisfies General Studies Requirement G]

413, 414 Introduction to Classical Chinese. (3) F '87 S '88
Reading in various genres of pre-20th century literature (wen yen) with analysis of the structure of the classical writings. Prerequisite: CHI 202† or the equivalent. See page 38 for special courses which may be offered by this academic unit.

FRENCH

Any two of the 200 level courses may be taken in any order or simultaneously to satisfy the Liberal Arts and Sciences 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 functional application to literary usage. Four lectures, 1 hour laboratory. Prerequisite: FRE 102†, 111 or equivalent. [Satisfies General Studies Requirement G]

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. One hour laboratory required. Pre

94 FOREIGN LANGUAGES

requisite. FRE 102†, 111 or equivalent [Satisfies General Studies Requirement: G]

205 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 [Satisfies General Studies Requirements: HU, G]

207 French for International Professions II. (8) S
Continuation of FRE 107. A tentative to FRE 201-203 sequence. Expansion of communicative proficiency in specific areas of international professions. Prerequisite: FRE 107 or approval of instructor. [Satisfies General Studies Requirement: G]

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 205† or equivalent [Satisfies General Studies Requirement: G]

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 205† or equivalent [Satisfies General Studies Requirement: G]

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 [Satisfies General Studies Requirement: G]

321, 322 French Literature. (3-3) F, S
Representative masterpieces and significant movements of French literature. Prerequisite: FRE 205† plus either FRE 203† or FRE 311†, or equivalent [Satisfies General Studies Requirements: L2, HU, H]

410 French Phonetics and Diction. (2) F, 88
Theory and practical application. Prerequisites: FRE 311†, 312†, or equivalent.

411 Advanced Spoken French. (3) F
Improvement of spoken French. Prerequisites: nine hours of 300-level French, including FRE 311†, or equivalent. [Satisfies General Studies Requirement: G]

412 Advanced Written French. (3) S
Improvement of composition skills. Prerequisites: nine hours of 300-level French, including FRE 312† or equivalent. [Satisfies General Studies Requirement: G]

415 French Civilization. (3) S, 89
Political, intellectual, social, economic and artistic development of the French nation from its origins to the present. Prerequisite: six hours of upper-level French. [Satisfies General Studies Requirements: HU, G]

431 French Women in Society and the Arts. (3) N
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, 88
From 1600 to 1660. Prerequisite: nine hours of 300-level French including FRE 321†, or approval of instructor. [Satisfies General Studies Requirements: HU, H]

442 French Literature of the 17th Century. (3) S, 89
From 1660 to 1700. Prerequisite: nine hours of 300-level French, including FRE 321† or approval of instructor [Satisfies General Studies Requirements: HU, H]

445 French Literature of the 18th Century. (3) F, 88
Contributions of the philosophers, development of the novel and drama. Prerequisite: nine hours of 300-level French including FRE 321†, or approval of instructor [Satisfies General Studies Requirement: HU]

451 French Poetry of the 19th Century. (3) S, 89
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, 88
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 [Satisfies General Studies Requirements: HU, H]

453 Theater of the 19th Century. (3) N
From Romantic drama to the Symbolist Theater. Representative plays of Hugo, Musset, Vigny, Dumas, Becque, Rostand, Feydeau and Molière. Prerequisite: nine hours of 300-level French including FRE 322†, or approval of instructor.

461 Pre-Atomic Literature. (3) F, 87
Representative authors from Proust, Mauriac to Sartre, from 1900 to 1945. Prerequisite: nine hours of 300-level French, including FRE 322†, or approval of instructor [Satisfies General Studies Requirement: HU]

462 Post-Atomic Literature. (3) S, 88
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. [Satisfies General Studies Requirement: HU]

471 The Literature of Francophone Africa and the Caribbean. (3) F, 88
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. [Satisfies General Studies Requirements: L2, HU]

500 Bibliography and Research Methods. (3) F
Required of all graduate students.

510 Explication de Textes. (3) N
Detailed analysis of literary texts.

515, 516 Intellectual Currents in France, from the Middle Ages through the 20th Century. (3, 3) N
Significant social, aesthetic, philosophical and scientific ideas as presented by major writers of fiction and non-fiction.

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, 87
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, 88
Readings in French Renaissance literature with special attention to the humanist movement and to Rabelais, Montaigne and the Pléiade.

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 Existential Literature
- (i) Advanced Problems in French Literature
- (j) Flaubert
- (k) Stendhal and Zola

See page 38 for special courses which may be offered by this academic unit.

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.

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. Four lectures, 1 hour laboratory. Prerequisite: GER 102† or 111 or equivalent. [Satisfies General Studies Requirement G]

303, 304 Scientific German. (3-3) F, S N
Acquisition of a specialized vocabulary through the reading of German scientific publications. Prerequisite: GER 102† or 111.

311, 312 German Conversation. (3-3) F S
Expansion of domain through oral practice dealing with contemporary articles, essays and stories. (Three-hour credit limit for majors. Prerequisite: GER 202† or equivalent. [Satisfies General Studies Requirements HU SB, G])

313 German Composition. (3) S
Intensive practice in writing, emphasizing style and grammar. Prerequisite: GER 202† or equivalent. [Satisfies General Studies Requirements: HU, SB, G]

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 N
Organization and presentation of clear, effective business communications; vocabulary applicable to modern business usage. Prerequisite: GER 313† or approval of instructor. [Satisfies General Studies Requirements. SB G]

321, 322 German Literature. (3-3) F '87 S '88
From the beginning to classicism and from romanticism to the present. Prerequisite: GER 202† or approval of instructor. [Satisfies General Studies Requirements. HU; SB G 322]

411 Advanced Grammar and Conversation. (3) F
Improvement of dictation and domain through intensive oral review. Prerequisite: GER 311† or 312† or equivalent. [Satisfies General Studies Requirements G HU SB]

412 Advanced Grammar and Composition. (3) S
Improvement of writing ability. Prerequisite: GER 313† or equivalent. [Satisfies General Studies Requirements G HU, SB]

415, 416 German Civilization. (3) F '87, S '88
Aspects of political, social and cultural life of the German speaking world. Prerequisite: any 300 level course in German or approval of instructor. [Satisfies General Studies Requirements: SB, G, HU H (415)]

445 German Literature: Enlightenment to Classicism. (3) F N
Major works of the literary epochs in the 18th century. Prerequisite: GER 321† or approval of instructor.

451 German Literature: Biedermeier to Naturalism. (3) N
Representative works of prose and poetry from 1820 to 1890. Prerequisite: GER 322† or approval of instructor.

461 Contemporary German Literature. (3) S '87
German writers since 1945. Prerequisite: GER 322† or approval of instructor.

500 Bibliography and Research Methods. (3) F '88
Required of all graduate students.

511 German Stylistics. (3) F '87
Art of writing literary German; comparative stylistics.

521 History of German Language. (3) F '87
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) N
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) S '88
Reading and discussion of specimens of the Middle High German epics, romances and other literary genres.

541 Baroque. (3) F N
Studies in poetry, prose and drama of the 17th and early 18th centuries.

551 Romanticism. (3) S '88
Treatment of early and late Romanticism.

555 Modern German Literature. (3) SS '87
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) Keats
- e) Kafka
- f) Hesse
- g) Grass and Böll
- h) Germanic Studies

See page 38 for special courses which may be offered by this academic unit.

GREEK

Completion of GRK 101, 201, 301 and 302 will satisfy the Liberal Arts and Sciences 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

96 FOREIGN LANGUAGES

repeated for credit Prerequisite: GRK 201† or approval of instructor [Satisfies General Studies Requirement HU]

See page 38 for special courses which may be offered by this academic unit.

ITALIAN

ITA 101, 102 Elementary Italian. 4 4) F S

Aural/oral drill in class and laboratory and basic grammar supplemented by sample 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. Four lectures, 1 hour laboratory Prerequisite: ITA 102† or equivalent [Satisfies General Studies Requirement: G]

311, 312 Italian Composition and Conversation. (3 3) F S

Development of writing ability and oral expression. Prerequisite: ITA 202† or equivalent [Satisfies General Studies Requirement: G]

314 Advanced Italian. 3 N

An advanced grammar and composition course with readings of selected literary works. Prerequisite: ITA 202 or approval of instructor [Satisfies General Studies Requirements: HU, G, H]

325 Introduction to Italian Literature. (3 F

Italian literature through the interpretation of representative works in drama, poetry and novel. Prerequisite: ITA 312† or approval of instructor [Satisfies General Studies Requirements: HU, H]

415 Italian Civilization. 3 N

A general survey of the history, literature, art, and music, emphasizing Italy's cultural contribution to Western civilization. Prerequisite: 6 hours of upper division Italian. [Satisfies General Studies Requirements: HU, G, H]

430 Italian Literature of the Middle Ages. 3 N

Emphasis on St. Novato, Dante's minor works, Petrarch and Boccaccio. Prerequisite: ITA 325 or approval of instructor [Satisfies General Studies Requirements: HU, H]

441 Dante: *Divina Commedia*. 3 N

Critical reading of the three *Cantiche*: *Inferno*, *Purgatorio*, *Paradiso*. Prerequisite: ITA 325† [Satisfies General Studies Requirements: HU, H]

443 Italian Literature of the Renaissance. (3) N

Emphasis on Lorenzo de' Medici, Poliziano, Castiglione, Machiavelli, Ariosto and Tasso. Prerequisite: ITA 325 or approval of instructor [Satisfies General Studies Requirements: HU, H]

446 Italian Literature of the 18th and 19th Century. (3) N

Goethe, Parini, Alfieri, the poetry of Foscolo and Leopardi and the socio-historical novel of Foscolo, Manzoni and Verga. Prerequisite: ITA 325 or approval of instructor [Satisfies General Studies Requirements: HU, H]

449 20th Century Italian Literature. 3 N

Major works, figures and movements of contemporary Italian literature. Prerequisite: ITA 325† [Satisfies General Studies Requirements: HU, G, H]

See page 38 for special courses which may be offered by this academic unit.

JAPANESE

JPN 101, 102 Elementary Japanese. 5, 5) F S

Communication skills, basic grammar, basic reading and writing skills including hiragana, katakana, and about 250 kanji. 5 lectures plus arranged laboratory

107 Japanese for International Professions I. 10) F '87

Accelerated program alternative to JPN 101, 102 sequence. Functional approach to needs of international professions. Ten class hours plus arranged laboratory

201, 202 Intermediate Japanese. (5 5) F, S

Continued development of communication skills. Increased emphasis on reading and writing. Review of fundamentals of structure to increase student's ability in composition and translation. Five lectures plus arranged laboratory. Prerequisite: JPN 102† or equivalent [Satisfies General Studies Requirement: G]

206 Calligraphy. 1 N

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 '88

Continuation of JPN 107, alternative to JPN 201, 202 sequence. Expansion of communication and proficiency in specific areas of international professions. Ten class hours plus arranged laboratory. Prerequisite: JPN 107 or approval of instructor [Satisfies General Studies Requirement: G]

309, 310 Intermediate Japanese Conversation. (2, 2) F '87 S '88

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† [Satisfies General Studies Requirement: G]

311, 312 Japanese Conversation and Composition. (3 3) F '88 S '89

Intensive aural/oral practice leading toward conversational fluency. Practice in writing Japanese emphasizing current usage. Prerequisite: JPN 202† [Satisfies General Studies Requirement: G]

313, 314 Advanced Japanese. 3 3) F, S

Continued development of ability to communicate orally and in writing. Exposure to the variety of Japanese written styles. Prerequisite: JPN 202† or equivalent [Satisfies General Studies Requirement: G]

321 Japanese Literature. 3, 3) N

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 [Satisfies General Studies Requirements: L2, G, H]

414 Introduction to Classical Japanese. 3 S '89

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 [Satisfies General Studies Requirement: H]

See page 38 for special courses which may be offered by this academic unit.

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. [Satisfies General Studies Requirement. HU]

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.

See page 38 for special courses which may be offered by this academic unit.

PORTUGUESE

Completion of POR 101, 201, 313, and 314 will satisfy the Liberal Arts and Sciences 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. [Satisfies General Studies Requirement. G]

313, 314 Portuguese Composition and Conversation. (3, 3) F, S
Designed to develop skill in written Portuguese and correct oral expression. Must be taken in sequence. Prerequisite: POR 201† or approval of instructor. [Satisfies General Studies Requirements. HU, G]

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. [Satisfies General Studies Requirement. HU]

472 Luso-Brazilian Civilization. (3) N
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. [Satisfies General Studies Requirements. HU, G]

See page 38 for special courses which may be offered by this academic unit.

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. Four lectures, 1 hour laboratory. Prerequisite: RUS 102† or equivalent. [Satisfies General Studies Requirement. G]

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†. [Satisfies General Studies Requirements: SB, G]

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 and Sciences 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†. [Satisfies General Studies Requirements. SB, G]

321, 322 Survey of Russian Literature. (3, 3) F, S
The major literary movements, prominent authors and the most significant works of prose, poetry and drama to the 1917 revolution. Prerequisite: RUS 202† or equivalent. [Satisfies General Studies Requirement. H]

323 Survey of Soviet Literature. (3) F, S
The major 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. [Satisfies General Studies Requirements. G, H]

411, 412 Advanced Composition and Conversation. (3, 3) F, S
Designed to improve aural-diction, self-expression in oral and written skills, emphasizing vocabulary building. Subject material drawn from current Soviet publications. Prerequisite: RUS 312†. [Satisfies General Studies Requirements: SB, G]

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†. [Satisfies General Studies Requirement. SB]

420 Russian Poetry. (3) N
Development of Russian poetry from its beginnings to the present, including both native and emigre poets. Topics in criticism and the study of poetries. Prerequisite: RUS 312† or approval of instructor. [Satisfies General Studies Requirement. H]

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 and Sciences language requirement for B.A. degree. [Satisfies General Studies Requirement. H]

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 and Sciences language requirement for B.A. degree. [Satisfies General Studies Requirement: H]

424 Tolstoy. (3) N
Tolstoy's major works including *War and Peace* and *Anna Karenina*. Taught in English. Does not satisfy the Liberal Arts and Sciences language requirement for B.A. degree. [Satisfies General Studies Requirement: H]

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 and Sciences language requirement for B.A. degree. [Satisfies General Studies Requirement: H]

98 FOREIGN LANGUAGES

426 Soviet Dissident Literature (1917-Present). 3) N
Incl uding such authors as Khvylovy, Pasternak, Solzhenitsyn, Danilov, Voinovich, Zinov'ev, Belevica, Vencova and others. Prerequisite: RUS 312† or approval of instructor. [Satisfies General Studies Requirements: G, H]

430 Russian Short Story. 3) N
Detailed study of representative works of the Russian short story genre. Authors included are from both Imperial and Soviet Russia. Prerequisite: RUS 312† [Satisfies General Studies Requirement: H]

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 Slavonic. Prerequisite: RUS 312† or approval of instructor. [Satisfies General Studies Requirement: SB]

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. Exclusive use of Russian language source materials. Prerequisite: RUS 312† or approval of instructor. [Satisfies General Studies Requirements: SB, G]

591 Seminar. (3) N
Topics may be selected from the following:
(a) Pre-19th Century Russian Literature
(b) 19th Century Russian Literature
(c) Russian Poetry to 1890
(d) Russian Poetry 1890 to Present
(e) Russian Literary Criticism
(f) Soviet Socialist Realism
(g) Contemporary Soviet Authors

See page 38 or special courses which may be offered by this academic unit.

SPANISH

SPA 101, 102 Elementary Spanish. (4) 4) F, S, SS
Fundamentals of the language. Emphasis on listening, speaking, reading and writing. Not open to students with credit in SPA 111. Four lectures, 1-hour laboratory.

107 Spanish for International Professions I. 8) F
Accelerated program alternative to SPA 101, 102 sequence. Functional approach to needs of international professions.

111 Fundamentals of Spanish. (4) F, S
Primarily for students with two years of high school Spanish who need review to enter second-year study. Not open to students with credit in SPA 102. Four lectures, 1-hour laboratory.

201, 202 Intermediate Spanish. (4) 4) F, S, SS
Continuation of fundamentals. Emphasis on the development of the skills of reading, listening, comprehending, speaking, writing, and culture. Four lectures, 1-hour laboratory. Prerequisite: SPA 102† or 111. [Satisfies General Studies Requirement: G]

203, 204 Intermediate Spanish for Bilinguals. (4) 4) F, S
Designed to meet the needs of the Spanish-speaking student. May be taken in lieu of 201-202. Emphasis on composition, literature, conversation and review of grammar fundamentals. Four lectures, 1-hour laboratory. Prerequisite: SPA 102† or 111 or placement. [Satisfies General Studies Requirement: G]

207 Spanish for International Professions II. 8) S
Continuation of SPA 107, alternative to SPA 201, 202 sequence. Expansion of communicative proficiency in

specific areas of international professions. Prerequisite: SPA 107 or approval of instructor. [Satisfies General Studies Requirement: G]

311, 312 Spanish Conversation. (3) 3) F, S
Designed primarily for non-majors to promote vocabulary building and communicative expression in Spanish through discussions based on cultural readings. Prerequisite: SPA 202† or equivalent. [Satisfies General Studies Requirement: G]

313, 314 Spanish Conversation and Composition. (3, 3) F, S, SS
Designed to develop skill and accuracy in spoken and written Spanish. Required of majors to be taken in sequence. Prerequisite: SPA 202† or equivalent. [Satisfies General Studies Requirement: G]

315, 316 Spanish Conversation and Composition for Bilinguals. (3) 3) F, S
Designed to meet the needs of the Spanish-speaking student. Emphasis on comparing standard Spanish to the student's knowledge of regional Southwest Spanish. May be taken in lieu of 313-314. Prerequisite: 202† or 204† or approval of instructor.

319 Business Correspondence and Communication. (3) S
Organization and presentation of clear, effective business communications, vocabulary applicable to modern business usage. Prerequisite: SPA 202† or 316† or approval of instructor. [Satisfies General Studies Requirement: G]

325 Introduction to Hispanic Literature. (3) F, S
A critical approach to and analysis of literary types: poetry, drama, short story and novel. Required of all majors. Prerequisite: SPA 202† or 204†. [Satisfies General Studies Requirement: HU]

412 Advanced Conversation and Composition. (3) F, S
Oral and written Spanish communication skills with particular attention given to developing fluency and facility. Required of majors. Prerequisite: SPA 314† or 316† or approval of instructor. [Satisfies General Studies Requirement: G]

413 Advanced Spanish Grammar. (3) F
Intensive analysis of the Spanish language. Required of teaching majors. Prerequisite: SPA 314† or 316† or approval of instructor. [Satisfies General Studies Requirement: G]

417 Spanish Phonetics and Phonology. (3) F '87
Introduction to the theory and practice of Spanish phonetics and phonology. Prerequisite: SPA 314† or 316†

420 Applied Spanish Linguistics. (3) S
Application of linguistic principles to the acquisition, analysis and teaching of Spanish. Prerequisite: FLA 400 or any other introductory linguistics course. [Satisfies General Studies Requirement: SB]

421 Spanish in the Southwest. (3) F '88
Analysis of Southwest spoken and written Spanish as compared to standard Spanish. Designed for students preparing for bilingual cultural work. Prerequisite: SPA 314† or 316† or approval of instructor. [Satisfies General Studies Requirements: HU, SB]

424 Masterpieces of Hispanic Literature. (3) S
Selections from the literature of the Hispanic world and discussion of its cultural background. Required of but not limited to teaching majors. Prerequisite: SPA 325†. [Satisfies General Studies Requirements: L2, HU]

425, 426 Spanish Literature. 3 F S
Survey of Spanish literature from its beginning to the present Prerequisite SPA 325† [Satisfies General Studies Requirement: HU]

427, 428 Spanish-American Literature. (3, 3 F S
Survey of major works, figures and movements from Colonial period to 1880 and from 1880 to present Prerequisite: SPA 325† [Satisfies General Studies Requirement: G (428)]

429 Mexican Literature. 3) N
Selected readings from pre-Columbian writers/poets (e.g., Macu xóchtli) through the novel of the Revolution to the present Prerequisite SPA 325†.

434 Drama of the Golden Age. 3 S '89
Dramatic works of Lope de Vega, Calderón de la Barca and the 17th-century contemporaries Prerequisite: SPA 325†

435 Cervantes - Don Quixote. (3) F 88
Don Quixote and the development of the novel Prerequisite SPA 325†

436 Generation of 1898. 3 S 88
Works of Unamuno, Baroja, Azorín and the 19th-century contemporaries studied against the ideological background of the turn of century in Spain Prerequisite: SPA 325†

437 20th Century Spanish Poetry. 3) F 87
Major trends in Spanish poetry from Modernism to present. Prerequisite: SPA 325†

454 19th Century Spanish American Narrative. 3 F '87
Principal works in the novel, short story, narrative fiction and narrative (Gauguin) poetry Prerequisite SPA 325†.

455 Spanish American Modernism. 3) S 89
Principal works and figures of Literary Modernism, 1880-1920; emphasis on international literary context of the movement. Prerequisite: SPA 325†

456 20th Century Spanish American Fiction. (3) S 88
Major works and movements Prerequisite: SPA 325†.

457 Contemporary Spanish American Poetry. 3 F 88
Major works and problems in contemporary poetry and poetics with emphasis on Paz, Parra, Cardena and new poetry since 1960 Prerequisite SPA 325†

464 Mexican American Literature. (3) F
Representative literature in Spanish and English by Mexican Americans, emphasizing socio-cultural as well as literary values Prerequisite SPA 325† [Satisfies General Studies Requirement: HU]

471 Civilization of the Spanish Southwest. 3 S
The political, economic, social and artistic development of the Spanish speaking people of the Southwest Prerequisite SPA 314† or 316† or approval of instructor [Satisfies General Studies Requirements: HU, SB]

472 Spanish-American Civilization. 3 F
Growth of the institutions and cultures of Spanish American people Prerequisite SPA 314† or 316† or approval of instructor [Satisfies General Studies Requirement: HU, SB, G, H]

473 Spanish Civilization. 3 S
Political, economic, social and artistic development of the Spanish nation from its origin to the present Prerequisite SPA 314† or 316† or approval of instructor [Satisfies General Studies Requirement: HU, SB, G]

485 Mexican American Short Story. 3 N
Critical study of contemporary short stories by Mexican American authors with emphasis on the Spanish

language writings Prerequisite SPA 325†, or approval of instructor.

486 Mexican American Novel. (3) N
Social and literary contexts of representative novels, emphasizing the Spanish language writings. Prerequisite SPA 325†, or approval of instructor.

487 Mexican American Drama. (3) N
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 87
The major dialects of Spanish in the Americas and the historical, social and cultural development Prerequisite SPA 540 or approval of instructor

542 Studies in the Spanish of the Southwest. (3) S 88

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 '89
Analysis and discussion within the framework of contemporary linguistic theories of selected problems in Spanish morphology, syntax and semantics Prerequisite FLA 400 or equivalent

545 Concepts of Literary Criticism. 3) F 88
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 Galdos

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, Sainas and Alendá

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

100 FOREIGN LANGUAGES / GEOGRAPHY

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 poet's developments 1920-1940 with emphasis on Hu Dobro, Valero, 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 nationalities: 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 (Guzmán, Azuela, Urquiza, Muñoz Romero), including related or peripheral offshoots and 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 modes for the critical analysis of these materials

591 Seminar. 3 N

Spanish and Spanish American literary culture, and linguistic topics

691 Figures and Works Seminar. 3 N

Topics may be selected from Spanish and Spanish American literatures. Prerequisite for SPA 590: approval of instructor, advisor and department chair. Secure forms in the Foreign Languages office

See page 38 for special courses which may be offered by this academic unit.

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, 121, 375, and 495; an additional 3 or 4 hour course in GPH, and an additional 3 hour course in GCU. 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.

Area Studies Emphasis. (See Certificate Programs, pages 63-64)—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 optional. Students who wish to graduate with a B.A. or B.S. in Geography are not obligated to choose one of these emphases.

Urban Studies Emphasis The required courses are GPH 111 or 411; 371 and 491, GCU 102, 121, 359 or 360, 361, 357, 375, 444 and 495. In addition, students must select one from the following list of options: GCU 351, 364, 453, 461, and GPH 481. If GPH 481 is not selected, a further 3-hour course in GPH is required. At

Geography

PROFESSORS:

GOBER (COB 338), BRAZEL BURNS,
COMEAX, GRAF, MARCUS McTAGGART,
WE GEND

ASSOCIATE PROFESSORS:

ACKER ALDRICH MINGS PASQUALETTI,
SARGENT

ASSISTANT PROFESSORS:

CERVENY, HENKEL, McHUGH PHILLIPS,
SHAW

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, 121, 375 or 495, GPH 212, 213, 214, 215, 310, 311, 371, 412, 413, 491. Students must also choose one other 3-hour course in GCU. Also required are the following related courses: 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.

Laboratory of Climatology

Dr. A. J. Brazel is Director of the Laboratory of Climatology and is Arizona's Governor appointed State Climatologist, a position formerly part of the National Weather Service of NOAA. The Laboratory performs pure and applied climatic research and supports both undergraduate and graduate students at Arizona State University. The Laboratory maintains an extensive archive of climatic and meteorologic information on Arizona and the western United States of America.

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. [Satisfies General Studies Requirement: SB]

121 World Geography.

(4) F S Description and analysis of area variations in social, economic and political phenomena in major world regions. [Satisfies General Studies Requirements: SB, G]

141 Introduction to Economic Geography. (3) F, S Production, distribution and consumption of various types of commodities of the world and relationship to the activities of man. [Satisfies General Studies Requirement: SB]

209 Introduction to the Study of Energy. (3) F An integrative non-technical introduction to many aspects of energy including power plants, resources, aesthetics, environment, geography, economics, policy, Federal trip. [Satisfies General Studies Requirement: SB]

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. [Satisfies General Studies Requirements: SB, H]

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. [Satisfies General Studies Requirements: SB, G]

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. [Satisfies General Studies Requirement: SB]

326 Geography of Asia. 3 S Spatial distribution of relevant physical, economic and cultural phenomena in Asia, excluding the U.S.S.R. [Satisfies General Studies Requirements: SB, G]

327 Geography of Africa. 3 F Spatial distribution of relevant physical, economic and cultural phenomena in Africa. [Satisfies General Studies Requirements: SB, G]

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. [Satisfies General Studies Requirements: SB, G]

351 Population Geography. (3) S Demographic patterns, spatial, temporal and structural investigation of the relationship of demographic variables to cultural, economic and environmental factors. [Satisfies General Studies Requirement: SB]

352 Political Geography. (3) S Relationship between the socio-physical environment and the state. [Satisfies General Studies Requirements: SB, G]

357 Social Geography. 3 F Environmental perception of individuals and groups. The spatial aspect of social and physical environments stressed. [Satisfies General Studies Requirement: SB]

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, South

102 GEOGRAPHY

east Asia, Europe Second semester Latin America
Anglo America Sub-Saharan Africa Australasia [Satisfies
General Studies Requirement G]

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. [Satisfies
General Studies Requirement SB]

364 Geography of Energy. 3) F

Production transportation and consumption of energy
emphasizing the electric power industry and its environ-
mental problems. [Satisfies General Studies Require-
ment SB]

375 Introduction to Geographic Research Methods. 3) S

Scientific techniques used in geographic research Pre-
requisite: approval of instructor

401 Topics in Cultural, Economic and Political Geography. 1 3 F S SS

Open to students qualified to pursue independent stud-
ies Field trips may be required Prerequisite: approval of
instructor [Satisfies General Studies Requirement SB]

421, 423, 424, 426, 428, 431, 432.

Courses concern spatial distribution of relevant physical,
economic and cultural phenomena in the area de-
signed.

421 Geography of Arizona and Southwestern United States. 3) F

423 Geography of South America. 3 F

Prerequisite: GCU 323 or approval of instructor.

424 Geography of Middle America. 3 S

Central America Prerequisite: GCU 323 or approval of
instructor

426 Geography of the Soviet Union. 3) S

Prerequisite: GCU 121 or approval of instructor

428 Geography of Middle East. 3 N

The Near East, emphasizing current political and eco-
nomic developments Prerequisite: GCU 121 or approval
of instructor [Satisfies General Studies Requirements
SB, G]

431 Geography of the Far East. 3) N

Japan China, Korea excluding the U.S.S.R. Prerequisite:
GCU 326 or approval of instructor

432 Geography of Sub-Saharan Africa. 3 N

A regional analysis, emphasizing south of the Sahara
Prerequisite: GCU 327 or approval of instructor.

441 Economic Geography. 3 F, S

Spatial distribution of primary secondary and tertiary
economic and production activities Prerequisite: GCU
141 or approval of instructor

442 Geography of Transportation. 3 N

Geographic analysis of world trade routes and trans-
portation systems Prerequisite: GCU 141 or 441

444 Applied Urban Geography. 3 N

Designed to prepare the student for employment in
planning agencies includes application of urban geo-
graphical principles to present day planning problems
Prerequisite: GCU 361

453 Recreational Geography. 3 S

Examination of problems surrounding the organization
and use of space for recreation introducing geographical
field survey methods of data collection and analysis
Saturday field trips may be required

455 Historical Geography of Anglo-America. 3) N

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

Philosophy of the planning concept, nature and function
of planning commissions and development of compre-
hensive plans Prerequisite: GCU 361 or 444† or
approval of instructor

462 Geography of Food and Famine. 3 S

Spatial distribution of relevant physical economic and
cultural factors influencing production and consumption
of foodstuffs. Field trips may be required

474 Federal Public Land Policy. 3 S

Geographic aspects of federal public lands policy man-
agement and issues. Emphasis on western wilderness
and resource development problems

495 Quantitative Methods in Geography. 3 A

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 con-
ducted by geography students faculty and invited
guests May be repeated for credit

526 Spatial Land Use Analysis. 3 S

Determination classification and analysis of spatial
variations in land use patterns Examination of the pro-
cesses affecting land use change Prerequisite: 15
hours of geography or approval of instructor

529 Contemporary Geographic Thought. 3) S

Comparative evaluation of current philosophy concern-
ing the nature and trends of geography Prerequisite: 15
hours of geography and approval of instructor.

585 Advanced Research Methods in Geography. 3) F

Specialized research techniques and methodologies in
economic political or cultural geography

591 Seminar. (1-3) F, S, SS

Selected topics in economic political or cultural geogra-
phy. Field trips may be required

596 History of Geographic Thought. 3) N

Development of geographic thought from Herodotus and
Strabo to Humboldt and Ritter

See page 38 for special courses which may be
offered by this academic unit

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 functional relationships among climate
and forms of soil, water and plants Three lectures 3
hours laboratory Field trips are required [Satisfies
General Studies Requirements S1, S2]

210 Physical Environment. 3 F

Principles of physical geography relating to environ-
mental problems pertinent to contemporary society.
Position, magnitude and use resource exploitation.

211 Landform Processes. 3 S

Geographic characteristics of landforms and earth
surface processes emphasizing erosion transportation,

deposition and implications for human management of the environment Prerequisite: GPH 111

212, 213 Introduction to Meteorology I, II. (3 3 A) Atmospheric processes and elements. General and local circulation, heat exchange and atmospheric moisture. Students whose curriculum require a laboratory course must also register for GPH 214† 215† Prerequisite: GPH 111 or approval of instructor. [*Satisfies General Studies Requirement: S2 212*]

214, 215 Introductory Meteorology Laboratory. 1 1 A

Introduction to meteorological observations and measurement. Numerical and cartographic interpretation of weather data. May be taken concurrently with, or subsequent to, GPH 212† 213† respectively. Three hours laboratory. [*Satisfies General Studies Requirement S2 214*]

271 Maps and Map Reading. 3 F

Techniques of interpretation of the many types of maps, map projections and history of mapping. Field trips are required. Prerequisite: GPH 111

310, 311 Synoptic Meteorology I, II. 4 4 F 87 S 88

Diagnostic techniques and synoptic forecasting. Includes practical operation of field stations and techniques of weather analysis. Field trips are required. Three lectures. 3 hours laboratory. Prerequisite: GPH 212† 213† or approval of instructor

317 Marine Geography. 3 F, S

Spatial analysis of the physical characteristics and potential economic and cultural resources of the oceans. Prerequisite: GPH 111 or 411, or approval of instructor

371 Cartography. 3 F, S

Basic map drafting, grid compilation, simple design and use of cartographic instruments. Field trips are required. Six hours laboratory. Prerequisites: GPH 111 and 271† or approval of instructor

372 Air Photo Interpretation. 3 S

Aerial photographs as a means of determining topography, vegetation and cultural resources. Use of index, vertical and oblique photographs and stereoscopes. Prerequisites: GPH 111 211†

373 Cartographic Design. 3 A

Optimizing the communication of spatial information and concepts. Includes cartographic decisions on making, symbol, form, perceptions, color, topography projections, and scale. Prerequisite: GPH 371 and approval of instructor

381 Geography of Natural Resources. 3 S

Nature and distribution of natural resources and the problems and principles associated with their use. [*Satisfies General Studies Requirement SB*]

401 Topics in Physical Geography. 1 3 F S, SS

Open to students qualified to pursue independent studies. Field trips may be required. Prerequisite: approval of instructor

405 Energy and Environment. 3 S

Sources, regulatory and technological controls, distribution, and consequences of the supply and human use of energy. Prerequisites: students are expected to have taken courses in the physical and/or life sciences as preparation, or approval of instructor. [*Satisfies General Studies Requirement SB*]

411 Physical Geography. 3 F, S

Introduction to physical geography and the physical elements of the environment. Open only to students who have not taken GPH 111. Field trips are required

412 Physical Climatology. (3 S

Physical processes of the earth-atmosphere system on regional and global scales, concepts and analysis of

energy, momentum and mass balances. Fieldwork required. Prerequisite: GPH 212† 213† or 310†, or approval of instructor

413 Meteorological Instruments and Measurement. 3 A

Design and operation of ground-based and aerological weather measurement systems. Collection, reduction, storage, retrieval and analysis of data. Field trips are required. Prerequisite: GPH 212† 213†, or approval of instructor

414 Climatic Analysis. 3 F

Processes that produce variations in climate over time and space. Includes changes in climate produced by human and natural forces and involves the analysis of climatic data to identify temporal and spatial variations. Prerequisite: GPH 212† or approval of instructor

433 Alpine and Arctic Environments. 3 F

Regional study of advantages and limitations of the natural environment upon present and future problems involving resource distribution, human activities, a regional and interregional adjustments. Field trips are required. Prerequisite: GPH 111 or approval of instructor

471 Geographic Information Systems. 3 A

GIS as a basis for microcomputer spatial analysis and synthesis. Includes digitizing, database organization, spatial retrieval, and graphics. Prerequisite: Approval of instructor

474 Dynamic Meteorology I. 3) F 88

Large-scale atmospheric motion, kinematics, Newton's laws, wind equation, baroclinicity, the meridional circulation. Prerequisites: GPH 212, 213, 214 215 MAT 270 271 PHY 111 112, GPH 310 or 311 or approval of instructor

475 Dynamic Meteorology II. 3) S 89

Topics in climate dynamics. General circulation, numerical modeling, teleconnections, phenomena, surface-atmosphere interaction. Prerequisite: GPH 474 or approval of instructor

481 Environmental Geography. 3) S

Problems of environmental quality, including uses of spatial analysis, research design and fieldwork in urban and rural systems. Field trips are required. Prerequisite: approval of instructor

491 Geographic Field Methods. 6 SS

Field techniques including use of aerial photos, large-scale maps, fractal, code system of mapping, urban and rural field analysis to be done off-campus. Travel fees required. Prerequisite: approval of instructor

511 Fluvial Processes. 3 A

Geographic aspects of fluvial geomorphology with emphasis on river channel change, fluvial erosion, and sedimentation in the present environment. Prerequisites: GPH 111 or GLG 101 and GPH 211 or GLG 362

571 Computer Mapping and Graphics. 3) F

Utilization of the digital computer in analysis and mapping of geographic data. Includes plotting, surficial display, composition and graphics. Field trips are required. Prerequisites: GPH 371† and approval of instructor

575 Geographic Applications of Remote Sensing. (3) S

Use of magnetic and non-magnetic methods of remote acquisition of data including satellite sensors, airborne radar, multi-band scanning, conventional photographic sensors and ground-based equipment. Field trips are required. Prerequisites: GPH 372† GCU 585 or GPH

104 GEOGRAPHY GEOLOGY

591 Sem nar. (1 3 F, S)

Selected topics in physical geography. Field trips may be required.

See page 38 for special courses which may be offered by this academic unit.

Geology

PROFESSORS:

GREELEY (PS F 686), BURT, BUSECK,
HOLLOWAY, KNAUTH, KRINSLEY LARIMER,
LUNDIN, MAL N MOORE PÉWÉ, RAGAN,
SHERIDAN STUMP

ASSOCIATE PROFESSOR:

F NK

ASSISTANT PROFESSORS:

CHRISTENSEN, PEACOCK, SMITH
TYBURCZY

PROFESSOR EMERITUS:

DIETZ

Departmental Major Requirements

Bachelor of Science Degree Curriculum

Geology 37 semester hours are required, including the following 'core courses' or their equivalent: GLG 100, or 101 and 103, or 301, 102† and 104; 310†, 321†, 323, 400 (2 semesters), and 450+. In addition, three of the following four 'branch courses' must be taken: 335†, 418†, 424†, 435. It is strongly recommended that the fourth branch course is also taken. Supporting courses required in related fields are CHM 113+, 116, PHY 115+, 116, 117, 118; MAT 290† and 291, or MAT 270†, 271 and 272, or MAT 270+, 271, and 274+. To complete the total required hours, other courses in geology or in related fields listed as approved by the department may be taken. GLG 472 cannot be used to fulfill the requirements for a major. French, German, or Russian is strongly recommended to fulfill foreign language requirement. (See Degree Requirements, page 59.)

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 and 103, 102, 310, 321†, 323, 335, 336, 362†, or

435+. Additional courses and substitutions that are necessary to complete the major will be selected 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 270†.

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 and 103, 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 *Graduate Catalog* for requirement.

GEOLOGY

GLG 100 General Geology. 4 F, S SS

Non-laboratory introduction to physical and historical geology. The earth's origin, processes that affect it, sequence of events in its evolution and succession of life upon it. GLG 100 and 101 may not both be taken for credit. Possible field trips.

101 Introduction to Geology. 3 F, S

Basic principles of geology. Geology, geochemistry and geophysics related to matter and processes acting upon and within the earth's crust. Rocks, minerals, weathering, earthquakes, mountain building processes, volcanoes, running water, ground water and glaciers. Three lectures. Possible weekend field trips. [Satisfies General Studies Requirements S1, S2]

102 Historical Geology and Modern Problems. 3 S

Basic principles of applied geology and the use of these principles in the interpretation of geological history. Three lectures. Possible weekend field trips. Prerequisite: GLG 101 [Satisfies General Studies Requirement S2]

103 Introduction to Geology Laboratory. 1 F, S

3 hours laboratory. Some field trips. Corequisite: GLG 101 [Satisfies General Studies Requirements S1, S2]

104 Historical Geology and Modern Problems

Laboratory. 1 S

Laboratory techniques involving map interpretation, cross sections, fossils. 3-hour laboratory. Possible field trips. Prerequisite: GLG 103 or equivalent. Corequisite: GLG 102 [Satisfies General Studies Requirement S1]

105 Introduction to Planetary Science. 3 F

Planets, asteroids, comets and meteorites, their geological evolution, surfaces, interior and atmospheres, exobiology, Terraforming and space colonies.

300 Geology of Arizona. 3 F, S

Basic and historical geology fossils mining, energy resources, environmental problems, and landscape development and meteorites, case studies from Arizona. Majors who have taken GLG 101 for credit may not enroll.

301 Geology for Engineers. 3 N

Physical geology emphasizing structural geology, groundwater and relation of geology to engineering problems. Two lectures, 3 hours laboratory. Some field trips during laboratory.

302 Man and Geologic Environment. 3) N

Geologic hazards, problems of waste disposal and land use planning, environmental problems related to soil erosion.

303 Geology of Arizona Laboratory. (1 F, S

Laboratory for GLG 300. 2 hours. Weekend field trip to Grand Canyon.

304 Geology of the Grand Canyon. (2) N

Review of the discovery history origin and geology of the Grand Canyon of the Colorado River in Arizona. Six day field trip down the river first six days after commencement (in May) required at student's expense. Field research and term paper on trip also required.

305 Geology of the Earth, Moon and Planets. 3) S

Geological studies of the planets and satellites through the analysis of spacecraft data and field studies. Weekend field trips. Prerequisite: GLG 100, 101, 105, 300 or equivalent.

310 Structural Geology. 3 S

Geologic structures and the mechanical processes involved in their formation. Two lectures, 3 hours laboratory. Possible field trips. Prerequisites: MAT 270† or 290†, GLG 101 or 301.

321 Mineralogy. 4 F

Crystallography, crystal chemistry and crystal physics as applied to minerals: determinative methods; origin and occurrence. Hand specimen study. Three lectures, 3 hours laboratory. Possible field trips. Prerequisites: CHM 116† or concurrent enrollment. MAT 270† or 290†.

323 Optical and X-ray Techniques. 3 S

Polarizing microscopy, optical crystallography and mineralogy introduction to X-ray techniques. Two lectures, 3 hours laboratory. Prerequisite: GLG 321†.

335 Principles of Paleontology. 2 F

Emphasis on preservation, growth, species concept and evolution as demonstrated by the fossil record. Two lectures. Prerequisites: MAT 270† or 290†, GLG 102† or approval of instructor.

336 Invertebrate Paleontology. 3 F

Biology skeletal morphology and systematics of fossil invertebrates. 6 hours of laboratory lecture. Possible field trips. Prerequisite: GLG 102† or approval of instructor. Pre- or corequisite for geology majors: GLG 335.

362 Geomorphology. 3 N

Land forms and processes which create and modify them. Laboratory and field study of physiographic features. Two lectures, 3 hours laboratory. Some field trips during laboratory, possible weekend field trips. Prerequisites: GLG 101, 310†, 424† or concurrent enrollment.

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 instructor.

405 Geology of the Moon. 3 N

Current theories of the origin and evolution of the Moon through photogeological analyses and consideration of geochemical and geophysical constraints. Possible weekend field trip. Prerequisite: GLG 105 or 305 or approval of instructor.

406 Geology of Mars. 3 N

Geological evolution of Mars through analyses of spacecraft data, theoretical modeling, and study of terrestrial analogs, emphasis on current work. Possible weekend field trip. Prerequisite: GLG 105 or 305 or approval of instructor.

412 Geotectonics. (3) F

Origin of continents and ocean basins. Evolution of the crust in time. Drifting sea floor spreading and other large scale movements of the earth's crust. Upper mantle processes. Emphasis on current work. Prerequisite: GLG 310†.

418 Geophysics. (3) F

Soil earth geophysics: geomagnetism, gravity, seismicology, heat flow, emphasizing crust and upper mantle. Two lectures, 3 hours laboratory. Some field trips during laboratory. Possible weekend field trips. Prerequisites: GLG 101 or 301, PHY 115†, 116, and MAT 272† or 291†; or approval of instructor.

419 Thermal-Mechanical Processes in the Earth. (3) S

Emphasis on applied mathematical techniques: heat conduction problems in geology, thermal convection, stresses in the lithosphere, viscoelastic processes in the Earth. Prerequisites: PHY 115†, 116†.

420 Volcanology. 3 A

Distribution of past and present volcanism: types of volcanicity, mechanism of eruption, form and structure of volcanoes, geochemistry of volcanicity. Possible weekend field trips. Prerequisite: GLG 424†.

424 Petrology-Petrography. 4 F

Theoretical and laboratory study of the origin and classification of igneous and metamorphic rocks. Hand specimens and thin section study of rocks. Three lectures, 3 hours laboratory. Possible weekend field trips. Prerequisites: GLG 321†, 323†.

435 Sedimentology. 3 S

Origin, transport, deposition and diagenesis of sediments and sedimentary rocks. Physical analysis, hand specimen examination and interpretation of rocks and sediments. Two lectures, 3 hours laboratory. Possible weekend field trips. Prerequisites: GLG 102, 321†, 323†.

436 Principles of Stratigraphy. 3 S

Sources of sediments, depositional environments and the principles of dating, correlation and naming of stratigraphic units. Three lectures. Possible weekend field trips. Prerequisites: GLG 102† and approval of instructor.

441 Ore Deposits. 3 N

Origin, occurrence, structure and mineralogy of ore deposits. Three lectures. Possible weekend field trips. Prerequisites: GLG 424† or approval of instructor.

446 Ground Water Geology. 3 N

Principles governing the occurrence, movement, quality, classification and recovery of underground water with special reference to Arizona. Possible field trips. Prerequisite: GLG 435†.

450 Geology Field Camp. 6 SS

Geological mapping techniques on aerial photos and topographic maps. Field based with excursions. Prerequisites: GLG 310†, 321†.

106 GEOLOGY

455 Advanced Field Geology. 4) F S

Geologic mapping in igneous, sedimentary, and metamorphic terranes of the Basin and Range province of Arizona. Weekend field trips. May be repeated for credit. Prerequisite: GLG 450† or approval of instructor.

456 Cordilleran Regional Geology. 3 F

Systematic coverage through space and time of the geology of the development of Western North America, emphasizing the Western United States. Prerequisite: Senior major or graduate student in geology or approval of instructor.

462 Environmental Geology of Cold Regions. 3 N

Geological and engineering importance of seasonal and perennially frozen ground, permafrost. Properties of strata on or in the ground and its application to engineering and land use problems. Possible weekend field trips. Prerequisites: GLG 101, 435†, PHY 111† and 113†, or approval of instructor.

472 Earth Science. 3 F S

Principles of earth science and the influence in forming the scenic features on the surface of the earth. GLG 472 cannot be taken for credit by one who has completed GLG 100 or 101 or the equivalent. Possible field trips.

481 Geochemistry. 3 F

Origin and distribution of the chemical elements. Geochemical cycles operating in the earth's atmosphere, hydrosphere, and lithosphere. Same as CHM 481. Prerequisites: CHM 341† or 441† or GLG 321†.

485 Meteorites and Cosmochemistry. 3 N

Chemistry of meteorites and their relationship to the origin of the earth, solar system and universe. Same as CHM 485. Prerequisite: GLG 481† or 482†.

490 Topics in Geology. 1-3 F S, SS

Special topics in following fields: mineralogy, petrology, economic geology, geochemistry, petroleum geology, regional geology, geomorphology, geophysics, planetary geology, paleontology, stratigraphy, sedimentology, volcanology, field geology and structural geology. May be repeated for credit. Prerequisite: approval of instructor.

500 Geology Colloquium. 1) F, S

Presentation of recent research by faculty and invited guests. One semester required for a geology graduate student. May be repeated for total of two semesters. Research paper required. Prerequisite: approval of instructor.

501 Geology of Arizona. 3 F S

Basic and historical geology, fossil mining, energy resources, environmental problems, landscape development, and meteorites. Case studies from Arizona. Three lectures. Research paper required.

504 Geology of the Grand Canyon. 2 S

Review of the discovery, history, origin and geology of the Grand Canyon of the Colorado River in Arizona. Six-day field trip down the river. First six days after commencement (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

Mechanics of rock deformation, emphasizing relationship between field observation, theory and experiment. Stress-strain simple constitutive relationships, failure criteria, and the basis of continuum methods. Possible field trips. Prerequisites: GLG 310†, 424† or approval of instructor.

520 Advanced Physical Volcanology. (3) A

Selected volcanologic topics, including explosive eruption processes, lava flow mechanics, and intrusive me-

chanisms. Field trips possible. Prerequisite: GLG 420† or approval of instructor.

523 Advanced Mineralogy-Crystallography. 3 S

Crystallography, principles of X-ray and electron diffraction, defects in crystals, electron microscopy of minerals. Three lectures. Prerequisites: GLG 321† or CHM 441 or equivalent.

524 Advanced Igneous Petrology. 3 N

Theoretical and practical aspects of the genesis of igneous rocks. Study of selected suites. Modern laboratory techniques. Two lectures. 3 hours laboratory. Possible weekend field trips. Prerequisite: GLG 424†.

525 Advanced Metamorphic Petrology. 3 N

Theoretical and laboratory study of metamorphic rocks. Processes of contact and regional metamorphism. Advanced methods and instrumentation. Two lectures. 3 hours laboratory. Possible weekend field trips. Prerequisite: GLG 424†.

550 Advanced Field Mapping. 4 F, S

Geologic mapping of areas with complex structural or facies relationships. Four weekend excursions. Course may be taken more than once for credit. Prerequisite: GLG 450† or approval of instructor.

561 Glacial Geology. 3 N

Properties distributed on and origin of glacial deposits, including principles of the stratigraphy and correlation. Environmental geology problems in glaciated regions. Two lectures, 3 hours laboratory. Some field trips during laboratory. Possible weekend field trips. Prerequisite: GLG 362†.

562 Quaternary Geology. (3) N

Geology of the Quaternary Period in both glaciated and unglaciated areas. Stratigraphy, correlation and environmental application of Quaternary deposits. Specific reference to the Southwest. Two lectures. 3 hours laboratory. Some field trips during laboratory, possible weekend field trips. Prerequisite: GLG 362† or approval of instructor.

581 Isotope Geochemistry. (3) N

Geochemistry and cosmochemistry of stable and radioactive isotopes, geochronology, isotope equilibrium. Same as CHM 581. Prerequisite: approval of instructor.

582 Physical Geochemistry. 3 N

Application of thermodynamic and kinetic principles to geochemical processes. Same as CHM 582. Prerequisite: GLG 321† or CHM 341 or 417† or 441†.

583 Phase Equilibria and Geochemical Systems. 3 N

Natural reactions at high temperatures and pressures. Sulfide and oxide equilibria. Same as CHM 583. Prerequisites: GLG 582† and approval of instructor.

591 Seminar. 1-3 F S, SS

Topics may be selected from the following:

- a) Igneous, Metamorphic, and Sedimentary Petrology
- b) Pleistocene Environment
- c) Advanced Geophysics
- d) Structural Geology
- e) Paleogeology
- f) Advanced Stratigraphy
- g) Mineralogy and Crystallography
- (h) Mineral Deposits
Geochemistry
- (j) Physical and Chemical Sedimentology
- k) Biostratigraphy
- (l) Environmental Geology
- (m) Planetary Geology

(n Stratigraphic Micropaleontology
 (o Volcanology
 See related courses ASB 541† Archaeology and Paleontology
 Analysis BOT 490† Paleobotany
 See page 38 for special courses which may be offered by this academic unit.

Health and Physical Education

PROFESSORS:

PANGRAZ (PEBW M 201, CORB N
 CORDER, DARST, KRAHENBUHL, LANDERS,
 ODENK RK, OSTERHOUDT PANGRAZI,
 PITTMAN, SKINNER, STONE, WELLS

ASSOCIATE PROFESSORS:

BURKETT DEZELSKY, SHREFFS

ASSISTANT PROFESSORS:

CUSIMANO, GRER, LARISH MARTIN, TRAN,
 VAN DER MARS

INSTRUCTOR:

MORGAN

Departmental Major Requirements Bachelor of Science Degree Curriculum

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 59.)

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Physical Education All majors are required to complete 45 semester hours of credit. Courses PED 110 (10 credits), 170, 335, 340, 345, 361, 376, 382, 450 or 451, 480, 483, DAN 367, and EED 313 are required. A 2.50 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)

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. Contact Intercollegiate Athletic Department to enroll in this program.

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, 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 health insurance, quackery and product safety.

108 HEALTH AND PHYSICAL EDUCATION

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 noncommunicable 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 Prerequisite: 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 examinations 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 nurse's role in 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 the 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 interrelationship 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

Coccidiosis, malaria, dengue, vector-borne diseases, rabies, airborne viruses, hepatitis, salmonella 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 Motivation 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 material, establishment of basic curriculum philosophies application of education principles, and sequence of course content

Students who complete satisfactory 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

See page 38 for special courses which may be offered by this academic unit.

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, scuba, karate, judo, handball, equitation, tennis, swimming, weight training, gymnastics and other activities Three hours a week May be repeated for credit

110 Professional Activities, Individual and Team Sports. 1-2 F, S

Skills, strategies and knowledge of selected physical activities One lecture one laboratory Physical Education majors only May be repeated for credit

170 Introduction to Physical Education. 3 F, S, SS

Orientation to and explanation of the field of physical education, to be taken in the freshman year Required of students majoring in physical education

175 Occupational and Physical Therapy. (2) S

Backgrounds, purposes and functions of the professions of physical therapy and occupational therapy the relationships to health professions and community agencies

183 Introduction to Athletic Training. (3) F

The role and responsibility of the athletic trainer, daily training room procedures and basic taping and wrapping skills

205 Physical Education Activity. 1 F, S, SS

Intermediate level Continue on of PED 105 Three hours a week May be repeated for credit

270 Instructorship in Standard First Aid. (2) F, S

For individuals seeking the Standard First Aid Certificate, leading to qualification as a first aid instructor Prerequisite: must be 18 years of age

283 Prevention and Care of Athletic Injuries. (3) F

Taping injury recognition, emergency care and observation procedures in athletic training Prerequisites: ZOL 201 and 202†

290 Sports Officiating. (3) F

Rules and mechanics of officiating used in football, basketball and volleyball

291 Theory of Coaching. (2) F, S

Theory of coaching competitive sports. Each class meets four hours per week. Physical education majors and coaching minors or approval of area chair

292 Sports Officiating. (3) S

Rules and mechanics of officiating used in softball, soccer and fast pitch, baseball, and track and field

305 Physical Education Activity. (1) F, S

Advanced level. Continuation of PED 205. Includes Red Cross Senior Life Saving, Red Cross Water Safety Instructorship. Three hours a week. May be repeated for credit. Prerequisite: Current Senior or Red Cross Life Saving Certificate and other aquatic activities

310 Collegiate Sports. (1) F, S

Credit may be given for participation in competitive sports. For men and women. May be repeated for a total of 4 credits. Time arranged "Y" grade only

325 Fitness for Life. (3) F, S

Physical fitness and benefits of exercise with emphasis on self-evaluation and personalized program planning for a lifetime

335 Biomechanics. (3) F, S, SS

Kinematics and dynamics applied to human movement. Development of biomechanical concepts for application in analysis and evaluation of neuromuscular skills. Prerequisite: 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 perceptual-motor behavior from infancy through adulthood. Acquisition of neuromuscular skills examined with references to biological, psychological and social determinants. Prerequisites: ZOL 201 and 202†.

346 Psychology of Coaching. (3) S, SS

Principles of learning applied to coaching sports. Psychological and social problems of coaching.

361 Physical Education in the Secondary School. (3) F, S, SS

Current trends and theories such as elective programs, coed classes, legal issues, contract teaching, curriculum and administration

376 Physical Education for the Elementary School.

(3) F, S, SS

Scope and values of physical education and movement education in the elementary school. Methods, materials and practice in teaching activities for primary, intermediate and upper grades

382 Physical Education for the Atypical Student. (3) F, S, SS

Handicapping conditions found among students and adaptation of exercises and activities to individual needs. Open to all students. Prerequisite: PED 335† or instructor's approval

383 Advanced Techniques and Evaluation of Athletic Injuries. (3) S

Evaluation of athletic injuries, recognition of the importance of physical exams, conditioning programs and identifying factors in athletics. Designed for students seeking NATA certification. Prerequisite: PED 283.

450 History of Physical Education. (3) F, S, SS

Development of physical education from ancient primitive to twentieth century civilization.

451 Philosophy of Physical Education. (3) F, S, SS

General notions of reality, knowledge, and values as related to physical education

480 Methods of Teaching Physical Education. (3) F, S

Methods of instruction, organization and presentation of appropriate content in elementary and secondary physical education. Concurrent with student teaching and/or permission of instructor

483 Evaluation in Physical Education. (3) F, S, SS

Analysis and construction of tests. Analysis of data and interpretation of measurement in physical education programs

485 Rehabilitation of Athletic Injuries. (3) S

Application of principles and practices regarding the use of modalities and rehabilitation techniques in the athletic training room. Designed for students seeking NATA certification. Prerequisite: PED 383

486 Coaching Athletic Training Internship. (1-6) F, S

Realization of theory of coaching athletics and/or athletic training techniques to practical application of coaching and/or athletic training techniques. "Y" grade only. Prerequisite: approval by discipline chair.

501 Research Statistics. (3) S

Statistical procedures, sampling techniques, hypothesis testing and experimental designs as they relate to studies reported in research publications

505 Research Laboratory. (3) F, S

Advanced research techniques in use and calibration of laboratory equipment utilized in cinematographic analysis, cardiorespiratory testing and motor learning experimentation

510 Introduction to Biomechanics Research

Methods. (3) S, SS

Application of basic mechanical concepts to human movement. Includes consideration of photostereotaxial segmental inertial property estimation and data processing methods

520 Psychology of Exercise and Sport. (3) F, SS

Principles derived from motor learning, motor development, and sport psychology applied to coaches' and athletes' behavior in competitive sport.

521 Motor Learning and Development. (3) F, S, SS

Theories and principles underlying motor learning, performance and development. Role of visual and kinesthetic perception and general and specific abilities in motor learning and performance

530 Exercise Physiology. (3) F, SS

Immediate and long-term adaptations to exercise with special reference to training and the role of exercise in cardiovascular health

534 Athletic Conditioning. (3) S, SS

Bases of sports conditioning including aerobic and anaerobic power, strength, flexibility, analysis of conditioning components for sports

536 Fitness Program Development. (3) F

Planning, organization and administration of fitness programs. Exercise testing and prescription. Programs for special groups

542 Environmental Aspects of Human Performance. (3) S

Mechanisms of physiological response of healthy human beings to desert, arctic, mountain and undersea environments, with emphasis on the effect of environmental stresses upon exercise performance

110 HEALTH AND PHYSICAL EDUCATION / HISTORY

550 Historical Bases of Physical Education. 3) F, S, SS

Golden Age of Greece Renaissance and modern Europe Cultural, economic and educational forces which influenced the development of physical education, dance and athletics in the United States

555 Sport and the American Society. (3 F, S, SS)
Impact of sports upon the American culture, with focus on competition, economics, myths, monuments and the Olympic syndrome

560 Theory of Administration. (3) F, S, SS
Administrative philosophies, development of concepts related to processes of administration, types of administrative behavior/tasks and responsibilities of the administrator, evaluation of the effectiveness of administration.

561 Administration of Athletics. (3) F, SS
Managing an athletic program, financing, budget policies, staging and promotion of athletic contests, schedules, travel insurance, and current athletic trends

562 Facility Development. 3 F, S
Principles, standards, personnel, designs and equipment utilized in the planning, construction and maintenance of indoor/outdoor facilities.

565 Improving Sport Skills. (3) N
Factors in successful motor performance in skills used in individual, dual, and team sports

570 Adapted Physical Education. (3) S, SS
Contemporary adapted developmentally remedial and corrective physical education programs, understanding of principles, problems and recent developments in this area

572 Trends and Issues in Physical Education. (3) F, S, SS
Literature, research and practices in contemporary physical education, including finances, Title IX, teaching and coaching philosophies, school organization and non-teaching physical education programs

573 Curriculum Construction in Physical Education. (3) F, S, SS
Application of principles, practices, and functional philosophies of curriculum making in physical education
Prerequisite: major in physical education 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 physical education and coaching athletics

575 Teaching Lifetime Fitness. 3 S, SS
Organizing and implementing physical fitness programs in the schools with emphasis on individual problem solving

576 Physical Education for Elementary School Children. 3 S, SS
Current practices and research pertaining to elementary school physical education programs

577 Movement Experiences for PreSchool Children. 3 SS, N
Movement activities for preschoolers based on the needs and characteristics of young children.

610 Biomechanics. 3 S
Advanced topics in biomechanics research including magnetic techniques, sampling theory, kinetics and muscle mechanics, evaluation of current research literature.
Prerequisite: PED 510 or consent of instructor.

620 Psychomotor Development. (3) S, SS
Analysis and discussion of current research results including theoretical models for conducting research. Prerequisite: PED 520.

621 Motor Learning. Alternate Years. (3) F
Role of general and specific abilities, as well as various perceptual components underlying motor learning and performance. Prerequisite: PED 520.

622 Sport Psychology. (3) S, SS
Theories and principles underlying the athletic behavior in competitive sports with emphasis on personality, motivation and team dynamics. Prerequisite: PED 520.
See page 38 for special courses which may be offered by this academic unit.

History

PROFESSORS:

TRENNERT (SS 204), BARLOW, BURG, GFFIN, HUBBARD, KLEINFELD, LUCKENHAM, PAULSEN, TAMBS, WARNICKE, YOUNG

ASSOCIATE PROFESSORS:

ADELSON, BATALDEN, FRANKLIN, FULLNIDER, IVERSON, KAHN, KEARNEY, MacKINNON, PHILLIPS, PYNE, ROSALES, ROTHSCHILD, R. D. SMITH, STOWE, TILLMAN, WOOTEN

ASSISTANT PROFESSORS:

CARROLL, DELLHEIM, FUCHS, GRATTON, HURTADO, L. C. SMITH, STONER, SUTTON, VANDERMEER, WEINER

LECTURER:

LUEY

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 related fields to be approved by the advisor in consultation with the student. Either HIS 498 (Pro Seminar) or HIS 493 (Honors Thesis) is required. At least 18 hours in history courses and six hours in the related fields must be in upper division courses. At least six hours in history must be taken in each of two of the following areas: U.S., Latin American, British, Asian, European. A minimum grade point average of 2.25 in the 30 hours of history courses is required. (See Foreign Language Requirement, page 59.)

Latin American Studies Emphasis. (See Latin American Studies, page 64.)—Consists of the Bachelor of Arts degree requirements in his

tory. 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 Asian Studies, page 63.)—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 42 semester hours of credit in history (including HIS 381 and 382) and 18 hours in closely related fields and quantitative studies, as approved by the program directors in consultation with the student. HIS 381 and 382 are required for all degree candidates and should be completed, in sequence, by the end of the junior year. Related fields courses may also be used to satisfy general CLAS requirements. At least 27 hours in history courses and nine hours in the related fields must be in upper division courses. At least six hours in history must be taken in each of two of the following areas: U.S., Latin American, British, Asian, European. A minimum grade point average of 2.25 in the 42 hours of history courses is required. (See Degree Requirements, page 59.)

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 495 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
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. [Satisfies General Studies Requirements: SB H G 102]

103, 104 The United States. 3 3) F S
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. [Satisfies General Studies Requirements: SB, H]

105 China: Literature and Revolution. (3) N
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. [Satisfies General Studies Requirement: G]

107 Introduction to Japan. 3) A
Historical survey of the people, culture, politics, and economy of Japan supplemented by audio-visual presentations. Intended for non-majors. [Satisfies General Studies Requirements: SB, G, H]

200 Latin American Civilizations. (3) N
The culture, economics, and politics of Latin American nations. Not open to history majors.

270 Judaism in American History. 3 N
A chronological analysis of Jews and Judaism in American history and letters. [Satisfies General Studies Requirements: SB, H]

271 European Jewish History. 3 N
European Jewish experience from the Crusades to the emancipation of the Jews in the 18th and early 19th centuries.

112 HISTORY

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

Culture: a broad connotation including ideas, ideas, the arts and social and economic standards. First semester, the national colonial background and early national period; second semester, the age of industrialism and modern America. [Satisfies General Studies Requirements SB, H]

305, 306 Asian Civilizations. (3, 3 F, S

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 the present. [Satisfies General Studies Requirement SB, G, H]

320 Ancient Greece. 3) A

History and civilization of the Greek world from the Bronze Age to the Roman conquest of the Hellenistic kingdoms. [Satisfies General Studies Requirements SB, H]

321 Rome. 3 A

History and civilization of Rome from the beginning of the Republic to the end of the Empire. [Satisfies General Studies Requirements SB, H]

322, 323 The Middle Ages. (3, 3 A

Political, socioeconomic, and cultural developments of Western Europe. First semester: Early Middle Ages, second semester: High Middle Ages. [Satisfies General Studies Requirements SB, H]

324 Renaissance. 3 F

Antecedents and development of the Renaissance in Italy and its spread to the rest of Europe. [Satisfies General Studies Requirements SB, H]

325 Reformation. 3) S

The Protestant and Catholic Reformation in the 16th century. [Satisfies General Studies Requirements SB, H]

326, 327 Early Modern Europe. (3, 3 A

Socioeconomic, cultural, and political changes in 17th and 18th century Europe. First semester: 17th century, second semester: 18th century. [Satisfies General Studies Requirements SB, H]

329, 330 19th 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. [Satisfies General Studies Requirements SB, H]

331, 332 20th Century Europe. 3, 3 N

European world setting since World War I, emphasizing major political and social issues. First semester, 1914-1945; second semester, 1945 to the present. [Satisfies General Studies Requirements SB, G, H]

333 Women and Society in Europe. 3) N

Women's role, status, and achievements in Europe, 1750-1950. Changes in everyday life, sex roles, family patterns, work and culture.

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. [Satisfies General Studies Requirements SB, H]

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. [Satisfies General Studies Requirements SB, H]

363, 364 The Black American Experience. (3) A

The Afro-American in American history: thought and culture. First semester, slavery to 1865; second semester, from 1865 to the present. [Satisfies General Studies Requirements SB, H (364)]

365 Islamic Civilization. (3) F

An interdisciplinary survey of art, history and religion in Islamic civilization. Cross-listed as REL 365. [Satisfies General Studies Requirements HU, SB, G, H]

366 The Modern Middle East. 3 S

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. [Satisfies General Studies Requirements SB, G, H]

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. [Satisfies General Studies Requirements SB, H]

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. [Satisfies General Studies Requirements SB, H]

370 Women in United States History, 1600-1880. 3) F

Examination of lives of American women and women's social organizations. [Satisfies General Studies Requirements SB, H]

371 Women in United States History, 1880-1980. (3) S

Examination of lives of American women, and women's social organizations. [Satisfies General Studies Requirements SB, H]

373, 374 United States Military History. (3, 3) F, S

The implementation of American foreign and domestic policies by strategic means. First semester: Colonial foundations to the Civil War; second semester: America as a world power. Prerequisites: HIS 103 and 104. [Satisfies General Studies Requirements SB, H, G (374)]

375 History and Theory. 3 N

Historical and theoretical sources of modernity: particular 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. [Satisfies General Studies Requirements SB, H]

381 Quantification in History. 3) A

Quantitative techniques: political analysis, new economic theory, demography and social history. Research methods in social science: design, data collection, and computer skills. Prerequisite: MAT 115 or 117.

382 Historical Statistics. (3) A

Historical data analysis: sampling distributions, tests of hypotheses, t-tests to multiple regression, nonparametric techniques. Prerequisite: HIS 381. [Satisfies General Studies Requirement N2]

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. [Satisfies General Studies Requirements SB, H]

394 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.

401 American Colonial History. (3) A

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. *[Satisfies General Studies Requirements: SB, H]*

403 Early National Period in American History. (3) A

Political, social, and economic development of the United States from the Revolution to 1828.

404 The Jacksonian Era. (3) N

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

Causes and development of the war; political, constitutional, and social issues of Reconstruction, and their effects on post-war America. *[Satisfies General Studies Requirements: SB, H]*

407 The Emergence of Modern America. (3) A

The triumph of modern political, social, and economic structures and values, 1870-1918. Role of religion, race, and ethnicity. *[Satisfies General Studies Requirements: SB, H]*

409, 410 Recent American History. (3) (3) A

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. Prerequisite: HIS 104 or equivalent. *[Satisfies General Studies Requirements: SB, H]*

411 Contemporary America. (3) A

The United States from 1945 to the present. *[Satisfies General Studies Requirements: SB, H]*

413 Origins of the American Economy. (3) F

Colonial period to 1870. Pre-industrial society, farm and factory in early industrialization, rise and collapse of the slave economy. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

414 The Modern American Economy. (3) S

1870 to the present. 19th century industrial base, 20th century crises and regulation. Political economy of an advanced capitalist democracy. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

415, 416 American Diplomatic History. (3) (3) A

American relations with foreign powers. First semester, 1776-1898; second semester, 1898 to the present. Prerequisite: For 415, HIS 103 or permission of instructor; for 416, HIS 104 or permission of instructor. *[Satisfies General Studies Requirements: SB, H, G (416)]*

417, 418 Constitutional History of the United States. (3) (3) N

Origin and development of the American constitutional system. First semester: colonial origins through Reconstruction; second semester: Reconstruction to the present. Prerequisite: For 417, HIS 103 or permission of instructor; for 418, HIS 104 or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

419, 420 American Urban History. (3) (3) A

The history of the city in American life. First semester, colonial times to the late 19th century; second semester, 19th century to the present. *[Satisfies General Studies Requirements: SB, H]*

421 History of American Labor. (3) A

American workers, from the colonial period to the present, including farmers, slaves, housewives, the skilled and unskilled, unionized and nonunionized. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

422 Social History of American Women. (3) A

Examination of women's social position in America. In-depth analysis of specific women's issues in terms of change over time. *[Satisfies General Studies Requirements: SB, H]*

423 Recent American Intellectual History. (3) A

Major movements in 20th century science, religion, and philosophy. *[Satisfies General Studies Requirements: SB, H]*

424 The Hispanic Southwest. (3) N

Development of the Southwest in the Spanish and Mexican periods to 1848. *[Satisfies General Studies Requirements: SB, H]*

425 The American Southwest. (3) N

Development of the Southwest from 1848 to the present. *[Satisfies General Studies Requirements: SB, H]*

426 Indian History of the Southwest. (3) S

Comprehensive review of historical events from prehistoric peoples, the Spanish and Mexican periods, American period after 1846 to the present. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

428 Arizona. (3) A

Emergence of the state from early times to the present. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

429 Metropolitan Phoenix. (3) A

Historical development of the Phoenix Metropolitan area since the 19th century.

430 20th Century Chicano History. (3) A

Historical development of the Chicano community in the 20th century. *[Satisfies General Studies Requirements: SB, H]*

431 The French Revolution and the Napoleonic Era. (3) N

Conditions in France before 1789, the Revolutionary decade from 1789 to 1799, the organization of France under Napoleon and the impact of changes in France on European society. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, H]*

433 Modern France. (3) A

Social, political, economic and cultural transformations of French society 1815-present. Impact of industrialization, war and revolution on people's lives. Prerequisite: upper-division standing or permission of instructor. *[Satisfies General Studies Requirements: SB, G, H]*

434 Hitler: Man and Legend. (3) N

A biographical approach to the German Third Reich, emphasizing nature of Nazi regime, World War II, and historiography. *[Satisfies General Studies Requirements: SB, H]*

435 Modern Germany. (3) A

Germany since 1840. *[Satisfies General Studies Requirements: SB, G, H]*

437, 438 Eastern Europe and the Balkans. (3) (3) A

Peoples and countries of eastern and southeastern Europe in the 19th and 20th centuries. First semester, 1800-1914, emphasizing the Hapsburg and Ottoman Empires; second semester, 1914 to the present, em

114 HISTORY

phasizing the successor states. *[Satisfies General Studies Requirements. SB, H; G (438)]*

441 Imperial Russia. (3) A

Development of Russian political, economic, social, religious, and intellectual institutions and traditions from the end of the 17th century to the collapse of the tsarist autocracy in 1917. *[Satisfies General Studies Requirements. SB, H]*

442 The Soviet Union. (3) A

An examination of Soviet political, economic development, and foreign relations from the 1917 Revolution to the present. *[Satisfies General Studies Requirements. SB, G, H]*

443 Russia and the United States. (3) A

Official and unofficial relations between Russia and the U.S., late 18th century to the present. Emphasizes period following the Bolshevik Revolution. *[Satisfies General Studies Requirements. SB, H]*

445 Tudor England. (3) A

Political, social, economic and cultural developments in 16th century England. *[Satisfies General Studies Requirements. SB, H]*

446 Stuart England. (3) A

Political, social, economic, and cultural developments in 17th century England. *[Satisfies General Studies Requirements. SB, H]*

449 Modern Britain. (3) A

Factors contributing to Britain's position as the world's leading power in the 19th century and its decline from that position in the 20th century. *[Satisfies General Studies Requirements. SB, G, H]*

450 British Constitutional History. (3) A

Historical development of the constitutional system of Great Britain from the Middle Ages to the present, emphasizing the growth of democracy. *[Satisfies General Studies Requirements. SB, H]*

451 The British Empire. (3) A

British imperialism and colonialism in Africa, the Americas, Asia, and the South Pacific. Prerequisite: upper division standing or permission of instructor. *[Satisfies General Studies Requirements. SB, H]*

452, 453 Economic History of Europe. (3, 3) N

Impact of industrialism upon the political, social, and cultural life of Europe. First semester, Renaissance to the 19th century; second semester, 19th and 20th centuries. *[Satisfies General Studies Requirements. SB, H; G (453)]*

454, 455 Intellectual History of Modern Europe. (3, 3) A

Major developments in European thought from the scientific revolution to the present. HIS 454: Copernicus through Bentham, HIS 455: Karl Marx to the present. Prerequisite: upper division standing or permission of instructor. *[Satisfies General Studies Requirements. SB, H]*

456, 457 History of Spain. (3, 3) N

Cultural, economic, political and social development of Spain. First semester, earliest days to 1700. Second semester, 1700 to the present. *[Satisfies General Studies Requirements. SB, H]*

458 Age of Conquest: Latin America. (3) N

Establishment of Spanish and Portuguese empires in America: Aztec and pre-Conquest backgrounds with emphasis on the Conquest and its impact through the early 17th century. *[Satisfies General Studies Requirements. SB, H]*

459 Change and Reform: Colonial Latin America. (3) N

Examination of political, economic, and social institutions. Emphasis on 17th century changes and the 18th century reforms leading to independence movements. *[Satisfies General Studies Requirements. SB, H]*

460, 461 Spanish South America. (3, 3) N

Political, economic, and social development of the Spanish speaking nations of South America since independence. First semester: the 19th century; second semester, 20th century developments.

463 Intellectual and Cultural History of Latin America. (3) N

Main currents of thought, the outstanding thinkers and their impact on 19th and 20th century Latin American Culture and institutional basis of Latin American life.

464 The United States and Latin America. (3) N

The Latin American struggle for development since recognition attempts at political union, participation in international organizations since 1810, and relations between the United States and Latin America. *[Satisfies General Studies Requirements. SB, G, H]*

466, 467 Mexico. (3, 3) A

Political, economic, social, and cultural developments. First semester, earliest times to 1810; second semester, 1810 to the present. *[Satisfies General Studies Requirements. SB, H]*

468 Brazil. (3) N

Discovery, conquest, and settlement by the Portuguese, achievement of independence; rise and fall of the empire; problems and growth of the republic to the present.

469, 470 Chinese Thought and Way. (3, 3) N

469: China's classical translation studied both for their intrinsic ideas and for the origins of Chinese thought. 470: Evolution of Confucian Tao (Way) as synthesis of Taoism and Buddhism, and 20th century reactions to that Tao. *[Satisfies General Studies Requirements. SB, H, G (470)]*

471 The United States and Japan. (3) A

Cultural, political, and economic relations in the 19th and 20th centuries. Emphasis on post World War II period. *[Satisfies General Studies Requirements. SB, G, H]*

472 The United States and China. (3) N

Emphasis on viewing from both sides the role/coastal role of cultural, political and economic relations in the 20th century. *[Satisfies General Studies Requirements. SB, G, H]*

473, 474 China. (3, 3) A

Political, economic, social and cultural history of the Chinese people. First semester, early times to the late 17th century; second semester, mid 17th century to the present. *[Satisfies General Studies Requirements. SB, H; G (474)]*

475 The American Experience in Vietnam, 1945-75.

(3) N

Intersection of American and Asian histories in Vietnam, viewed from as many sides as possible. *[Satisfies General Studies Requirements. SB, G, H]*

476 Modern Southeast Asia. (3) N

Imperialism and revolution in 19th and 20th century Southeast Asia. *[Satisfies General Studies Requirements. SB, H]*

477, 478 Japan. (3, 3) A

Political, economic, social, and cultural history of the Japanese people. First semester, early times to the 19th century; second semester, 19th century to the present.

[Satisfies General Studies Requirements. SB, H, G (478)]

479 The Chinese Communist Movement. (3 N)
Analysis of the communist movement in 20th century China, with emphasis on its historical setting. [Satisfies General Studies Requirements SB, G, H]

481 The People's Republic of China. (3 N)
Analysis of major political, social, economic and intellectual trends in China since the founding of the People's Republic in 1949. [Satisfies General Studies Requirements SB, G, H]

485 Historic Preservation. (3 N)
Comparative approach to preservation of historical resources in Europe and United States; analysis of regulatory framework and case studies

495 Methods of Teaching History. (3 S)
Methods of instruction, organization, and presentation of the subject matter of history and closely related fields

501 Historical Research and Writing. (3 F)
Surveys current methodological practices; recent historical monographs; and the research skills and tools used by historians. Required of students in historical editing emphasis

502 Public History Methodology. (3 F)
Introduction to historical research methodology, techniques, and strategies used by public historians. Readings, short papers, guest speakers. Required for public history business emphasis.

503 Public History Research. (3 S)
Individual and group research projects utilizing the approaches and techniques of the public historian. Required for public history business emphasis.

515 Studies in Historiography. (3) F S
Methods and theories of writers of history. May be repeated for credit.

520 Historical Editing and Publishing Procedures I. (3) F
Introduction to editing of scholarly journals and books. Covers manuscript evaluation and preparation, copy editing, proofreading, and related topics.

521 Historical Editing and Publishing Procedures II. (3) S
Advanced work in copy editing, substantive editing and manuscript evaluation. Includes treatment of authored relations and preparation of indexes. Prerequisite: H S 520

522 Issues in Historical Editing. (3) F
Survey of journal and textbook publishing including publishing law, financial aspects of publishing, book design, printing technology, and related topics. Prerequisites: H S 520, 521 and 584 (Editing Internship)

525 Historical Resource Management. (3) F
Identification, documentation and interpretation of historical period buildings, sites and districts. Emphasis on interdisciplinary efforts among historians, architects, and anthropologists

526 Historians in Preservation. (3) S
Preparation of historians for public and private historical preservation programs. Prerequisite: H S 525 or permission of instructor

527 Historical Administration. (3) F
Preparation of historians in administration of archives, historical sites, historical museums, historical societies, and historical offices in government agencies.

530 American Business History. (3) F
Origins, evolution and present form of various major U.S. industries. Required for public history business option.

591 Seminar. (3) N

May be repeated for credit. Topics may be selected from the following areas:

- (a) United States History
- (b) European History
- (c) English History
- (d) Latin American History
- (e) East Asian History
- (f) British History

See page 38 for special courses which may be offered by this academic unit.

Interdisciplinary Humanities Program

PROFESSOR/DIRECTOR:
Bettie Anne Doebler, Director

Departmental Major Requirements Bachelor of Arts Degree Program

Humanities—The major in humanities is interdisciplinary and may be intercollegiate; it consists of 45 hours. It is recommended that students take some 12 hours of supporting courses which may be credited towards general studies requirements where appropriate. In consultation with an adviser, the student will take 29 hours of interdisciplinary humanities courses, including 1) a core of 14 hours: HUM 110, HUM 301, 302, HUP 318 or HUM 498; and 2) 15 hours of courses selected to develop an interdisciplinary cultural or area concentration (examples: medieval or Renaissance studies). To balance the breadth of the interdisciplinary concentration, the student will also 3) take 16 hours of course work from those courses required for one of the humanities disciplinary majors. See this catalog for requirements for Art, Anthropology (cultural), Dance, English, Foreign Languages, History, Music, Philosophy, Religious Studies, and Theatre. Twelve additional hours of supporting courses in consultation with the adviser are recommended especially to broaden the student's historic and aesthetic understanding. They are to be selected from the following disciplines: art history, dance, English, foreign languages, history, music, philosophy, religious studies and theatre

Graduate Program

The program also offers the Master of Arts degree in Humanities through the Committee on Humanities. Consult the *Graduate Catalog* for requirements.

116 HUMANITIES / LIBERAL ARTS / MATHEMATICS

HUMANITIES

HUM 110 Contemporary Issues in Humanities. (3) F, S

Responses of literature, art history, history, philosophy, religion and other disciplines to common problems affecting modern Americans. [Satisfies General Studies Requirements: HU G, H]

301, 302 Humanities in the Western World. (4, 4) F, S
Interrelation of arts and ideas in Western Civilization on HUM 301. Helénic through Medieval. 302 Renaissance to the present. Three lectures, one discussion meeting per week. [Satisfies General Studies Requirements: HU H]

413 Comedy: Meaning and Form. (3) S
Nature and characteristics of comedy in the literary, fine and performing arts. Prerequisite: HUM 301 and 302 or equivalent. [Satisfies General Studies Requirement: HU]

414 Tragedy: Meaning and Form. (3) A
Nature and characteristics of literary and artistic expressions called tragic. Prerequisite: HUM 301 and 302 or equivalent. [Satisfies General Studies Requirement: HU]

494 Special Topics in the Humanities. (3) N

Open to all students. Topics include

- Western Historical or Contemporary Cultures
- Non Western Cultures
- Cultures of Ethnic Minorities
- American Fine Arts
- Comparative Fine and Performing Arts

498 Interpretation of Culture. (3) A
Methodologies and comparative theories for the study of relationships between various aspects of culture: the history of ideas and the arts. For students with a major in humanities with upper division standing. May be repeated for a total of 6 hours credit when topics vary. [Satisfies General Studies Requirement: H]

501 Interpretation of Culture. (3) A
Methodologies and comparative theories for the study of relationships between various aspects of culture: the history of ideas, and the arts. May be repeated for a total of 6 hours credit when topics vary.

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

See page 38 or special courses which may be offered by this academic unit.

Liberal Arts

Interdisciplinary (LIA) courses offered by the College of Liberal Arts and Sciences

LIA 100 University Adjustment and Survival. (3) F, S, SS

Analysis of student motivation and goals. Reinforcement of language faculty and study skills. Use of the library. Orientation to University resources and procedures. Special section offered for mature women returning to higher education.

101 The Use of Research Libraries. (1) F, S
Interdisciplinary resources and services of the University Library, with an emphasis on research. Open to freshmen and sophomores.

171H, 172H The Human Event. (3, 3) F, S
Landmarks in the social and intellectual development of the human race, with emphasis on Western Civilization. Enrollment restricted to members of the Honors Program. Consent the Honors office for applicability to General Studies requirements. [Satisfies General Studies Requirement: HU]

318 Perception and Judgment in the Arts. (3) A
Application of perceptual theory to the arts. Creativity, art forms as icons of reality, the role of language in evaluation. 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. See page 38 for special courses which may be offered by this academic unit.

Mathematics

PROFESSORS:

TROTTER, PS A 216), ANDERSON, BUSTOZ, BYRNES, FELDSTEIN, GOLDSTEIN, GRACE, HERRERO, HRIG, ISMAIL, JACOBOWITZ, KELLY, LEONARD, McDONALD, MITTELMANN, NERING, SAVAGE, SHERMAN, H. A. SMITH, L. SMITH, A. WANG, C. WANG, WEISS, YOUNG

ASSOCIATE PROFESSORS:

BEDIENT, BREMNER, DRISCOLL, FARMER, HASSETT, HELTON, KUPER, KURTZ, MOORE, QUIGG, RINGHOFER, RODMAN, SANSONE, H. L. SMITH, STEWART, SWIMMER

ASSISTANT PROFESSORS:

KADELL, L. SKOVEC, McCARTER, PECK, TAYLOR, WILLIAMSON

Departmental Major Requirements Bachelor of Arts Degree Curriculum

Mathematics—Consists of a minimum of 30 semester hours in mathematics and additional course work in closely related fields, to be approved by the advisor, for a total of at least 45 semester hours. The required courses must include MAT 270†, 271, 272, 219, 274, 342, 371 or 460, two 400 level mathematics courses to be approved by the advisor, 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 mathe-

matics should consult their advisor concerning an appropriate curriculum as early as possible.

Bachelor of Science Degree Curriculum

Mathematics Consists of a minimum of 42 semester hours in mathematics and additional course work in closely related fields, to be approved by the advisor, for a total of at least 55 semester hours. 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, 274, 371, 372, STP 421, MAT 464, one of MAT 410, 415, 443 or 445, one of MAT 461, 462 or 475, and 3 more hours in mathematics to be approved by the advisor. The department recommends a one year sequence in some closely related field.

Computational Mathematics Option Requires MAT 243, 274, 371, 464, 465, 467, STP 326 or 420 or 421, CSC 100, 101 or CSC 300 (with approval of advisor) and CSC 220 or 310. The remaining hours are to include 3 upper division courses, at least two of which must be in mathematics including one at the 400 level and all of which must be approved by the advisor.

Applied Mathematics Option Requires MAT 274, 371, 372, MAT 419 or IEE 473, MAT 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 420, 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 or 243, 270, 271, 272, 310, 342, 371, 443 or 445, MTE 483, STP 420, and CSC 100 or 181. MTE 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 76) or Physics (page 126). 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, 274 or 371 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 274, 371, 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 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 precalculus 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[†] [Satisfies General Studies Requirement: N1]

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[†] [Satisfies General Studies Requirement: N1]

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 [Satisfies General Studies Requirement: N1]

119 Finite Mathematics. (3) F, SS
Topics from set theory, probability and linear algebra. Applications will be emphasized. Prerequisite: MAT 115[†] or 117[†] or equivalent [Satisfies General Studies Requirement: N1]

118 MATHEMATICS

205 The Creative Art of Mathematics. (3) N

Topics chosen to illustrate the historical and conceptual development of mathematics. Prerequisite: MAT 106 or equivalent.

210 Brief Calculus. (3) F, S, SS

Differentiation 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. [Satisfies General Studies Requirement N1]

219 Mathematical Structures. (3) 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. [Satisfies General Studies Requirement N1]

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. [Satisfies General Studies Requirement N1]

243 Discrete Mathematical Structures. (3) F, S, SS

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) F, S, SS

Analytic geometry, differentiation and integral calculus of elementary functions emphasizing physical interpretation and problem solving. MAT 260 is not open to students with credit in MAT 210, 270 or 290. Prerequisite for MAT 260: MAT 115† or equivalent; prerequisite for MAT 261: MAT 260† or approval of instructor. [Satisfies General Studies Requirement N1 (260)]

270 Calculus with Analytic Geometry I. (4) F, S, SS

Real numbers limits and continuity differentiation 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. [Satisfies General Studies Requirement N1]

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 engineering and the sciences. Prerequisite: MAT 271† or equivalent. Prerequisite: credit in MAT 272† or equivalent. Prerequisite: 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. [Satisfies General Studies Requirement N1]

291 Calculus II. (5) F, S

Further applications of calculus, partial differentiation, gradients, and infinite series. Prerequisite: MAT 290† or equivalent.

310 Introduction to Geometry. (3) S

Congruence area perimeter 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 determinants linear mappings eigenvalues inner product spaces and bilinear forms. Prerequisite: credit or concurrent registration in MAT 272† or equivalent.

362 Advanced Mathematics for Engineers and Scientists I. (3) F, S, SS

Complex numbers partial differentiation, multiple integrals, vector analysis and Fourier series. Prerequisite: MAT 272† or equivalent.

363 Advanced Mathematics for Engineers and Scientists II. (3) N

Special functions, complex variables, integral transforms partial differential equations and probability. Prerequisites: MAT 274† and 362† or equivalent.

371 Advanced Calculus I. (3) F, S

Continuity Taylor's theorem partial differentiation implicit function theorem, vectors linear transformations and norms in \mathbb{R}^n , multiple integrals power series. Prerequisite: MAT 272† or equivalent and credit or concurrent registration in MAT 342†.

372 Advanced Calculus II. (3) S

Maps from \mathbb{R}^n to \mathbb{R}^m line and surface integrals divergence and Stokes theorems \mathbb{R}^m topology series uniform convergence improper integrals. Not open to students with credit in MAT 460. Prerequisite: MAT 371†.

400 Computability and Unsolvability. (3) N

Turing machines and computability computable and partial computable functions, recursive sets and predicates, recursive enumerability unsolvability decidability on problems, applications. Prerequisite: MAT 243†.

401 Theory of Formal Languages. (3) N

Theory of grammar, methods of syntactic analysis and specification types of artificial languages relationship between formal languages and automata. Equivalent to CSC 459. Prerequisite: MAT 243† or 342†.

410 Introductory Topology. (3) F

Topology of the real numbers equivalence of sets, transfinite induction. Designed to develop the student's critical faculties and creative abilities in mathematics. Prerequisite: MAT 272† or equivalent.

412 Projective Geometry. (3) N

Projective geometry and its relationship to Euclidean and other geometries. Prerequisite: MAT 342† MAT 310† recommended.

415 Combinatorial Mathematics I. (3) F

Permutations and combinations recurrence relations, generating functions graph theory and combinatorial proof techniques. Prerequisite: MAT 342†.

416 Combinatorial Mathematics II. (3) S

Continuation of MAT 415 considering some advanced aspects of the theory as well as applications. Topics chosen from: transport networks, matching theory, block designs coding theory, Pólya's counting theory, and applications to the physical and life sciences. Prerequisite: MAT 415† or approval of instructor. MAT 443† recommended.

- 419 Linear Programming.** (3) S
Linear programming and the simplex algorithm: network problems, quadratic and non-linear programming. Prerequisite: One semester of college calculus. [Satisfies General Studies Requirement N2]
- 431 Foundations of Mathematics.** (3) N
Topics from mathematical logic and set theory. May be repeated for credit with approval of instructor. Prerequisite: 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 matrices, linear programming in a space, bilinear and quadratic forms and multilinear algebra. Prerequisite: MAT 342† or equivalent.
- 443 Abstract Algebra.** (3) A
Introduction to the most important algebraic structures: natural numbers, rings, integral domains, and fields. Prerequisite: MAT 342† or approval of instructor.
- 445 Theory of Numbers.** (3) A
Prime numbers, unique factorization theorem, congruences, Diophantine equations, primitive roots, quadratic reciprocity theorem. Prerequisite: MAT 342†.
- 451 Mathematical Modeling.** (3) A
An in-depth study of one or more mathematical models which occur in the physical or biological sciences. May be repeated for credit with approval of instructor. Prerequisites: MAT 274† and 242† or 342† or approval of instructor. [Satisfies General Studies Requirement N2]
- 460 Applied Real Analysis.** (3) A
Vectors, curves, polar coordinates, Jacobians, implicit function theorem, line and surface integrals, Green's, Stokes' and divergence theorems. Not open to students with credit in MAT 372. Prerequisites: MAT 274† and 242† or 342†.
- 461 Applied Complex Analysis.** (3) F, SS
Analytic functions, complex integration, Taylor and Laurent series, residue theorem, conformal mapping, and harmonic functions. Prerequisite: MAT 272† or equivalent.
- 462 Partial Differential Equations.** (3) F, S, SS
Second-order partial differential equations: emphasizing Laplace, wave and diffusion equations, solutions by the methods of characteristics, separation of variables and integral transforms. Prerequisite: MAT 274†.
- 463 Transform Theory and Operational Methods.** (3) N
Fourier, Laplace, and other transforms; applications to boundary value problems, generalized functions and modern operational mathematics. Prerequisite: approval of instructor.
- 464 Numerical Analysis I.** (3) F
Theory and methods for numerical solution of algebraic and transcendental equations, iterative methods, approximation; 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. [Satisfies General Studies Requirement N3]
- 465 Numerical Analysis II.** (3) S
Continuation of MAT 464. Prerequisite: MAT 464†. [Satisfies General Studies Requirement N3]
- 466 Applied Computational Methods.** (3) F, S
Numerical methods for quadrature, differential equations, roots of nonlinear equations, interpolation, approximation, linear equations, floating point arithmetic, roundoff error.

- Prerequisites: Fluency in computer programming (preferably Fortran) and MAT 271† or equivalent, or approval of instructor. [Satisfies General Studies Requirement: N3]
- 467 Computer Arithmetic.** (3) S
Number systems, hardware/software arithmetic, overflow, significance, rounding, multiple precision, automatic error control, impact on languages, architectures, robust programming, software development. Prerequisites: CSC 101†, or 200† or 383†, or MAT 464†, or 466† or approval of instructor. [Satisfies General Studies Requirement N3]
- 472 Intermediate Real Analysis.** (3) F
Topology of the real line, sequences and series of functions, uniform convergence, and the Riemann-Stieltjes integral. Prerequisites: MAT 372 or approval of instructor.
- 475 Differential Equations.** (3) S
Asymptotic behavior of solutions of linear and nonlinear ordinary differential equations, stability, Sturm-Liouville problems, boundary value problems, singular point behavior of autonomous systems. Prerequisite: MAT 274 or equivalent.
- 485 History of Mathematics.** (3) N
Topics from the history of the origin and development of mathematical ideas. Prerequisite: MAT 272† or equivalent.
- 510, 511 Point Set Topology.** (3) (3) F, S
Topological spaces, metric spaces, compactness, connectedness, local properties, product and decomposition spaces, mappings, covering properties, separation properties. Prerequisite: MAT 371† or 410† or approval of instructor.
- 543, 544 Abstract Algebra.** (3) (3) F, S
Groups, modules, rings and fields, Galois theory, homomorphisms on a algebra, representation on theory. Prerequisite: MAT 444† or approval of instructor.
- 550 Variational Methods.** (3) F
Calculus of variations and its applications to extremal problems: classical mechanics, and partial differential equations. Prerequisites: MAT 274 and MAT 462, or equivalent.
- 551 Linear Operators and Integral Equations.** (3) S
Bounded-linear and compact operators on Hilbert spaces. Linear integral equations, Fredholm and Hilbert-Schmidt theory, approximate methods, Dirichlet problems. Prerequisites: MAT 242 and MAT 462, or equivalent.
- 564, 565 Advanced Numerical Analysis.** (3) (3) F, S
Finite difference equations, orthogonal polynomials, quadrature, approximation and integration theory, numerical solution of differential equations, numerical linear algebra. May be repeated for credit with approval of instructor. Prerequisite: MAT 464† or approval of instructor.
- 569 Topics in Analysis.** (3) N
Prerequisite: approval of instructor. May be repeated for credit with approval of instructor.
- 570, 571 Real Analysis.** (3) (3) S, F
Lebesgue integration, selected function spaces, differential and abstract measure theory, elements of functional analysis. Prerequisite: MAT 372† or approval of instructor.
- 572, 573 Complex Analysis.** (3) (3) F, S
Analytic functions, series and product representations, entire and meromorphic functions, normal families, Riemann mapping theorem, harmonic functions, Riemann surfaces. Prerequisite: MAT 371† or approval of instructor.

120 MATHEMATICS

574, 575 Theory of Ordinary Differential Equations. 3) 3) N

Systems, existence proofs, singularities, asymptotic behavior of solutions, boundedness of solutions, eigenvalues and eigenfunctions, perturbation theory. Prerequisite: MAT 372† or approval of instructor.

576, 577 Theory of Partial Differential Equations. 3, 3) N

Existence and uniqueness theorems, boundary value and initial value problems, characteristics, Green's functions, maximum principle, distributions, and weak solutions. Prerequisite: knowledge of Lebesgue integration or approval of instructor.

578, 579 Functional Analysis. 3) 3) N

Locally convex, normed and Hilbert spaces. Linear operators, spectral theory, and application to classical analysis. Prerequisite: MAT 472†, or 571† or approval of instructor.

591 Seminar. (1) 3) N

Topics may be selected from the following:

- Analysis
- Applied Mathematics
- Topology
- Algebra
- Mathematical Logic
- Numerical Analysis
- Combinatorial Mathematics

See page 38 for special courses which may be offered by this academic unit.

evaluate techniques, diagnosis and remediation, and problem solving. Prerequisite: approval of instructor.

483 Mathematics in the Secondary School. (3) S SS

Topics in geometry, number theory, algebra, and analysis. Emphasis on unity and principles. Prerequisite: MAT 310† or 412† or approval of instructor.

582 Modern Mathematics for Teachers. 3) A

Theory of sets, real number system, transfinite numbers and other selected topics. Prerequisite: approval of instructor.

583 Abstract Algebra for Teachers. 3) A

Postulational approach to a general elementary mathematical systems including groups and fields. Prerequisite: approval of instructor.

584 Teaching College Mathematics. 3) A

Methods and learning difficulties in the teaching of non-structural lower-levels on college mathematics courses. Prerequisite: approval of instructor.

585 Modern Geometry for Teachers. 3) A

Eucledean, projective and non-Eucledean geometries. Prerequisite: approval of instructor.

587, 588 Analysis for Teachers. 3, 3) N

Subject matter in mathematics appropriate for accelerated programs in secondary schools, including analytic geometry and calculus. Prerequisite: approval of instructor.

See page 38 for special courses which may be offered by this academic unit.

MATHEMATICS EDUCATION

MTE 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 MTE 180: MAT 106 or equivalent; prerequisite for MTE 181: MTE 180 or approval of instructor.

380 Arithmetic in the Elementary School. 3) A

Historical numeration systems, overview of elementary number theory including primes, factorization, divisibility, bases, modular systems, near congruence and continued fractions. Prerequisite: MTE 181† or approval of instructor.

381 Geometry in the Elementary School. 3) N

Informal geometry including concepts of length, area, volume, similarity and congruence. Classification of figures, straightedge and compass constructions, motion geometry. Prerequisite: MTE 380† or approval of instructor.

480 Mathematics in the Upper-Elementary Grades I. 3) N

An introduction to probability and statistics including open-ended data gathering and processing, counting techniques, sampling strategies, estimation and decision making. Prerequisite: MTE 381† or approval of instructor.

481 Mathematics in the Upper-Elementary Grades II. 3) N

Elementary functions and their applications. A thorough investigation of some of the algorithms of basic arithmetic. Prerequisite: MTE 480† or approval of instructor.

482 Methods of Teaching Mathematics in Secondary School. 3) F SS

Examination of secondary school curricular materials, analysis of instructional devices, teaching strategies,

STATISTICS AND PROBABILITY

STP 226 Elements of Statistics. 3) F, S SS

Basic concepts and methods of statistics, including descriptive statistics, significance tests, estimation, sampling and correlation. Not open to majors in mathematics or the physical sciences. Prerequisite: three semesters of high school algebra or MAT 106† [*Satisfies General Studies Requirement N2*]

326 Intermediate Probability. 3) F S

Probability models and computations, joint and conditional distributions, moments, families of distributions. Topics in stochastic processes, simulation, and statistics. Prerequisite: MAT 210† or equivalent [*Satisfies General Studies Requirement N2*]

420 Introductory Applied Statistics. 3) F S

Introductory probability, descriptive statistics, sampling distributions, parameter estimation, tests of hypotheses, chi-square tests, regression analysis, analysis of variance, nonparametric tests. Prerequisite: MAT 115† or 117† or 141† or equivalent [*Satisfies General Studies Requirement N2*]

421 Probability. 3) F

Laws of probability, combinatorial analysis, random variables, probability distributions, expectation, moment-generating functions, transformations of random variables, central limit theorem. Prerequisites: MAT 219† or STP 326† and 371† or equivalent.

425 Stochastic Processes. 3) S

Markov chains, stationary distributions, pure jump processes, second-order processes and other topics in stochastic processes. Prerequisites: STP 421† and MAT 342†.

427 Mathematical Statistics. 3) S

Limiting distributions, interval estimation, point estimation, sufficient statistics, tests of hypotheses. Prerequisite: STP 421†.

429 Experimental Statistics. (3) S
 Statistical inference for controlled experimentation. Multiple regression correlation analysis of variance, multiple comparisons nonparametric procedures Prerequisite: STP 420 or equivalent [*Satisfies General Studies Requirement N3*]

525 Advanced Probability. (3) N
 Measure theoretic foundations of probability distribution functions and characteristic functions laws of large numbers and central limit theorems, conditional probabilities, martingales and topics in stochastic processes Prerequisites: STP 421† and MAT 571†, or approval of instructor.

526, 527 Theory of Statistical Linear Models. (3, 3) F S
 Multivariate distribution distribution of quadratic forms, full and nonfull rank models generalized inverses, unbalanced data variance components, large sample theory Prerequisites: STP 427†, and knowledge of matrix algebra

530 Applied Regression Analysis. (3) F
 Method of least squares, simple and multiple linear regression polynomial regression analysis of residuals dummy variables, model building. Prerequisite: STP 420† or equivalent.

531 Applied Analysis of Variance. (3) S
 Fractional designs, balanced and unbalanced data, fixed and random effects random zed blocks, Latin squares, analysis of covariance multiple comparisons Prerequisite: STP 420† or equivalent

532 Applied Nonparametric Statistics. (3) F
 One sample tests, tests of two or more related or dependent samples, measures of correlation, tests of trend and dependence Prerequisite: STP 420† or equivalent

533 Applied Multivariate Analysis. (3) S
 Discriminant analysis principal components, factor analysis, cluster analysis, canonical correlation Prerequisite: STP 420† or equivalent

534 Applied Discrete Data Analysis. (3) N
 Models for discrete and count data measures of association log linear and regression models for contingency tables Prerequisite: STP 420† or equivalent

591 Seminar. (1, 3) N
 Topics may be selected from the following:
 a) Statistics
 b) Probability
 See page 38 for special courses which may be offered by this academic unit.

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 goal 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 condition; (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 remaining, either at the undergraduate or graduate level. The student must also have at least Sophomore status (except for certain exceptions applicable to veterans). This program is open to

Military Science

(Army ROTC)

PROFESSOR:

STANDRIDGE (MAIN 240)

ASSISTANT PROFESSORS:

CROSSON DEFRANCO LARSON,

LECHLER, ROTOLO, STAGGS,

VAN DEN BELDT

all students with the exception of three and four year scholarship winners (see scholarships). Students seeking enrollment in the two year program should make application during the spring semester of the year in which they desire to enter the program. They must pass the ROTC Qualifying Examination, and the Army physical examination. After successfully completing a six week basic camp at an Army post (conducted during June, July and August) or completing the Basic Course classes during a University Summer Session (not always offered), students may enroll in the Advanced Course. Students with previous military experience 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 the minimum cumulative grade point average required for graduation in the student's selected major, attainment of at least sophomore class standing, and maintenance of that minimum GPA or better as a full time student during enrollment 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 travel 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. Under the program, ROTC students may simultaneously be a member of the Army Reserve or National Guard. The combination of advanced course allowance and pay for Reserve/Guard participation provides more than \$1,000 for each semester's involvement.

Military Construction Option. The Department of Military Science and the Construction Division of the College of Engineering and Applied Sciences have jointly developed a new degree program entitled 'Military Construction.' It is comprised of 70% technical studies and 30% electives in the areas of planning, management, and organization. It is distinctly military in orientation and is designed to prepare graduates to plan, manage, and direct large scale construction projects, such as roads, dams, air fields, bridges, and other public works. ROTC cadets enrolled in this program receive credit toward the degree for all military science courses (18 semester hours). Upon completion of the 132 hour program, cadets will graduate with a Bachelor of Science degree in Construction.

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 provide \$100 per month subsistence allowance while the scholarship is in effect. In addition, a flat rate is paid each semester towards the purchase of texts and some academic supplies. A scholarship for four years is available to freshmen who will enter the four year program. Applications must be submitted in accordance with a schedule furnished high school counselors. Selection is made on a nationwide basis. Scholarships are available for three and two year periods commencing with the sophomore and junior years of ROTC, respectively. Applications are open to all students in good standing with the University; previous ROTC or military experience 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 three scholarship programs requires a service commitment to serve in the active Army for a period of up to 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 four years to as little as three months. Scholarship students have up to 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 stu-

dents 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 Organizational mission of the Army within American society, current issues in the military justice system, basic leadership skills. Two lecture conferences.

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. One lecture conference. 1 1/2 hours of Leadership Practical Application.

203 Land Navigation and Survival. (2) F SS Components of maps; use of map and compass, orienting and navigation exercises; military mapping system; basic outdoor survival skills. Two lecture conferences. 1 1/2 hours of Leadership Practical Application.

204 Leadership and Military Management. (2) S, SS Interdisciplinary approach to leadership and management; ethics, responsibility and conduct of military officers; effective decisions on making technical introduction and ceremonies. One lecture conference, 1 1/2 hours of Leadership Practical Application.

205 ROTC Basic Camp. (4) SS Six week training program emphasizing practical hands on skills and leadership development. Taken in lieu of MIS 101, 102, 203 and 204. Conducted at Fort Knox Kentucky.

301 Advanced Military Science. (3) F Theory and dynamics of the individual soldier and military units in offensive combat operations. Two lecture conferences. 1 1/2 hours of Leadership Practical Application, one two-day field exercise, three one-day field exercises. Prerequisites: MIS 101, MIS 102, MIS 203 and MIS 204, or equivalent.

302 Advanced Military Science. (3) S Theory and dynamics of military units in defensive combat operations. Two lecture conferences. 1 1/2 hours Leadership Practical Application, one three-day field exercise, two one-day field exercises. Prerequisites: MIS 101, MIS 202, MIS 203 and MIS 204 or equivalent.

303 ROTC Advanced Camp. (4) SS Six week training program emphasizing leadership development and advanced military skills to include tactics, land navigation and physical training. Conducted at Fort Lewis, Washington. Prerequisites: MIS 301 and 302.

401 Advanced Military Science. (2) F The military legal system; preparation and conduct of military training; leadership development, ethics and professional status of the military officer. Two lecture-conferences, 1 1/2 hours Leadership Practical Application, one two-day field exercise, three one-day field exercises. Prerequisites: MIS 301† and 302†.

402 Advanced Military Science. (2) S Military correspondence; career planning and personal affairs; service, conduct of training; leadership development; ethics and professional status of the military officer.

Two lectures, 1 1/2 hours Leadership Practical Application, one three-day field exercise, two one-day field exercises. Prerequisites: MIS 301† and 302†.

Philosophy

PROFESSORS:

ARNER, CARNEY, HUMPHREY, MURPHY
WHITE

ASSOCIATE PROFESSORS:

FITCH (PS A-521), CREATH, GIESCHEN,
GULESERIAN, LIU, MAIENSCHEN

ASSISTANT PROFESSORS:

HOWELLS, KOBES

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 301, 302, 305, 312 or 314, 316 or 317, 333, 350, and at least two PHI 400 level courses not to include 492, 493, or 499, except with special permission of the Chair. A minor in Philosophy consists of 18 hours of credit, of which at least 12 must be upper-division level and approved by an advisor in the Philosophy Department. Students planning to do graduate work in philosophy must consult an advisor in order to develop an appropriate selection of courses at the 300 and 400 level. A minimum grade of 'C' is necessary for each course used to fulfill the major requirements. (See Degree Requirements, page 59.)

History and Philosophy of Science—The Department of Philosophy offers courses bearing the HPS prefix. With the consent of the Director of Undergraduate Studies, these courses may on occasion be taken to satisfy the requirements of the philosophy major. They may never be used to satisfy the related fields requirement for philosophy majors.

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.

124 PHILOSOPHY

PHILOSOPHY

Philosophy majors who take cross listed courses must register for these under the PHI prefix

PHI 101 Introduction to Philosophy. (3) F, S, SS
Exploration of issues which philosophers have tradition-ally considered. morality, reality, obligation and knowledge [Satisfies General Studies Requirement HU]

103 Principles of Sound Reasoning. (3) F, S, SS
Fallacies, validity and soundness of arguments. May include syllogistic elementary symbols, inductive and scientific method [Satisfies General Studies Requirements. HU, L1]

111 Introduction to Moral and Social Philosophy. (3) F, S, SS
Problems of ethics and social political philosophy. e.g., virtue and integrity rights vs social utility, nature of law and state [Satisfies General Studies Requirements HU, H]

301 History of Ancient Philosophy. (3) F
History of western philosophy from its beginnings through the Hellenistic period [Satisfies General Studies Requirements HU, H]

302 History of Modern Philosophy. (3) S
History of western philosophy from the Renaissance through Kant. [Satisfies General Studies Requirements HU, H]

303 Contemporary Analytic Philosophy. (3) A
Aims and methods of such 20th century philosophers as Frege, Moore, Russell, Wittgenstein, Carnap, Ayer, Wisdom, Ryle, Austin, Strawson, Quine, and Sellars, with application to metaphysics and epistemology. Prerequisite: one course from among PHI 101, 103, 111, 301, 302, 333 or 350. [Satisfies General Studies Requirement HU]

304 Existentialism and Phenomenology. (3) A
An introduction to this movement through a study of its major figures e.g. Kierkegaard, Dostoevsky, Nietzsche, Husserl, Heidegger, Buber, Sartre, Camus, Merleau-Ponty, Binswanger, May, Frank, and Ricoeur [Satisfies General Studies Requirement HU]

305 Ethics. (3) A
Investigation of moral conduct focusing on such concepts as goodness, rightness, duty and justice, examination of theories such as deontology, utilitarianism, formalism, relativism, and egoism in which these concepts occur. Prerequisite: PHI 111 or approval of instructor [Satisfies General Studies Requirement HU]

306 Applied Ethics. (3) A
Philosophical techniques are used to elucidate such vital moral issues as sexual perversions, civil disobedience, abortion, punishment, violence and pacifism, suicide and euthanasia [Satisfies General Studies Requirement HU]

307 Philosophy of Law. (3) A
The nature and source of law and its relation to morality. Legal rights, legal enforcement of morals, civil disobedience, liability and responsibility, punishment, judicial reasoning, justice, property differences between theories of natural and positive law [Satisfies General Studies Requirement HU]

308 Philosophy of Art. (3) A
Central problems in philosophy of art, e.g., the nature of a work of art, modern and traditional theories of art, aesthetic perception and experience, objectivity and relativism in art or criticism [Satisfies General Studies Requirement HU]

309 Social and Political Philosophy. (3) A
Selected works of literature introduce philosophical problems such as the nature of morality, goodness and interpersonal relations to the world and other people [Satisfies General Studies Requirements. HU, H]

311 Philosophy in Literature. (3) A
Selected works of literature introduce philosophical problems such as the nature of morality, goodness and interpersonal relations to the world and other people [Satisfies General Studies Requirements. HU, H]

312 Theory of Knowledge. (3) A
The nature, sources and limits of human knowledge. Theories of truth, a priori concepts and knowledge, empirical concepts and knowledge, perception, induction, knowledge of the external world. Prerequisite: one course from among PHI 101, 103, 111, 301, 302, 333, 350 [Satisfies General Studies Requirement HU]

314 Philosophy of Science. (3) A
The structure and justification of scientific theories, explanation and theory change. The roles of observation and laws, theoretical concepts and entities, reduction, probability, confirmation, space and time, and causation. [Satisfies General Studies Requirement HU]

315 Philosophy of Language. (3) A
Problems pertaining to the nature of language: meaning, reference, truth, definition, analyticity, translativity, synonymy and contributions of contemporary linguistics. Prerequisite: PHI 103, 333 or 350 [Satisfies General Studies Requirement HU]

316 Metaphysics. (3) A
Investigation into the real: appearance vs reality, perception, realism vs idealism, materialism vs mentalism, the concepts of mind and person, substance, univocity, space and time, causation. Prerequisite: one course from among PHI 101, 103, 111, 301, 333 or 350. [Satisfies General Studies Requirement HU]

317 Philosophy of Mind. (3) A
Nature of consciousness. The common sense view of mind and perception, behaviorism, materialism, dualism, phenomena, self-knowledge, knowledge of other minds. Prerequisite: one course from among PHI 101, 103, 111, 301, 302, 333 or 350 [Satisfies General Studies Requirement HU]

318 Philosophy of Religion. (3) A
Nature and justification of religious beliefs. Arguments for the existence of God, mysticism, theistic and pantheistic conceptions of God and creation [Satisfies General Studies Requirement HU]

319, 320 Introduction to Asian Philosophies I, II. (3) F, S
Leading philosophical systems of thought in Asia: especially in China and Japan. Included are Hinduism, Buddhism, Taoism, Confucianism and Neo-Confucianism.

325 Philosophy of Social Science. (3) N
Philosophical problems surrounding the aims, structure, and methods of theories in the social sciences. [Satisfies General Studies Requirements HU, SB]

332 19th Century Philosophy. (3) N
The history of 19th Century philosophy: a thought emphasizing either the German or the British traditions. Prerequisite: PHI 302 [Satisfies General Studies Requirements HU, H]

333 Introduction to Symbolic Logic. (3) A
Symbolic techniques emphasizing deductions and proofs in the propositional and first and second order predicate

calculus. Either axiomatic or natural deduction systems may be used.

350 Philosophical Argument and Exposition. (3 F S) The development of techniques of philosophy: argument and exposition. Frequent written exercises. Course content may vary with instructor. Prerequisite: one course from among PHI 101, 111, 301, 302, or permission of instructor.

401 Rationalism. (3 N)

Examination of representative of either classical or contemporary philosophy: Cartesianism, e.g., Descartes, Spinoza, Malebranche, Leibniz, Broad, Banachard, and Chisholm. Prerequisite: PH 302 plus one of the following: 305, 309, 312, 316, 317. [Satisfies General Studies Requirement: HU H]

402 Empiricism. (3 N)

Examination of representative of either classical or contemporary philosophy: empiricism, e.g., Bacon, Hobbes, Locke, Berkeley, Reid, Hume, Mill, Carnap, Ayer. Prerequisite: PH 302 plus one of the following: PHI 305, 309, 312, 316, 317. [Satisfies General Studies Requirement: HU H]

413 Advanced Symbolic Logic. (3 N)

Properties of formal systems: axiomatic propositional and first-order predicate logic. May also include modal logic, number theory, models of logicism. Prerequisite: PHI 333.

420 A-E Topics in Philosophy. (3 N)

Course descriptions and prerequisites on file in department. Courses may be repeated for credit. Topics may be selected from the following: a) Topics in Metaphysics/Epistemology; b) Topics in Philosophy of Language; Logic (c); Topics in Value Theory; (d) Topics in History of Philosophy; e) Topics in Philosophy of Science.

591 Seminar. (1-3 A)

Topics may be selected from the following:

- (a) Graduate Philosophy
- (b) Theory of Knowledge
- (c) Moral Philosophy
- (d) Metaphysics and Logic
- (e) History of Philosophy
- (f) Epistemology
- (g) Philosophy of Science
- (h) Philosophy of Law
- (i) Social and Political Philosophy
- (j) Aesthetics

See page 38 for special courses which may be offered by this academic unit.

HISTORY AND PHILOSOPHY OF SCIENCE

HPS 201 Technology and Social Change. (2 A)

Technology as related to social change, contemporary impact of technology on society. (Also listed as STE 201.) [Satisfies General Studies Requirement: HU]

321 Man and Machine. (2) A

Relation of man to machine examined in historical, political, and social terms. Comparisons with a look at artificial intelligence studies. Also listed as STE 310.

322, 323 Science and Technology in History. (3-3 F S)

Development and application of scientific thinking from ancient times to present. First semester through 17th century. Second semester 18th to present. Also listed as STE 311, 312. [Satisfies General Studies Requirements: HU H]

402 Technology, Society and Human Values. (3 A)

Values which motivate mankind to create technology. Areas of conflict and resolution of conflict between values and technology. Readings and discussions with visiting lecturers. Also listed as STE 402. Prerequisite: Jun or standing or above.

411 Social Effects of Invention. (3 S)

The role of science and invention in the private and public sector in the development and application of technology. The issue of the personal and public responsibility of scientists and engineers is examined. Also listed as STE 411.

See page 38 for special courses which may be offered by this academic unit.

Physics

PROFESSORS:

JACOB PS F 470, COMFORT, A, COWLEY, J, COWLEY, HANSON, HESTENES, KEVANE, KYRALA, LU, NIGAM, PAGE, ROY, SPENCE, STARRFIELD, STEARNS, STROJNIK, TILLERY, TSONG, VENABLES, VOSS, WYCKOFF

ASSOCIATE PROFESSORS:

AANNESTAD, ACHARYA, BENIN, KAUFMANN, LINDSAY, MARZKE

ASSISTANT PROFESSORS:

BENNETT, BURSTEIN, CHAMBERLAIN, NORTHROP, RITCHIE, SANKEY, TSEN

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, 465. Additional courses in physics and other related fields will be selected with the approval of the advisor. Supporting mathematics courses MAT 270, 271, 272, 274, and either MAT 242 or 342 are required in addition to the 45 semester hour major requirement. MAT 290, 291 may be substituted for MAT 270, 271, 272. French, German, or Russian is strongly recommended to fulfill foreign language requirement.

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 is a minimum of 26 semester hours of physics, including PHY 115†, 116, 117, 118, 321, 331, 333, 362 and 363. The remaining courses to a total of 53 hours required for this

option 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 non major courses will necessarily include MAT 290†, 291, and 274, 242 or 342. MAT 270, 271, 272 may be substituted for MAT 290, 291.

French, German, or Russian is strongly recommended to fulfill foreign language requirement.

Astronomy. The astronomy faculty offers courses in astronomy both for non science majors and for science and physics majors. For an emphasis in astronomy, the following courses (or their equivalents) should be taken: AST 321, 322, 421, 422, 499.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Physics—Option No. 1. Consists of 42 semester hours of credit. Required courses are PHY 115, 116, 117, 118 (or 111, 112, 113, 114 on approval of advisor), 321, 331; 333; 362, 363, and two or more credits in 484. Electives to be chosen in physics and/or other closely related fields, subject to approval of advisor.

Physics—Option No. 2. An interdisciplinary 60 hour program which consists 30 semester hours in physics and an additional 30 semester hours in either chemistry (see page 76) or mathematics (see p. 117). The physics portion of this program requires the following courses: PHY 115, 116, 117, 118 (or 111, 112, 113, 114 on approval of advisor); 321, 331; 333; 361 or 362 and 363; two or more credits in 484. Electives to complete the 30 hour physics portion are to be chosen from physics and/or closely related fields, subject to the approval of the physics advisor.

General Science—Consists of 42 semester hours of credit. Required courses are: CHM 113, 116; PHY 111, 112, 113, 114; BIO 181, 182; GLG 101, 102, 103. Electives to be chosen, with advisor approval, from among courses in astronomy, chemistry, geology, physics, biology, botany, meteorology and zoology.

Departmental Minor Teaching Field Requirements

Physics—Consists of 24 semester hours of credit. Required courses are PHY 115, 116, 117,

118 (or PHY 111, 112, 113, 114 on approval of advisor); either 361 or 362 and 363; two credits in 484. The remaining credits are to be selected from upper division courses in physics and/or astronomy (including AST 125, 126) subject to approval of the advisor.

Departmental Graduate Programs

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

PHYSICS

PHY 101 Introduction to Physics. (4 F, S) Emphasizes applications of physics to life in the modern world. Understanding of elementary algebra is presumed. Three lectures 1 recitation 2 hours laboratory. [Satisfies General Studies Requirements S1 S2]

105 Basic Physics. (4) F One semester survey of the principles of physics. Prerequisite for students who intend to take PHY 115, 116 but have not taken high school physics. Three lectures 1 recitation, 2 hours laboratory Prerequisites Algebra and trigonometry [Satisfies General Studies Requirements S1, S2]

111, 112 General Physics. (3 3) F, S SS Noncalculus treatment of the principles of physics for nonphysics majors. Students whose curriculum require a laboratory course must also register for PHY 113† 114†. Three lectures, 1 recitation. Prerequisite trigonometry. [Satisfies General Studies Requirements S1 S2]

113, 114 General Physics Laboratory. (1, 1) F, S, SS Elementary experiments in physics. May be taken concurrently with, or subsequent to PHY 111†, 112†, respectively. Two hours laboratory. Outside preparation for experiments and report writing are required. [Satisfies General Studies Requirements S1, S2]

115, 116 University Physics. (4 4) F, S, SS Principles of physics using calculus. Four lectures, 1 recitation. For physics laboratory at this level enroll in PHY 117† 118† Prerequisite Concurrent enrollment in MAT 290† 291† respectively, or equivalent [Satisfies General Studies Requirements S1 S2]

117, 118 University Physics Laboratory (1 1) F, S, SS Introductory experiments, measurements and techniques in physics. Two hours laboratory. Outside preparation for experiments and report writing are required Prerequisite Concurrent enrollment in PHY 115† 116† [Satisfies General Studies Requirements S1 S2]

321 Newtonian Mechanics. (3 F) Vector calculus Kinematics and dynamics of particles. Conservative, resistive and central forces Dynamics of a charged particle Many particle systems The two body problem and collisions Rigid body dynamics Motion in noninertial reference frames Prerequisites: PHY 116† MAT 291† MAT 274 or equivalent; concurrent enrollment in MAT 242† or equivalent

322 Analytical Mechanics. (3) S

Lagrange's and Hamilton's equations. Constraints. Coupled oscillators. Elements of continuum mechanics; elasticity and hydrodynamics. Prerequisite: PHY 321†

331 Electricity and Magnetism. (4) F

Vector fields and vector calculus. Electrostatic fields. Conductors and capacitors. Currents of charge. Ohm's law, charge conservation. Circuit theory. Magnetic fields and the Lorentz force. Electromagnetic induction. Fields in matter. Displacement current. Maxwell's equations. Prerequisites: PHY 116†, MAT 242† and 274† or equivalent

332 Electromagnetic Fields. (4) S

Maxwell's equations. Scalar and vector potentials. Laplace's equation and boundary value problems. Magnetostatics. Electromagnetic waves, propagation in media, reflection and refraction. Prerequisite: PHY 331†.

333 Intermediate Physics Laboratory I. (3) F, S

Basic physical measurements techniques with emphasis on modern electronics and instrumentation. One-hour lecture. 3 hours laboratory. Equivalent effort outside of the laboratory is required. Prerequisites: PHY 117†, 118†, 321† (or approval of instructor), MAT 274 or equivalent.

334 Intermediate Physics Laboratory II. (2) F, S

Experiments selected in consultation with instructors to suit the student's need and interests. Three hours laboratory. Equivalent effort outside of the laboratory is required. Prerequisites: PHY 331†, 333†.

351 Optics. (3) F

Matrix methods in geometrical optics. Interferometry. Partial coherence. Selective absorbers, Fresnel and Fraunhofer diffraction. Fourier transform spectroscopy. Prerequisites: PHY 116†, MAT 291† or 272†

361 Introductory Modern Physics. (3) F, S

Special relativity and introductory quantum theory with applications drawn from atom, nuclear and solid state physics. Prerequisite: PHY 116†

362, 363 Modern Physics. 3 3 F, S

Special relativity, foundations and theoretical concepts of quantum theory, introduction to atomic molecular solid state and subatomic physics. Prerequisites: PHY 116† concurrent enrollment in MAT 274† or equivalent

401, 402 Mathematical Methods in Physics. (3, 3) S

Elements of vector calculus. Complex variables. Ordinary and partial differential equations. Integral transforms, special functions, determinants, matrices, probability and statistics. Prerequisite: PHY 321†.

441 Statistical and Thermal Physics I. (3) F

Statistical and experimental basis of heat, temperature and entropy. Mechanical and statistical basis of the laws of thermodynamics. Applications of macroscopic thermodynamics. Phase equilibrium. Prerequisites: PHY 321†, 363†

442 Statistical and Thermal Physics II. (3) S

Principles and applications of statistical mechanics. Quantum statistics of ideal gases and simple solids. Equilibrium of phases and chemical species. Transport theory. Irreversible processes and fluctuation. Prerequisite: PHY 441†.

452 Advanced Optics. (3) S

Linear systems theory, coherent and incoherent imaging, spatial filtering. Elements of radio astronomy. Antenna theory and heat flow problems. Holography, coded apertures, reciprocity and symmetry in X-ray electron and optical diffraction. Prerequisites: PHY 331†, 351†, PHY 401†, 402† recommended

462 Nuclear Physics. 3 F

Static properties of nuclei, natural and induced radioactivity, nuclear reactions, nuclear models and energy levels, mesons and hyperons, interaction of photons and electrons with matter. Prerequisite: PHY 363†

463 Physical Measurements. (1) F

Experiments in mechanics and heat, electricity and magnetism, optics and modern physics. Designed for teachers and students not majoring in physics. Three hours laboratory. May be repeated for a maximum of 3 hours credit. Prerequisite: PHY 112†.

465 Advanced Physics Laboratory I. 2 F, S

Continuation of PHY 334† at a more advanced level. Three hours laboratory. Equivalent effort outside of the laboratory is required. Prerequisites: PHY 334†, concurrent enrollment in PHY 362† (or approval of instructor)

466 Advanced Physics Laboratory II. 1 3) F, S

Continuation of PHY 465. May be repeated for credit. Prerequisites: PHY 465†

471 Quantum Mechanics. (3) F

Wave mechanics, Schrödinger's equation. Barrier problems, operators and eigenfunctions, harmonic oscillator, one-electron atoms. Prerequisites: PHY 363†, MAT 274†, 242†, or approval of instructor

472 Quantum Mechanics. (3) S

Matrix mechanics. Angular momentum. Perturbation theory, scattering theory. Prerequisite: PHY 471† or approval of instructor.

480 Methods of Teaching Physics. (3) S

Evaluation of various approaches to the teaching of high school physics. Preparation of demonstrations and experiments. Organization of a laboratory. Designed for secondary school physics teachers. Prerequisite: approval of instructor

481 Solid State Physics. (3) S

Structure, elastic properties and dynamics of crystals, electron motions in crystals under applied fields. Prerequisite: PHY 363†.

484 Internship: Physics Teaching. 1 4) F, S, SS

Preparation for high school physics teaching. Student will work closely with a faculty member in the elementary physics program. May be repeated for a total of six semester hours. Prerequisite: prior approval of instructor

495 Project Research. 1 3) F, S

Supervised project in experimental physics. May be repeated for credit. Prerequisite: four hours selected from PHY 333†, 334† and 465†. 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 mathematical foundations for graduate students in basic and applied physics. Complex variables, vector spaces, operators, matrices. Ordinary differential equations, integral equations and transforms and special functions. May include additional topics. Prerequisite: PHY 401†, 402† or approval of instructor

503 Physical Applications of Group Theory. (3) N

Fundamentals and applications of the theory of finite and continuous groups as they occur in physics. Atomic molecular solid state and elementary particle physics. Prerequisite: approval of instructor.

521 Classical Mechanics. (3) F

Variaional principles, Lagrange's and Hamilton's equations, rigid body motion, canonical transformations; Hamilton-Jacobi theory. Prerequisite: PHY 321†.

128 PHYSICS

522 Advanced Topics in Classical Mechanics. (3) S
Continuum mechanics elements of hydrodynamics, elasticity theory; special relativity Prerequisites: PHY 322† 521†.

523 Relativity. (3) N
Special and general theories of relativity Prerequisites: PHY 522†, 532† or approval of instructor

531 Advanced Electricity and Magnetism (3) F
Electrostatics and magnetostatics. Potential theory, the theory of constitutive relations. Maxwell's equations. The wave equation, plane electromagnetic waves; cavities and waveguides Prerequisite: PHY 331† or approval of instructor

532 Electrodynamics. (3) S
Special theory of relativity; covariant formulation of electromagnetic interactions. Inhomogeneous wave equations. Lienard-Wiechert potentials, radiation fields. Interactions of charged particles and electromagnetic waves scattering dispersors Prerequisites: PHY 332†, 531† or approval of instructor

541 Statistical Physics. (3) F
Probability theory and principles of statistical inference. Evaluating experimental data; foundations of statistical mechanics. General laws of thermodynamics from microscopic theories. Calculation of specific properties of bulk matter Prerequisites: PHY 441†, 471† (442† desirable)

542 Advanced Topics in Statistical and Thermal Physics. (3) S
Theory of reversible processes, Onsager reciprocity laws, fluctuation-dissipation theorem; relaxation and transport processes in fluids and plasmas; Luttinger equation; the BBGKY hierarchy of distribution functions kinetic theory; hydrodynamics from many-body theory; phase changes and equilibrium ferromagnetism Prerequisite: PHY 541†

551 X-Ray and Electron Diffraction. (3) S
Fresnel and Fraunhofer diffraction. Integral formulation. Diffraction of X-rays and neutrons by crystal lattices. Structures of solids, including crystal structure analysis. Theory and techniques of electron microscopy diffraction of crystalline and noncrystalline specimens Prerequisites: PHY 451†, 481† or approval of instructor.

561, 562 Nuclear Physics. (3) 3) F, S
Two nucleon interaction. Chew-Gordon coefficients, internucleon forces. meson theory and high energy scattering, nuclear binding energy. nuclear models. transition probabilities, nuclear reactions. beta decay Prerequisites: PHY 462†, 576† or approval of instructor

568 Elementary Particle Physics. (3) N
Classification of particles, phenomenology of strong, electromagnetic and weak interactions. cross sections, decay rates; isotopic spin and higher symmetries, structure of reaction amplitudes Prerequisite: PHY 577†

569 Elementary Particle Theory. (3) N
Theoretical models for strong, electromagnetic and weak interactions; analytical S-matrix dispersion relations. current algebras; medium and high energy models. Prerequisite: PHY 568†.

576, 577 Quantum Theory. (3) 3) F, S
Abstract approach to quantum mechanics. Hilbert space observables and their corresponding operators. eigenstates and eigenvalues, quantum dynamics; approximation methods; systems of identical particles; angular momentum and group representation theory; collisions on processes; relativistic quantum theory. Prerequisites: PHY 471†, 521†

578, 579 Relativistic Quantum Theory. (3) 3) F, S
Relativistic one-particle equations. Klein-Gordon equation. Dirac equation. second quantization theory of scattering. S-matrix. Feynman diagrams. quantum electrodynamics, renormalization procedures Prerequisite: PHY 577†

581 Solid State Physics. (3) F
Quantum theory of solids. acoustic phonons, lattice specific heats. band structure. Fermi surfaces, thermal expansion. polarons. electron-phonon interactions and scattering by lattice defects Prerequisite: PHY 481†, 472†, 576† (or concurrent enrollment)

582 Solid State Physics. (3) S
Elements of transport theory, thermal conduction. electronic conduction in metals, mobility in semiconductors. Hall effect. magnetoresistance and selected topics of current research Prerequisite: PHY 581†.

587, 588 Quantum Optics. (3) 3) F, S
Quantization of the electromagnetic field. Quantum theory of coherence. photon counting. photon states, density operators. atomic Raman scattering. Prerequisite: PHY 471

595 Current Physics Literature. (1) N
Weekly seminar to introduce the graduate student to current activity in physics through the contemporary literature. (May be repeated for credit.)

ASTRONOMY

AST 111 Introduction to Astronomy, I. (3) F, SS
For non-science majors. History. properties of light, instruments; study of solar system and nearby stars. Optional laboratory. AST 125 [Satisfies General Studies Requirements: S1, S2]

112 Introduction to Astronomy, II. (3) S, SS
For non-science majors. Structure and evolution of stars. star clusters. galaxies. cosmology. Optional laboratory. AST 126 [Satisfies General Studies Requirements: S1, S2]

125 Astronomy Laboratory, I. (1) F
Astronomical observations and experiments designed to help the student become familiar with the sky. telescopes, and astronomical measurements. 2-1/2 hour laboratory. Prerequisites: Concurrent enrollment or previous credit in AST 111 or 321 and working knowledge of high school algebra and geometry. [Satisfies General Studies Requirements: S1, S2]

126 Astronomy Laboratory, II. (1) S
Similar to AST 125 but material chosen to supplement AST 112 and 322. 2-1/2 hour laboratory. Prerequisites: Concurrent enrollment or previous credit in AST 112 or 322 and working knowledge of high school algebra and geometry. [Satisfies General Studies Requirements: S1, S2]

321 Solar System Astronomy. (3) F, SS
For science majors. Physical laws, evolution of the sun and planets, extraterrestrial life, astronomical instrumentation. Optional laboratory. AST 125. Prerequisite: MAT 210 or equivalent which may be taken concurrently. [Satisfies General Studies Requirements: S1, S2]

322 Stars, Galaxies, and the Universe. (3) S, SS
For science majors. Star formation. structure. evolution. interstellar medium; star clusters. galaxies. distance scale. cosmology. Optional laboratory: AST 126. Prerequisite: MAT 210 or equivalent which may be taken concurrently. AST 321 or permission of instructor. [Satisfies General Studies Requirements: S1, S2]

421 Astrophysics I. (3) F

Aspects of observational astronomy; atomic properties of matter; stellar atmospheres; stellar structure, evolution; nucleosynthesis; compact objects; close binary systems. Prerequisites: AST 321, 322, or equivalent; PHY 321, 331, 362 or permission of the instructor.

422 Astrophysics II. (3) S

interstellar medium; gaseous nebulae; shock waves; stellar dynamics; star clusters and stellar populations; galaxies and their evolution; cosmology. Prerequisites: AST 321, 322, or equivalent; PHY 321, 322, 362; or permission of instructor.

PHYSICAL SCIENCES**PHS 110 Fundamentals of Physical Science.** (4) F, S

One-semester survey of the principles of Physics and Chemistry. Understanding of elementary algebra is presumed. Three lectures. 2 hour laboratory. [Satisfies General Studies Requirements: S1, S2]

361, 362 Science and Society. (2, 2) F, S

Fundamental principles of physical science as a creative human enterprise and its relationship to technology and the environment.

370 Ideas of Physics. (1-3) N

Relationships of physical concepts to other areas of knowledge. Recent offerings have been: (1) basic concepts in physics; relativity, complementarity, uncertainty, etc.; (2) current topics of research and public interest; (3) methods for developing and assessing new ideas. See *Schedule of Classes* and consult Physics Department for current titles and sectional offerings. May be repeated for credit.

375 The Energy Crisis. (2-3) F, S

Current problems in energy resources, production, consumption and conservation. No physics or mathematics prerequisites. Students registered for 3 hours will participate in a discussion group as well as attend lectures.

410 Origins of the Physical Sciences. (3) N

Origins of astronomy, chemistry, physics and mathematics in the cultures of Mesopotamia, Egypt, China and India.

411 Development of the Physical Sciences. (3) N

Hellenistic mathematics, physics, chemistry and astronomy. Arabs and the physical sciences; their role in spreading the physical sciences to Europe. The development of the physical sciences in Europe until the time of Newton.

See page 38 for special courses which may be offered by this academic unit.

**Political Science****PROFESSORS:**

JONES (SS 410), ALISKY, BERMAN, CHAUDHURI, HINK, JO, KAMINSKY, KIRKPATRICK, MASON, MCGOWAN, MILLER, MUSHENO, RICE, SIMON, WALKER

ASSOCIATE PROFESSORS:

ASHLEY, DAGGER, DALGLEISH, DANTICO, MCGAW, MUSHKATEL, OLSON, READER, STOOKEY, WATSON, WILSON, WOLF, YOUNGBLOOD

ASSISTANT PROFESSORS:

BURT, GEER, KEATING, KENNEY, NICHOLLS, 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 2.00 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 59)

Latin American Studies Combined Degree Program. (See Latin American Studies, page 64.)—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 Asian Studies, page 63.)—Consists of the Bachelor of

130 POLITICAL SCIENCE

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 advisor. 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. At least 21 hours in political science must be in upper division 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. Of the 15 hours in closely related fields, 6 hours must be taken, in any combination, from among the following courses: MAT 115, 117, 119, 141, 210, 242, 243, 270, 290, PHI 103, 314, 325, 333, 413, CSC 100, 181, 183, 304, 305. The remaining 9 hours in closely related fields are to be approved by the advisor in consultation with the student.

Students who major in political science must have a 2.00 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 59)

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 2.00 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 2.00 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 political ideas and belief systems, e.g., Marxism, liberalism, conservatism, theories of democracy and alternative futures. [Satisfies General Studies Requirements SB, H]

110 Government and Politics. 3 F S

Major institutions of modern government and processes of individual and group political activity with emphasis on the American experience. Meets the federal government requirement for teacher certification. Not open to students with credit for 300. [Satisfies General Studies Requirement SB]

120 Political Issues and Public Policy. (3) A

Contemporary social problems and political issues particularly development of public policy. [Satisfies General Studies Requirement SB]

150 Comparative Government. 3 F S

Political institutions and processes selected foreign countries or groups, strengths and weaknesses of contemporary political systems political development. [Satisfies General Studies Requirements SB, G]

160 Global Politics. 3 F S

The nature of contemporary world politics through the study of both general theoretical topics and specific geographical areas. [Satisfies General Studies Requirements SB, G]

170 American Legal System. 3 F, S

Concepts, institutions, classifications and functions of law. The role of the courts and the impact of judicial decisions on making social change. [Satisfies General Studies Requirement SB]

300 American National Government. (3) F S

Powers, functions and agents of American political institutions. Meets the federal government requirement for teacher certification. Not open to students with credit for POS 110. [Satisfies General Studies Requirement SB]

301 Empirical Political Inquiry. (3) F, S

Logic of political inquiry including research problems, concepts, hypotheses, theories, measurement, data collection and analysis.

- 311 Arizona Constitution and Government.** 2) F S
Constitution and government of the State of Arizona. Not open to students having credit for POS 316 411 or 417. Meets the Arizona government requirement for teacher certification. May not be counted for the major teaching major or minor in political science. [Satisfies General Studies Requirement SB]
- 313 The Congress.** 3 A
Lawmaking process in the U.S. Congress. [Satisfies General Studies Requirement SB]
- 314 The American Presidency.** 3 A
Office, role, and power of the American presidency in the American political system. [Satisfies General Studies Requirement SB]
- 315 The Supreme Court.** 3 A
Role of the Supreme Court in American society and politics; examination of decisions on making process, impact of decisions; restraint versus activism. [Satisfies General Studies Requirement SB]
- 316 State and Local Government.** 3 A
Survey of the operations, problems, and policies of state and local governments in the U.S. [Satisfies General Studies Requirement SB]
- 320 Public Administration.** 3 A
Role of the administrator in the political process with an examination of the basic concepts of bureaucracy. [Satisfies General Studies Requirement SB]
- 325 Public Policy Development.** 3 A
Relationships between policy development and administrative processes as affected by the various roles of legislative bodies, executive and administrative agencies. [Satisfies General Studies Requirement SB]
- 330 Current Issues in National Politics.** 3 F S
Major issues facing national governments in the domestic field. [Satisfies General Studies Requirement SB]
- 331 Public Opinion.** 3 A
Formation, expression, and influence of individual and organized opinion on political institutions. [Satisfies General Studies Requirement SB]
- 332 American Political Parties.** 3 A
Development of the American party system. Party organization and functions. [Satisfies General Studies Requirement SB]
- 333 Interest Groups.** 3 A
Examines how minority, corporate, labor, farm, consumer, environmental, health, education, and public interest groups, and single issue movements influence government. [Satisfies General Studies Requirement SB]
- 334 Comparative Politics.** 3 A
Theoretical approaches and political institutions such as parties, pressure groups, elections, and executives from a cross-national perspective. [Satisfies General Studies Requirements SB C]
- 336 Electoral Behavior.** 3 A
Voting behavior and the attitudes, perceptions, and activities of the citizenry in the political process. [Satisfies General Studies Requirement SB]
- 349 The British Nations.** 3 A
Examines such parliamentary systems as Great Britain, Ireland, Canada, Australia, and New Zealand. [Satisfies General Studies Requirements SB G]
- 356 Western Europe.** 3 A
Structures and behavior of governmental institutions and political processes in selected countries of Western Europe. [Satisfies General Studies Requirements SB G]
- 360 Current Issues in International Politics.** (3 F S)
Analysis of major current problems in world politics. [Satisfies General Studies Requirements SB G]
- 361 American Foreign Policy.** (3 A)
United States in world affairs; foreign policies since World War I. Techniques in formulating American foreign policies. [Satisfies General Studies Requirement G]
- 401 Political Statistics.** (3 F S)
Basic concepts in statistics as they facilitate the description, explanation, and prediction of social and political phenomena. [Satisfies General Studies Requirement N2]
- 410 Urban Government and Politics.** (3 A)
Governmental organizations, decisions on making structures, and problems of urban political systems. [Satisfies General Studies Requirement SB]
- 413 Comparative Legislative Processes.** (3 A)
Lawmaking process followed in selected legislative bodies; composition of membership, organization, powers, impact of internal and external forces on legislation. [Satisfies General Studies Requirement SB]
- 417 The Arizona Political System.** (3 N)
Contemporary political problems with in the context of Arizona's political, social, and constitutional frameworks. Meets the Arizona Constitution requirement for certification. [Satisfies General Studies Requirement SB]
- 422 Politics of Bureaucracy.** 3 N
Bureaucracy as a political entity; internal dynamics of public agencies; the relationship between public agencies and other political entities. [Satisfies General Studies Requirement SB]
- 423 Politics of Budgeting.** 3 N
The policy process in budgeting strategies used to influence the process and recent reforms in public budgeting. [Satisfies General Studies Requirement SB]
- 424 Regulatory Politics.** 3 N
Development and implementation of governmental policies regulating business activity, e.g., anti-trust, consumer and environmental protection and labor relations. [Satisfies General Studies Requirement SB]
- 426 Elements of Public Policy.** (3 A)
Each section may cover one of the following topics: consumer protection, natural resources, criminal justice, environmental protection, science and technology, or theories of public policy. May be repeated for credit when topics vary. [Satisfies General Studies Requirement SB]
- 435 Women, Power and Politics.** (3 N)
The roles and treatment of women within various political contexts. Specific focus may vary with instructor.
- 438 Revolution and the Social System.** 3 A
Causes and consequences of revolution; identification of systemic structures and institutions conducive to radical and moderate patterns of conflict resolution. [Satisfies General Studies Requirement SB]
- 439 Minority Group Politics in America.** 3 N
Role of minority groups in American politics. [Satisfies General Studies Requirement SB]
- 440 History of Political Philosophy I.** 3 A
Western political philosophers and their theories to the 17th century. [Satisfies General Studies Requirements HU, H]
- 441 History of Political Philosophy II.** 3 A
Western political philosophers and their theories from the 17th to the 20th century. [Satisfies General Studies Requirements HU, H]

132 POLITICAL SCIENCE

442 American Political Thought. 3 A

Political theories and movements from the colonial period to the present. [Satisfies General Studies Requirements: HU H]

443 Topics in Contemporary Political Theory. 3 A

Major problems and theories in contemporary political thought. [Satisfies General Studies Requirement. HU]

445 Asian Political Thought. (3) A

Contemporary political ideas and theories in selected Asian countries including the impact of Marxist and non-Marxist theories on revolutionary processes. [Satisfies General Studies Requirements SB G, H]

446 Problems of Democracy. (3) A

Issues and problems in democratic theory e.g. the nature of democracy, majority rule, representation, equality, and the value of political participation. [Satisfies General Studies Requirement. HU]

448 China, Japan, and the Koreans. 3 A

A comparative analysis of the political modernization experiences of China, Japan, and the two Koreas focusing on the differing reactions to the West. [Satisfies General Studies Requirements SB G]

450 Soviet Union and Eastern Europe. 3 A

Description and analysis of political institutions and practices in the Soviet Union and the Communist governed nations of Eastern Europe. [Satisfies General Studies Requirements: SB G]

452 China. 3 A

Background of the Communist revolution, political processes and developmental problems in China from a comparative perspective. [Satisfies General Studies Requirements SB, G]

453 South America. 3) A

Governmental institutions, political processes and developmental problems of the South American states. [Satisfies General Studies Requirements SB G]

454 Mexico. 3 A

Mexican federal, state and local governmental institutions. [Satisfies General Studies Requirements SB G]

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. [Satisfies General Studies Requirements: SB, G]

458 Southeast Asia 3 A

Political background, governmental institutions, political dynamics and developmental problems of Southeast Asian nations. [Satisfies General Studies Requirements. SB, G]

459 Sub-Saharan Africa. 3 N

Governmental institutions and processes of political systems south of the Sahara. [Satisfies General Studies Requirements: SB, G]

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. [Satisfies General Studies Requirements SB, G]

462 Soviet Foreign and Defense Policies (3) A

Examination and analysis of foreign and defense policies of the Soviet Union. [Satisfies General Studies Requirements SB G]

463 Inter-American Relations. 3 A

Diplomatic relations among the Latin American states. Development of U.S. foreign policy toward Latin America. [Satisfies General Studies Requirements SB G]

464 American Defense Policy. (3) A

Problems and issues of the organization and control of the defense establishment of the U.S. [Satisfies General Studies Requirement. SB]

465 International Organization and Law. (3) A

History, practical political significance and future of international institutions, transnational regimes, and international law. [Satisfies General Studies Requirements SB G]

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. [Satisfies General Studies Requirements SB G]

468 Comparative Asian Foreign Policies. (3) A

Foreign policies of the Asian states emphasizing the security relations and movements toward regionalism. [Satisfies General Studies Requirements. SB G]

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. [Satisfies General Studies Requirement SB]

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. [Satisfies General Studies Requirement. SB]

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. [Satisfies General Studies Requirement SB]

476 Political Economy. 3 A

Problems, policies and possibilities of various political economic systems and the interrelationship of capitalism, socialism, and democracy. [Satisfies General Studies Requirement SB]

477 International Political Economy. 3 A

Contending approaches to historical and contemporary issues of international political economy, including global welfare, equality, ecology, and peace. [Satisfies General Studies Requirements SB, G, H]

480 Methods of Teaching Government. 3 N

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, except Legals at the Internship 12 S [Satisfies General Studies Requirement L SB]

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 the major area. Prerequisite: major in the department or approval of instructor. [Satisfies General Studies Requirement L2]

501 Foundations of Political Action. (2) F (8 weeks)

Examines the creation and expansion of political issues, mobilization of public opinion 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) N

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

- | | |
|-----------------------|----------------------|
| (a) American Politics | (c) Public Policy |
| (b) Global Politics | (d) Political Theory |

601 Advanced Experimental Research. (3) N

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) N

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.

See page 38 for special courses which may be offered by this academic unit



Psychology

PROFESSORS:

PARKINSON (PSY B-237C), AIKEN, BERNAL, BRAUN, CIALDINI, EISENBERG, HAYGOOD, HOMA, JONES, KAROLY, KILLEEN, LANYON, LINDER, MEYERSON, REICH, RUSSO, SANDLER, SOMERVILLE, VESTRE, WEST

ASSOCIATE PROFESSORS:

BARRERA, BRAVER, CHARTIER, CHASSIN, FEHR, GLANZMAN, KENRICK, LESHOWITZ, LEVINE, LINDHOLM, PRESSON, ROSSI, SADALLA, WOLCHIK, ZAUTRA

ASSISTANT PROFESSORS:

HARRIS, STONE

VISITING ASSOCIATE PROFESSOR:

KNIGHT

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 28 semester hours in Psychology, including at least 15 upper-division hours. 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; one additional upper-division PSY course; two additional upper-division courses (PGS or PSY); and one additional psychology course. No more than a total of 3 hours in PGS 399, PGS 499, and PSY 499 combined may be used to complete the 15 hours of upper-division requirements. **Eighteen hours** in courses related to psychology are required. They are to be approved by an undergraduate advisor and include one course from among CSC 100, 181, and 183. College graduation requirements on page 60.

Bachelor of Science Degree Curriculum

Psychology—Consists of 31 semester hours in Psychology, including at least 15 hours in

134 PSYCHOLOGY

upper division courses. Required courses, which must be passed with a minimum grade of 'C', are PGS 100, PSY 233, PSY 290, one from among PSY 323, 324, 325, one from among PGS 315, 341, 350; one additional upper division PSY course; two additional upper division courses (PGS or PSY), and two additional psychology courses. No more than a total of 3 hours in PGS 399, PGS 499, and PSY 499 combined may be used to complete the 15 hours of upper division requirements. **Eighteen hours** in courses related to psychology are required. They are to be approved by an undergraduate advisor and include one course from among CSC 100, 181, 183. College graduation requirements on page 60

Departmental Minor Teaching Field Requirements

(Secondary Education)

Consists of 24 semester hours of credit taken. See advisor.

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 college graduation requirement in social and behavioral sciences

PGS 100 Introduction to Psychology. 3 F S SS
Major areas of theory and research in psychology. Participate in department sponsored research or an educational equity event alternative activity required. *[Satisfies General Studies Requirement SB]*

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. *[Satisfies General Studies Requirement SB]*

270 Psychology of Adjustment. 3 F, S SS
Principles of mental health adjustment, conflict and coping processes derived from clinical and experimental research intended for non majors, cannot be used for major credit. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

306 Environmental Psychology. 3 F S, SS
Concepts and research strategies in the study of behavior in interaction with physical environment. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

315 Personality Theory and Research. 3 F S SS
Definition and description of personality in terms of the theoretical and methodological approaches. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

331 Sexual Identification. 3 N
Theories and research in the development of sexual identification: concepts of femininity and masculinity so

cial roles and attitudes. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

332 Human Sexual Behavior. 3 F S
Patterns of sexual behavior and underlying variations; theories of sexual attraction, sexual differences and sexual dysfunction and treatment. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

341 Developmental Psychology. 3 F S
Behavior development analyzed in terms of psychological principles. Current research in human development. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

350 Social Psychology. 3 F S SS
Human social behavior and underlying concepts as aggression, attraction, attribution, conformity, groups, helping, person perception, and persuasion. Prerequisite PGS 100. *[Satisfies General Studies Requirement SB]*

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†. *[Satisfies General Studies Requirement SB]*

399 Supervised Research. 1 3 F S, SS
Experience within the context of current faculty research projects. Student's assigned responsibility dependent on qualification. Y grade only. May be repeated for a total of 6 hours. Prerequisites: approval of faculty member prior to registration. B average in major, PSY 230† or equivalent may be taken concurrently.

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. *[Satisfies General Studies Requirement SB]*

430 Industrial Psychology. 3 F S SS
Organizational and management system 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. *[Satisfies General Studies Requirement SB]*

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†. *[Satisfies General Studies Requirement SB]*

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. *[Satisfies General Studies Requirement SB]*

444 Directed Child Study. 1 3 F S SS
Supervised experience with children in the pre-school program of the Child Study Laboratory. May be repeated for a total of 9 credits. Prerequisites: CDE 232† or PGS 341† and approval of instructor.

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 [Satisfies General Studies Requirement: SB]

458 Group Dynamics. 3 F

Theories and methods of group leadership, group effectiveness, communication within groups and individual members. Prerequisite: PGS 350†

459 Attitudes and Attitude Change 3 S

Concept of attitude. Review of theory and research using techniques of measurement. Analysis of attitude change at both mass and individual levels. Persuasive communication, behavioral modes, cognitive perceptual and motivational determinants. Prerequisite: PGS 350† [Satisfies General Studies Requirement: SB]

461 Interpersonal Influence. 3 N

Principles and procedures that affect the process of social influence. Consideration of attitude, compliance, inducing and perceptual influences. Prerequisite: PGS 350 [Satisfies General Studies Requirement: SB]

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 20a and PGS 315† [Satisfies General Studies Requirement: SB]

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†

See page 38 for special courses which may be offered by this academic unit

PSYCHOLOGY (PSY)

Courses which may be applied toward Part B of the college graduation requirement in natural science and mathematics

PSY 230 Introduction to Statistics. F S, SS

Basic concepts in descriptive and inferential statistics, emphasis on application to psychology. The course is both self-paced and lecture sections. Prerequisites: PGS 100 and MAT 117† [Satisfies General Studies Requirement: N2]

290 Experimental Psychology. 4 F S

Planning, execution, analysis and reporting of experiments. Literature procedure and instruments in representative areas of psychological research. Three lectures, 3 hours laboratory. Prerequisite: PSY 230† equivalent [Satisfies General Studies Requirements: L1, S2]

323 Sensation and Perception. 3 F, S

Underlying processes of vision and 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 on nervous system functioning. Prerequisites: PSY 290† or two courses in biology, 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. Three lectures, 1 hour laboratory. Prerequisite: PSY 230† [Satisfies General Studies Requirement: N2]

420 Analysis of Behavior. 3 N

Research application and philosophy of the analysis and control of human behavior. Prerequisite: PSY 90

425 Biological Bases of Behavior. 3 N

Critical study of physiological and psychological brain mechanisms underlying motivation, learning, etc. Prerequisite: PSY 325†

426 Neuroanatomy. 4 N

Structure and function of mammalian brain including deep brain dissection. Three lectures, 3 hours laboratory. Prerequisite: PSY 35† or equivalent

432 Human Performance. 3 S

Analysis of human behavior in complex human machine systems including tracking, vigilance, scanning and failure detection. Prerequisites: PSY 290† and upper division standing, or approval of instructor

433 Human Psychophysiology. 3 S

Emphasis on human physiological behavior relationships. Topics include physiological change associated with imagery, stress, attention, skill learning, and biofeedback. Prerequisite: PSY 325†

434 Cognitive Psychology. 3 S

The human organism as a processor of information from perceptual input. Abstract concepts, semantic memory, attention and meta-imagery. Prerequisite: PSY 323† or 324† or approval of instructor

437 Human Factors. 3 F

Emphasis on human factors in high technology systems. Specific topics include systems development, systems analysis, techniques, displays and controls. Same as EE 437. Prerequisites: PSY 290† and upper division standing, or approval of instructor

470 Psychopharmacology. 3 F, S

Basis of drug action on physiological and behavioral effects. Psychology and medical applications and medical uses of drugs used in the treatment of mental illness. Prerequisite: One semester each of biology and chemistry or PSY 325†

490 Course Programming. 2 F S

Supervised experience in the development and administration of programmed instruction. Designed for students who proctor self-paced or personalized courses. May be repeated for a total of 4 credits. Prerequisites: PSY 212 or 230† and approval of instructor

501 Supervised Teaching. 4 F

Experience and examination of perspectives on teaching undergraduate psychology. Prerequisite: graduate standing in Psychology and approval of instructor

506 Survey of Research in Environmental Psychology. 3 F

Major topics and paradigms in the study of man-environment relationships

136 PSYCHOLOGY

512 Advanced Learning. 3 N

Principles and theories of learning emphasizing research literature

522 Methods and Instrumentation in Psychological Research. 3 N

Electron and electromechanical instrumentation in psychological research including training in the programming and use of electronic computers Prerequisite approval of instructor

524 Advanced Physiological Psychology. 3 N

Contributions of physiological processes and brain function to fundamental behavior processes

528 Sensation and Perception. 3 N

Principles of sensory and perceptual processes, emphasis on research literature

529 Correlation and Psychometric Theory. 3 S

Principles of correlational techniques including regression and multiple correlation Psychology theory including reliability and validity

530 Intermediate Statistics 3 F

Content of PSY 529 Psychological statistics emphasizing the analysis of variance and the design of experiments

534 Information Processing. 3 N

Processes by which sensory input is transformed, reduced, elaborated, stored, recovered, and used

535 Cognitive Processes. 3 N

Theoretical empirical treatment of the human organism as a processor of information including abstraction memory structure problem solving and thinking

541 Research in Cognitive Development 3 N

Theoretical empirical issues in the study of children's knowledge and cognitive processes Comparison of research in Piaget and other traditions Prerequisite Admission to Psychology Ph.D. program or approval of instructor

542 Social Development. 3 N

Major issues in the area of social development a topical review and critique Theory research and content are covered Prerequisite approval of instructor

543 Moral Development 3 N

A variety of issues in moral development including positive and negative behaviors are considered Theory and research are major focus Prerequisite approval of instructor

550, 551 Advanced Social Psychology. 3 3 F

Theory and research in emerging interpersonal perception decision making attitude formation and change group processes social motivation and interaction process Prerequisite approval of instructor

553 Social Influence. 3 N

Research literature relevant for example to attitude formation and change conformity obedience power compliance and altruism Prerequisites PSY 550† 551† or approval of instructor

555 Experimental and Quasi-Experimental Designs for Research. 3 N

Review of research techniques Laboratory and field research analyzed application to specific topics Prerequisite approval of instructor

556 Social Perception 3 N

Theoretical and empirical implications of top-down perception and cognition e.g. attribution attraction impression formation Prerequisite PSY 550 and 551 or approval of instructor

558 Interpersonal Processes 3 N

One or more topics chosen from empathy modeling various processes contagion group phenomena social communication behavior exchange Prerequisites PSY 55† 551† or approval of instructor

564, 565 Somatopsychology. 3 3 N

Theory and research in the psychobiology aspects of chronic neuropsychiatric disability and mental retardation

569 Advanced Study of Personality. 3 N

Personality as a theoretical concept in psychology including definitional problems behavioral and traditional approaches the measurement of personality and current research use Prerequisite approval of instructor

572 Personality Assessment. 3 S

Theory and research on assessment of personality and psychopathology and construction of personality assessment instruments Supervised practice in a self-paced instructional format Prerequisite admission 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 interview methods Structured role playing practice in the major procedure 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 during the application of assessment procedures in psychological 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 conceptualizing conducting and evaluating psychological interventions to promote well-being in community setting Advanced theory and research relevant Prerequisites PSY 58† and advanced standing in psychology Ph.D. program or approval of instructor

582 Community Psychology. 3 SS

Community systems, intervention techniques consultation models current status of community mental health movement conceptualization of the role of community psychology in a 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 hospital settings Prerequisite PSY 57† or approval of instructor

584 Advanced Treatment Methods. 3 N

Advanced theory research and techniques of psychological treatment method Prerequisite PSY 576†, 57† and approval of instructor

588 Consultation Methods. 3 N
 Several theories and strategies of organizational consultation. The development of consultation 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
 See page 38 for special courses which may be offered by this academic unit.

Religious Studies

PROFESSORS:
 WENTZ

ASSOCIATE PROFESSORS:
 MARTIN (LL B 605, FELDHAUS FOARD)
 GEREBOFF, MORRISON

ASSISTANT PROFESSORS:
 CADY, SCHREINER

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. In order for the student to become acquainted with a variety of religious phenomena as well as with major issues and methods in the study of religions, the 30 semester hours in religious studies must include: REL 305, at least one course in religions from each of three distinct geographic regions or cultural traditions, and two research seminars, including REL 405 (REL 405 may be repeated for credit.) All majors must plan their programs in consultation with a departmental advisor. A minimum grade point average of 2.50 is required in the 30 hours of religious studies courses (see Foreign Language Requirement, page 59.)

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 100 Religions of the World. 3 F, S
 An introduction to the religious traditions of the world, including Buddhism, Hinduism, Islam, Judaism, Christianity and others. [Satisfies General Studies Requirements HU, G]

210 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. [Satisfies General Studies Requirements HU, H]

270 Introduction to Christianity. 3 A
 The beliefs, ceremonies, festivals and institutions of Christianity emphasizing the contemporary era. The course presupposes no previous knowledge about Christianity. [Satisfies General Studies Requirements HU, H]

305 Ritual, Symbol, and Myth. 3 A
 Ritual, symbol, and myth as types of religious expression with examples selected from the non-literate religions of the world. [Satisfies General Studies Requirements L2 HU, G]

310 Western Religious Traditions. 3 A
 Religious traditions of Judaism, Christianity and Islam comparing the doctrinal institutions and ritual systems and social histories. [Satisfies General Studies Requirement H]

315 Hebrew Bible (Old Testament). 3 A
 The nature, content, background, historical situation and message of the books of the Hebrew Bible. 1 English translation. [Satisfies General Studies Requirements HU, H]

316 Types of Early Judaism. 3 A
 Developments in Judaism during the intertestamental period. [Satisfies General Studies Requirements HU, H]

317 Introduction to Rabbinic Judaism. 3 A
 An historical analysis of the thought, literature and institutions of rabbinic Judaism. [Satisfies General Studies Requirements HU, H]

320, 321 Religion in America. 3 3 F S
 The emergence of religious ideas and institutions REL 320 up to the Civil War REL 321 from the Civil War to the present. [Satisfies General Studies Requirements HU, H]

330 Native American Religious Traditions. 3 A
 World views and religious thought presented through the art, architecture, literature, music, mythology, ritual, and folklore of representative tribes in North America. [Satisfies General Studies Requirements L2, HU]

331 History of Native American Religious Traditions. 3 N
 The role of religion in Native American history including missionization, religious adaptation, prophetic messianic and religious revitalization movements. [Satisfies General Studies Requirements L2, HU, H]

340 Confucianism and Taoism. 3 A
 Issues in classical Chinese religious thought. Readings include Confucius, the Tao Te Ching, Mencius, Chuang Tzu, and the I Ching. [Satisfies General Studies Requirements L2, HU, H]

138 RELIGIOUS STUDIES

350 Hinduism. 3 A

The study of diverse forms of Hinduism through its religious literature, folk art and architecture [Satisfies General Studies Requirements L2 HU G, H]

351 Buddhism. 3 A

Doctrines, practices, and institutions of the Buddhist religion emphasizing its role in the history and culture of Asian societies [Satisfies General Studies Requirement HU]

365 Islamic Civilization 3 A

An interdisciplinary survey of the art, history and religion of Islamic civilization Cross-listed as HS 365 [Satisfies General Studies Requirements HU, SB G H]

371 New Testament 3 A

Origins and literature of early Christian communities; historical narrative of the types of oral and written tradition in the New Testament [Satisfies General Studies Requirement HU]

372 Formation of the Christian Tradition. 3 A

Origins, development and expansion of Christianity; major themes and tensions of the New Testament world to the beginning of the Middle Ages [Satisfies General Studies Requirements HU H]

374 Classics of Christian Literature. 3 N

The interaction of Christian thought and culture; a representative Christian literature of various ages [early Christian to contemporary] [Satisfies General Studies Requirements HU H]

381 Religion and Moral Issues. 3 A

The manner in which human religiosity relates to social concerns; e.g., sexuality, the environment, bioethical issues and violence [Satisfies General Studies Requirement HU]

385 Contemporary Religious Thought. 3 A

Issues in current Western religious thought, such as theology and revolution, Judaism and Christianity, the impact of science on religion, the "death of God" controversy, the Bible and tradition [Satisfies General Studies Requirements L2, HU]

390 Women and Religion. 3 A

The role of women in several organized religions and other religious sects, including a study of myth and symbols as they are used to establish marriage and enforce sex roles with specific religions [Satisfies General Studies Requirements L2 HU]

405 Problems in Religious Studies. 3 A

Selected topics and methodological problems in religious studies involving student and instructor research interests of the instructor. May be repeated for credit when topics vary.

410 Judaism in Modern Times. 3 N

Variety of expressions of Judaism and Jewishness in the modern period. Topics may include American Judaism and religious responses to the Holocaust [Satisfies General Studies Requirements HU H]

415 The Jewish Mystical Tradition 3 A

Examination of some of the esoteric core of Judaism. Movements and literature such as Hasidism and Kabbalah be studied [Satisfies General Studies Requirements HU H]

420 Religion in American Life and Thought. 3 A

The influence of religion on American society, culture and ideas; the distinctive character of religion in America. Prerequisite REL 320 321 recommended [Satisfies General Studies Requirements HU H]

426 American Preachers and Preaching: The Sermon in America. (3 N)

The life and work of notable American preachers. The emergence of the preacher as representative of America. Prerequisite REL 320 or 321 recommended. [Satisfies General Studies Requirements H H]

427 American Religious Thought. 3 N

The thought of representative American religious thinkers: Jonathan Edwards, William Erby Channing, Horace Bushnell, and Reinhold Niebuhr. Prerequisite REL 320 321 recommended [Satisfies General Studies Requirements HU H]

435 Problems in Native American Religions. 3 A

An in-depth consideration of selected problems in Native American religions [Satisfies General Studies Requirement HU]

443 Zen. 3 A

History, practice and utilization of Zen Buddhism in China and Japan [Satisfies General Studies Requirements HU G]

444 Religion in Japan. 3 A

Role of religion in Japanese history and culture. Emphasis on the impact of Buddhism and its transformation in Japan; the vitality of folk religion; the intimacy of religion and the arts; the development of Shintō and religion in modern Japan [Satisfies General Studies Requirements HU G H]

454 Hindu Religious Thought. 3 A

Readings in classical systems, such as Samkhya and Vedānta, and in the works of modern Hindus such as Aurobindo and Gandhi. Prerequisite REL 351 recommended [Satisfies General Studies Requirements L2 HU H]

460 Studies in Islamic Religion. 3 A

Issues in the interpretation and understanding of Islamic texts, history, society, culture and ritual. Prerequisite REL 365 or Religious Studies major or consent of instructor [Satisfies General Studies Requirements HU, G]

464 The Islamic Mystical Tradition. 3 N

Asceticism, mysticism and the cult of the saint in Islam: poetry, imitations for Islamic religious and social history. Prerequisites REL 365 or Religious Studies major or consent of the instructor [Satisfies General Studies Requirements HU G]

470 Religion in the Middle Ages. 3 A

Religious aspects of medieval life and thought; variety of forms of dissent, heresy and reform movements 4th to 11th centuries [Satisfies General Studies Requirement H H]

471 Reformation and Modern Christianity 3 A

Protestant Reformation; contemporary Christian movements; includes factors in the development of the Medieval Christian and the variety of reform movements and reformation patterns. Catholic counter-reform measures; formation of liberal theology; ecumenical movement; World Council of Churches [Satisfies General Studies Requirements HU H]

485 Existential Theology. 3 N

The contribution of existentialist thinkers, especially Kierkegaard, to the work of theologians such as Martin Buber, Rudolf Bultmann and Paul Tillich.

486 Critiques of Religion 3 A

Major theories and critiques of religion among modern social philosophers and religious thinkers [Satisfies General Studies Requirement H H]

494 Special Topics in Religious Studies 3 N

Open to students freshmen by approval of instructor only. Topics may be selected from various areas.

498 Pro-Seminar in Religious Studies. 3 A
For students with a major or minor emphasis in Religion
Study

591 Seminar. 3 N
Topics on methodological issues in the study of religion
Prerequisite: Religion Studies graduate student or approval
of instructor

598 Special Topics. 3 F S
May be repeated for credit. Topics are selected from the following areas:

- a Study of Religion: Comparative Religion
- b Comparative Western/Ancient/Near East
Judaism
- c Religion in America
- d Native American Religion
- e Religion in East Asia
- f Religion in South Asia
- g Islam
- h Christianity/Greco-Roman Religion
- i Western Religious Thought/Ethics
- j Problems in Religious Studies

See page 38 for special courses which may be offered by this academic unit.

Sociology

PROFESSORS:

GORDON SS 321 AXELROD FARBER,
HUDSON MAYER OWEN, PFUHL, SEBALD
WHITAM

ASSOCIATE PROFESSORS:

BENIN, COBAS, HARDERT, LANER, MILLER
NAGASAWA SMITH, SNOW, SULLIVAN,
WEITZ

ASSISTANT PROFESSORS:

CULLEN KULIS, THOMAS

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 and Sciences section of this *Catalog*, for the additional requirements for B.A. and B.S. degrees. 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: institutional 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 39.

Departmental Minor Requirements

The department minor consists of 18 hours in Sociology, including either SOC 101 or 301; any one of SOC 391, 483, 485, or 486, four remaining courses to be chosen by the student in consultation with a Sociology advisor.

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 organization and social psychology (details available in the department office).

Special Emphasis Program

Public Safety Emphasis A public safety emphasis 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 consist of SOC 340, 360, 440, 446, 449, and SWU 291 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 successful in completing the program will receive recognition by a statement on the student's transcript.

140 SOCIOLOGY

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 social change. Not open to students who have credit for SOC 301. Two hours lecture, one hour discussion. [Satisfies General Studies Requirement SB]

301 Principles of Sociology. 3 F, S SS

Intensive and critical analysis of the concepts of sociology. Not open to students who have credit for SOC 101. [Satisfies General Studies Requirement SB]

305 Courtship and Marriage. 3 F, S SS

An overview of courtship, marriage and related processes, focusing on problematic aspects of these institutions from the sociological perspective. [Satisfies General Studies Requirements SB, H]

332 The Modern City. 3 F, S

Growth, characteristics and problems of the modern city. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirement SB]

333 Population Problems. 3 F, S SS

Theories of population change, births, deaths, migration, population policies. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirements SB, G]

340 Sociology of Deviant Behavior. 3 F, S SS

A sociological analysis of stigmatized behavior and conditions, including the causes, effects, and management of stigma. Prerequisite: SOC 101 or 301 or approval of instructor. [Satisfies General Studies Requirement SB]

341 Modern Social Problems. 3 F, S, SS

Race relations, poverty, unemployment and other current issues. [Satisfies General Studies Requirements SB, H]

348 Overview of Aging. 3 F

Multidisciplinary introduction to gerontology. Explores the characteristics, experiences, problems, and needs of older persons. [Satisfies General Studies Requirement SB]

351 Industrial Sociology. 3 S

Social and cultural analysis of industry, occupational roles, status and social participation of workers. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirement SB]

352 Social Change. 3 F, S

Patterns of social change, resistance to change and change-producing agencies and processes. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirements SB, G, H]

360 Sociological Psychology. 3 F, S

Interaction patterns between the sociocultural order and individual socialization processes, norms, roles and statuses, collective behavior. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirement SB]

361 Variant Sexuality. 3 F

Sociological research and theories dealing with homosexuality, transvestism, transsexualism and other variations in sexual orientation and gender identity. Prerequisite: SOC 101 or 301. [Satisfies General Studies Requirements SB, G]

362 Sociology of Adolescence. 3 F, S

Cultural values and the social processes that help explain the development of the phenomenon of modern adolescence, including investigation of adolescent subcultures and cross-cultural references. [Satisfies General Studies Requirement SB]

365 The Sociology of Mass Communication. 3 F, S

A sociological explanation of the major mass media as a communicative process in American society. [Satisfies General Studies Requirement SB]

390 Social Statistics I. 3 F, S SS

Application of descriptive and inferential statistical methods to research problems in sociology. Prerequisites: SOC 101 or 301 and passing a proficiency examination in basic algebra to be administered by the Department of Sociology or approval of instructor. MAT 106† recommended. [Satisfies General Studies Requirement N2]

391 Sociological Research. 3 F, S SS

Methods of sociological research, including the fundamental assumptions underlying research and some practical experience in research design, data collection, techniques and data analysis. Prerequisites: SOC 101 or 301, 390† or approval of instructor. [Satisfies General Studies Requirement SB]

392 Practicum in Survey Research I. 3 F

Provides practical experience in conducting a significant research project: survey design, questionnaire construction, sampling, data collection, coding and preliminary data processing. Prerequisite: SOC 391† or approval of instructor. [Satisfies General Studies Requirement SB]

393 Practicum in Survey Research II. 3 S

Continuation of SOC 392. Provides practical experience in analysis and reporting survey data. Prerequisite: SOC 392†. [Satisfies General Studies Requirement SB]

401 Comparative Sociology. 3 F

Cross-cultural study of basic social institutions, the methodology of cross-cultural research. Prerequisite: SOC 101 or 301, or ASB 102 or approval of instructor. [Satisfies General Studies Requirements SB, G]

410 Sociology of Religion. 3 S

Interaction of culture, society and religion on religious and social stratification, religion and economic and political institutions, social change and religion. Emphasis on American society and institutions. Prerequisite: six hours in sociology, including SOC 101 or 301, or approval of instructor. [Satisfies General Studies Requirements L2, SB]

415 The Family. 3 F, S SS

The family considered from the evolutionary viewpoint; its historical development, and its adaptation to a changing culture; the family system in many cultures. Prerequisite: six hours in sociology, including SOC 101 or 301 or approval of instructor. [Satisfies General Studies Requirement SB]

416 Marriage Problems in Contemporary Society.

3 S
Marriage and family problems in today's society from the viewpoint of personal and cultural adjustment. Prerequisite: six hours in sociology, including SOC 101 or 301 or approval of instructor. [Satisfies General Studies Requirement SB]

417 Family Violence. 3 F, S

Critical overview of current research and theory on several aspects of domestic violence, including child maltreatment, spousal aggression, and abuse of elders. Prerequisite: permission of instructor. [Satisfies General Studies Requirements SB, H]

442 Human Ecology. (3) F, S
 Patterns and laws of societies' adjustments to the physical environment distribution of communities and institutions Prerequisite: six hours in sociology including SOC 101 or 301, or approval of instructor [Satisfies General Studies Requirement SB]

443 Demography. (3) S
 Science of population analysis problems in measurements of the size composition and changes in population Prerequisite: six hours in sociology including SOC 101 or 301 and college algebra or approval of instructor [Satisfies General Studies Requirements N2, SB]

440 Racial and Ethnic Minorities. (3) F, S, SS
 Problems of minorities in the United States and in other racial and ethnic 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 [Satisfies General Studies Requirements SB, H]

446 Sociology of Crime. (3) F
 The process of criminalization, explaining 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. [Satisfies General Studies Requirements SB, H]

448 Sociology of Aging. (3) F, S
 Social aspects of aging. Theoretical and methodological perspectives problems of aging such as life satisfaction retirement and adjustment to losses Prerequisite: SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirement SB]

449 Sociology of Law. (3) S
 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. [Satisfies General Studies Requirement SB]

452 Sociology of Complex Organizations. (3) F
 Sociological studies of government agencies, industrial firms, unions military establishments and other large scale organizations Prerequisite: six hours in sociology including SOC 101 or 301, or approval of instructor. [Satisfies General Studies Requirement SB]

453 Social Class and Stratification. (3) S
 Social classes and the function of these groupings in a society Prerequisite: six hours in sociology including SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirements L2, SB]

454 The Afro-American in Modern Society. (3) S
 Social and cultural heritage of Black Americans, achievements and current trends Prerequisite: approval of instructor [Satisfies General Studies Requirement L2 SB H]

455 Collective Behavior. (3) S
 Social causes and consequences of such non-institutionalized forms of behavior as crowds, civil liberties social movements and revolutions Prerequisite: six hours in sociology including SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirements SB, H]

456 Political Sociology. (3) S
 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. [Satisfies General Studies Requirements SB G H]

457 Sociology of Health and Illness. (3) F
 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 [Satisfies General Studies Requirement SB]

462 Social Control. (3) F
 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 [Satisfies General Studies Requirements SB L2]

464 Women's Roles. (3) S
 Sociological analysis of the development nature and consequences of traditional and tentative roles of women in contemporary society Prerequisite: SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirements SB L2]

483 History of Social Thought. (3) S, SS
 Social thought in human culture Background of modern sociology Prerequisite: six hours in sociology including SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirements SB H]

485 Sociology of Knowledge. (3) F
 Relationship between social conditions and the development of knowledge in modern society Prerequisite: SOC 101 or 301 or approval of instructor [Satisfies General Studies Requirement SB]

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 [Satisfies General Studies Requirement SB]

498 Pro-Seminar. (3) F, S
 Topics to be selected [Satisfies General Studies Requirements SB G]

501, 502 Practicum in Survey Research. (3, 3) F, S
 A one-year research practicum in survey fieldwork analysis and reporting in the Phoenix Area Study Prerequisite: SOC 391†

505 Social Statistics II Multivariate Analysis. (3) F, S
 Analysis of variance multiple regression dummy variable regression, path analysis and related topics Computer application to problem solving Prerequisites: SOC 390† or equivalent and a proficiency examination Enrollment MAT 530 is encouraged

507 Social Statistics III: Advanced Multivariate Analysis. (3) S
 Topics include discriminant analysis logistic regression and linear and nonlinear models studied through the application of computers Prerequisite: SOC 505 or approval of instructor

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 functionalist conflict social exchange, symbolic interactionist theory Prerequisite: approval of instructor

587 Metasociology. (3) S
 Nature of sociological assumptions Nature and form of sociological theories Context of discovery grounded the

ory Context of st fication 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 social sciences. Prerequisite: SOC 391† or approval of instructor.

See page 38 for special courses which may be offered by this academic unit.

Speech and Hearing Science

PROFESSORS:

LaPOINTE LL A 29A CLUFF, DORMAN,
MOWRER PRATHER

ASSOCIATE PROFESSORS:

CASE, CHUBRICH, HANNLEY

LECTURER CLINICAL SUPERVISORS:

HUEFFNER KENNEY MNTZ

CLINIC 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 language, speech and hearing. The following courses or their approved equivalent, are required: SHS 105, 310, 311, 367, 375, 376, 384, and 494. Introduction to Speech and Language Disorders. Supporting courses from related fields must include PGS 100, COM 100, MAT 115, PSY 230, ENG 213 or ASB 480, ENG 301, and ASB 353, or their equivalent. The remaining Speech and Hearing Science courses to complete the major will be determined by the student in consultation with an advisor. A list of approved electives is 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 Science. Consult the *Graduate Catalog* for requirements.

SPEECH AND HEARING SCIENCE

SHS105 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

Role of the parent, teacher and others in support of evaluation and treatment of communication disorders. Designed for nonmajors. [Satisfies General Studies Requirement SB]

310 Anatomical and Physiological Bases of Speech. 3 F

Anon-cadaveric study of anatomical systems which underlie human speech and language: respiratory, phonatory, articulatory and related nervous system processes. Prerequisite: SHS 105 or concurrent enrollment.

311 Physical and Physiological Bases of Hearing. 3 S

Physical characteristics of sound and the structure and function of the human auditory system. Prerequisite: MAT 118.

367 Speech and Language Development. 3 F

Process of speech and language development from birth through adulthood. Prerequisite: ENG 213 or ASB 381.

375 Speech Science. 3 S

Normative aspects of speech, hearing and language. Prerequisite: SHS 310, 311.

376 Psychoacoustic cs. 3 F

Auditory processes underlying perception of sound. Subjective correlates of acoustic parameters, and perceptual responses to simple and complex auditory stimuli. Prerequisite: SHS 311.

384 Introduction to Hearing Disorders. 3 S

Survey of peripheral and central hearing disorders: characteristics, management and effects on communicators. Prerequisites: SHS 311, SHS 376.

400 Methods of Audiometry. 4 F

Techniques and instrumentation used in measuring auditory threshold and audiogram interpretation. Three hours lectures, 2 hours laboratory weekly. Prerequisites: SHS 311, 376, 384.

402 Modifying Communicative Behavior. (3 F

Principles and techniques of modifying speech and language behavior. Prerequisite: SHS 105.

430 Psychology of Hearing-Handicapped Children. 3 N

Effects of hearing impairment on child language acquisition, intellectual development, personality development and educational placement.

431 Nature of Fluency Disorders. 2 S

History and nature of fluency disorders. Prerequisite: approval of instructor.

435 Hearing Conservation. 3 S

Techniques and prevention of noise-induced hearing loss. Prerequisite: SHS 376.

450 Observation. 1 F, S

Supervised observation of evaluation and therapy representing the areas of language, speech and hearing. Prerequisite: approval of instructor.

465 Language Acquisition. 3 F

Language development in the normal child. Prerequisite: approval of instructor.

490 Childhood Language Disorders. 3 F

Introduction to the nature and treatment of language disorders in children. Prerequisite: SHS 310, 311, 367, 402.

494 Special Topics. (3) F, S

Topics may be selected from the following:

- a) speech and language disorders;
- b) research;
- c) computer applications.

495 Disorders of Articulation. (3) F

Detailed analysis of disorders of articulation. Prerequisites: SHS 105, SHS 310, SHS 402, ASB 383.

496 Aural Habilitation—Children. (3) S

Theories and practices in the education of hearing-handicapped children. Prerequisite: approval of instructor.

502 Differentiation of Peripheral and Central Auditory Disorders. (3) F

Prerequisite: SHS 400.

504 Aural Rehabilitation: Hearing Aids. (3) F

Operation and application of amplifying devices relative to the aurally handicapped. Prerequisite: SHS 400.

508 Pediatric Audiology. (3) S

Audiologic testing, and management of young children and infants. Prerequisites: SHS 400 and approval of instructor.

510 Advanced Hearing Science. (3) F

Psychoacoustic and psychophysiological correlates of audition. Prerequisites: SHS 311, 320.

512 Medical Aspects of Speech and Hearing. (3) F, S

Correlation of history and physical findings with pathologic physiology and test results in speech and hearing abnormalities.

516 Physiological Measurements of Auditory Function. (3) S

Theory and application of physiological techniques for assessing the auditory system. Three hours lecture, one hour laboratory. Prerequisite: SHS 502 or SHS 510.

531 Neurophysiology of Hearing. (3) N

The neurophysiological processes of hearing. Prerequisites: SHS 311, 320.

545 Speech Perception and Production. (3) F

Current progress in production and perception of speech. Prerequisite: SHS 375 or approval of instructor.

566 Psychology of Language. (3) N

Language and thought in interaction.

574 Fluency Disorders and Treatment. (3) F

Phenomena, etiology, assessment and theories of stuttering are presented followed by various treatment procedures for children and adults who stutter. Prerequisite: SHS 431 or approval of instructor.

575 Neurogenic Disorders of Communication—Aphasia. (3) F

Assessment and treatment of acquired neurolinguistic impairment.

576 Neurogenic Aspects of Speech Production—Motor Speech Disorders. (3) S

Evaluation and treatment of the dysarthrias and apraxia of speech. Emphasis on acquired adult disorders.

577 Orofacial Disorders of Communication—Cleft Palate. (3) N

Communication disorders related to anomalies of the orofacial structures. Prerequisite: SHS 310 or approval of instructor.

578 Disorders of Voice. (3) S

Communication disorders related to dysfunction of the phonatory and resonance systems of voice production, assessment and treatment. Prerequisite: SHS 310 or approval of instructor.

580 Therapy: Practicum. (1-6) F, S, SS

Supervised practicum in communication disorders. One hour staffing and two hours of client contact per week per hour of credit. May be repeated for credit. Prerequisite: approval of instructor.

582 Differential Diagnosis of Communication Disorders. (3) F

Procedures for assessing speech/language disorders in children and adults. Three hours lecture, 2 hour laboratory. Prerequisite: 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.

591 Seminar. (3) F, S, SS

Selected topics regularly offered: a) autism and pervasive language disorders; b) multiply-handicapped child. See page 38 for special courses which may be offered by this academic unit



Women's Studies

The Women's Studies Program is an interdisciplinary university program housed in the College of Liberal Arts and Sciences. Core and affiliated faculty hold tenure or tenure track positions in traditional academic departments. Information on faculty affiliation is provided in parentheses for reference.

PROFESSORS:

E SENBERG (Psychology, GFFNH story)
 JOHNSON (Justice Studies)
 KELLY (Public Affairs), L GHTFOOT (English,
 MAGENTA (Art),
 NILSEN (Curriculum and Instruction)
 RUSSO (Psychology), SHAFER
 (Educational Leadership and Policy Studies
 SHINN (English),
 K B VALENTINE (Communication)
 WARNICKE (History),
 WELLS (Health and Physical Ed.)

ASSOCIATE PROFESSORS:

AHERN (Foreign Languages),
 ALLSON (Lecture Studies),
 BENIN (Sociology) BRANDT (Anthropology),
 COOK (Management),
 DANTCO (Political Science),
 DATESMAN (Justice Studies),
 EDELSKY (Elementary Education),
 GREENE (English)
 LOSSE (Foreign Languages),
 METHA (Counseling),
 MOORE (Counseling), NIGG (Public Affairs),
 ROTHSCHILD (History),
 VASQUEZ (Foreign Languages),
 WEITZ (Sociology)

ASSISTANT PROFESSORS:

FUCHS (History),
 GRUZINSKA (Foreign Languages)
 JURIK (Justice Studies),
 C VALENTINE (Communication)
 ZATZ (Justice Studies)

Major Requirements

Bachelor of Arts and Bachelor of Science Degree Curricula

Women's Studies—Consists of 45 semester hours of credit: 30 of these hours must be in Women's Studies, 15 in a single discipline other than Women's Studies, which constitute the student's related field. At least 30 of the 45 credits required for the major must be completed in upper division courses. In addition, for the B.S.

degree, students must complete six hours in statistics, computer science, or quantitative research methods. This sequence must be approved by the student's advisor.

Required Course. Five courses are required. Student must complete 1) WST 100 or WST 300; 2) WST 498; 3) an upper division course which provides an historical perspective on the lives and contributions of women; 4) an upper division course that provides a humanities/fine arts perspective on the lives and contributions of women and 5) an upper division course on women in non western societies or a course on minority or ethnic women in American society. A list of approved courses is available each term in the Program Office.

The historical perspective requirement may be fulfilled by completing HIS 333, HIS 370, HIS 371, HIS 422, FRE 431, or an approved special topics course. The humanities perspective requirement may be fulfilled by completing ARE 485, ENG 461, ENG 462, FRE 431, REL 390 or an approved special topics course. No course may be used to satisfy more than one requirement.

Electives in a Single Discipline. Majors must complete fifteen hours of courses in a discipline other than Women's Studies; this amounts to the completion of the minimum core requirements in a single field other than Women's Studies. These courses may be used to satisfy the general education requirements in the College of Liberal Arts and Sciences. In exceptional cases, a student may be permitted to focus on courses from more than one department. A student must secure approval for such a program of study through a petition.

Women's Studies Minor Requirements

The Women's Studies minor consists of 18 semester hours of credit. Required courses are WST 100 or 300, WST 498, and 12 additional hours of approved Women's Studies courses taken after consultation with a Women's Studies advisor.

Certificate Program in Women's Studies

The Certificate Program is equivalent to an interdisciplinary minor and is recommended for students outside the College of Liberal Arts and Sciences, graduate students and nondegree students. Students majoring in another field may wish to have a certificate in Women's Studies (Refer to page 64 for a description of the Certificate Program.)

WOMEN'S STUDIES

WST 100 Women and Society 3 F S
 Interdisciplinary introductory examination of the
 Women's Studies [Satisfies General Studies Requirement
 SB H]

294 Special Topics. 3
 Topics vary by semester. Check with Program Office for
 current description.

300 Women in Contemporary Society. 3 SS
 Interdisciplinary examination of such topics as
 gender role, work, education, equality, politics, health,
 and law. Not open to student who have credit for WST
 100. [Satisfies General Studies Requirement SB]

484 Undergraduate Internship. 1 6
 Advance approval of Program Director required.

494 Special Topics. 3
 Topics vary by semester. Advance approval of Program
 Director required. [Third World Women Satisfies General
 Studies Requirement G]

**498 Pro-Seminar: Theoretical Issues in Women's
 Studies.** 3 A
 Reading and research on important theoretical issues in
 Women's Studies. [Satisfies General Studies Requirement
 L2 SB]

499 Independent Study. 1 6
 Topic agreed on in advance by instructor and student.
 Approval of Program Office required.

590 Readings and Conference. 1 6
 Topic arranged in advance between student and instructor.
 Approval of Program Office required.

591 Seminar. 1 6
 Topics vary by term. Contact Program Office for current
 listing.

598 Special Topics. 1 6
 Topics vary by term. Contact Program Office for current
 information.

*The following courses are available through department
 mentors. Refer to department listing for a course description.*

- ARE 485 Women's View of Art**
- ASB 211 Women in Other Cultures**
- CED 591 Woman: Sense of Identity**
- COM 316 Women and Communication**
- CRJ 422 Women and Crime**
- CRJ 560 Women and Crime**
- ENG 461 Women and Literature**
- FRE 431 French Women in Society and the Arts**
- HIS 370 Women in U.S. History: 1600-1890**
- HIS 371 Women in U.S. History: 1890-1980**
- HIS 422 Social History of American Women**
- PGS 331 Sexual Identification**
- REL 390 Women and Religion**
- SOC 417 Family Violence**
- SOC 464 Women's Roles**
- SPF 515 Education of Women**

Additional courses will appear as special topics; these
 will vary by semester. Check with the Program Office or
 the Department for a current listing.

Zoology

PROFESSORS:

KAMMER (LS C 226), ALCOCK, ALVARADO,
 CHURCH, DOANE, FISHER, HADLEY,
 HAZEL LAWSON, McGAUGHEY, MCKLEY,
 OHMART, PATTERSON, RASMUSSEN, WOOLF

ASSOCIATE PROFESSORS:

CHANDLER, COLLINS, FAETH, FOUQUETTE,
 GOLDSTEIN, JUSTUS, RUTOWSKI,
 SATTERLIE, A. SMITH, WALSBURG

ASSISTANT PROFESSORS:

CAPCO, GALAT, MARTIN, MOORE, RISSING,
 G. SMITH

LECTURER:

M. LSTEIN

PROFESSORS EMERITI:

BENDER, CAZIER, CLOUTIER, COLE,
 GERKING, HANSON, HASBROUCK,
 LANDERS, STAHNKE

Departmental Major Requirements 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 provided by the more specialized majors of
 the individual departments. The major consists
 of 43 hours and 20 hours in supplementary ar-
 eas, plus a mathematics proficiency. Required
 major courses are BIO 181, 182, 320, 340, BOT
 300, MIC 205 or 220; MIC 206, ZOL 350;
 BOT 360 or ZOL 360, the remaining 12 hours
 are to be selected so the total major hours re-
 flect a balance between the two departments.
 Required supplementary courses are CHM 113,
 115; CHM 231 (or CHM 331, 332, 335, 336),
 PHY 101 (or PHY 111, 112, 113, 114); CSC
 181 or 183.

Mathematics proficiency requirement: MAT
 115 (or MAT 117, 118) and 210 (or any calcu-
 lus). Two years of a foreign language, or equiva-
 lent competence (see Foreign Language Require-
 ment, page 59.)

Zoology—Consists of 34 hours in major courses
 and 27 hours in required supplementary courses
 plus math proficiency. Required are: BIO 181,
 182, 320, 340, 445; ZOL 280, 330, 331, 360,
 plus one of ZOL 270 or 350 or 354; CHM 113,
 115, and either of the following sequences:
 CHM 331, 332, 335, 336, or CHM 231, 361;
 PHY 111, 112, 113, 114, CSC 181, or 183.

Mathematics proficiency requirement: MAT 115, 210 or MAT 270, 271, 272, or MAT 290, 291, or any calculus. Two years of a foreign language, or equivalent competence (see Foreign Language Requirement, page 59)

Wildlife Biology Two options are available:

The Wildlife Management Option consists of a minimum of 63 hours in major and supplemental courses, plus mathematics proficiency. Required are: BIO 181, 182, 210, 320, 340, 415, ZOL 360, 411, 412, and ZOL 354 or 471 or 472; BOT 370; ERA 370 or 360; an additional, approved upper division Plant course: BOT or ERA, CHM 113, 115, CHM 231 (or CHM 331, 332, 335, 336), COM 225. Mathematics proficiency requirement: MAT 115, 210 (or MAT 270, 271, 272, or MAT 290, 291, or any calculus).

The Fisheries Management Option consists of a minimum of 61 hours in major and supplemental courses, plus mathematics proficiency. Required are: BIO 181, 182, 217, 320, 340, 415, 426; ZOL 270, 350, 360, 413, 473; CHM 113, 115; CHM 231; COM 225. Mathematics proficiency requirement: MAT 115, 210 (or MAT 270, 271, 272, or MAT 290, 291, or any calculus).

These requirements meet the minimum for eligibility for the Federal Register. Students planning to enter graduate school from either option should take CHM 331, 332, 335, 336 instead of CHM 231, and should take PHY 111, 112, 113, 114.

Departmental Major Teaching Field Requirements

Bachelor of Arts in Education Degree Curriculum

Biological Sciences A combined offering by the faculties of departments of Botany, Microbiology and Zoology. The major consists of a minimum of 42 hours of credit, plus at least 9 hours in supporting courses. Required major courses are: BIO 181, 182, 320, 340, BOT 300 or 370; BOT 360, MIC 205 or 220; MIC 206; ZOL 350, 360. The remaining courses in the major (7 hours minimum) must include one from each of the two departments. Required supporting courses are: CHM 113, 115. 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 181, 182, 340, MIC 205 or 220; MIC 206; and 8 additional hours in courses listed under Biology: Botany, Microbiology, and Zoology, with the exception of the following: BIO 100, 218, BOT 100; ZOL 113, 300. Supporting course: BIO 480 is required in addition to the 24 hours credit in biological sciences.

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

Principle of biology. Cannot be used for major or credit in the biological science. Three hours lecture, 3 hours laboratory. [Satisfies General Studies Requirements S1, S2]

181, 182 General Biology. 4 4 F, S

Biological concepts emphasizing fundamental principles 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 school chemistry strongly recommended. BIO 181 is a prerequisite for BIO 182. Three hours lecture, 3 hours laboratory. [Satisfies General Studies Requirement S1, S2]

217 Introduction to Fisheries and Wildlife

Management. 3 F

Management of fisheries and terrestrial wildlife emphasizing management of ecosystems. Designed for prospective Wildlife biologists. Prerequisite: 8 hours of biology.

218 History of Medicine. 1 F

Development of medical concepts.

300 Natural History of Arizona. 3 F, S

Plant and animal communities of Arizona. Cannot be used for major credit in the biological sciences. Prerequisite: junior standing.

301 Field Natural History. 1 N

Organisms and their natural environment. Two weekend field trips and a field project. Cannot be used for major credit in the biological sciences. Prerequisite: BIO 300 or concurrent enrollment.

310 Special Problems and Techniques (1-3) F, S

Qualified undergraduates may investigate a specific biological problem under the direction of a faculty member. May be repeated for a total of 6 credits. Prerequisites: approval of the problem by the faculty member and departmental chair.

320 Fundamentals of Ecology. 3 S
 Organization, function and development of ecological systems, energy flow, biogeochemical cycling, environmental relations, population dynamics. Prerequisite: BIO 182 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 biological sciences. [Satisfies General Studies Requirement: G]

332 Cell Biology. 3 F
 Survey of major topics in cell biology, including structural biochemistry and molecular aspects of cell function. Prerequisite: BIO 182

340 General Genetics. 4 F S S S
 Science of heredity and variation. Three hours lecture, 1 hour recitation. Prerequisite: BIO 182†

415 Biometry. 4 F
 Statistical methods applied to biological problems, design of experiments, estimation, significance analysis of variance, regression, correlation, chi-square and boassay, the use of computers. Does not satisfy laboratory requirements for the Liberal Arts General Studies program. Three hours lecture, 3 hours laboratory. Prerequisite: MAT 210† or equivalent. [Satisfies General Studies Requirement: N2]

420 Computer Applications in Biology. 3 F
 Computer analysis techniques in biology, emphasizing data entry, management and analysis and graphic portrayal. Employs mainframe and microcomputers. Prerequisite: MAT 115. [Satisfies General Studies Requirement: N3]

424 Ecosystems. 3 F 88
 Structure and function of terrestrial and aquatic ecosystems with emphasis on productivity, energetics, biogeochemical cycling and systems integration. Prerequisite: BIO 320 or equivalent.

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. Prerequisite: BIO 320† or approval of instructor.

428 Biogeography. 3 F
 Environmental and historical processes determining distributional patterns of animals and plants, emphasis on terrestrial life. Prerequisites: BIO 182† or equivalent, un or standing.

429 Advanced Limnology. 3 F
 Recent literature, developments, methods and limnology theory, field and laboratory application to some particular topics in limnology. Prerequisite: BIO 426†

430 Advanced Developmental Biology. 3 S
 Current concepts and experimental methods involving differentiation and embryonic activity of cells and organisms with emphasis on microorganisms, plants and animals. Prerequisite: ZOL 330†

432 Biochemical Cytology. 3 S
 Eukaryotic cell functions as affected by intracellular compartmentalization. Emphasis on the application of electron microscopy analysis, cell fractionation and selected biochemical procedures. Prerequisite: BOT 36 or ZOL 360 or BIO 332 or equivalent, CHM 231 or 331 or equivalent.

435 Biomembranes. 3 F
 Structure and function of biological membrane, emphasis on synthesis, fluidity, exocytosis, endocytosis and cell responses to hormones and neurotransmitters.

Prerequisites: BIO 332 or equivalent, CHM 231 or 331 or equivalent.

441 Cytogenetics. 3 F 88
 Chromosomal basis of inheritance. Prerequisite: BIO 340†.

442 Cytogenetics Laboratory. (2) F 88
 Microscopic analysis of meiosis, mitosis and aberrant cell divisions. Six hours laboratory. Prerequisite: BIO 441† or concurrent enrollment.

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 adaptive change and speciation in sexual populations. Prerequisite: BIO 340† or ZOL 241

464 Photobiology. 3 S
 Principles underlying the effects of light on growth, development and behavior of plants, animals, and microorganisms. Prerequisites: 12 hours of courses in sciences. CHM 231† or 331†

480 Methods of Teaching Biology. (3) S
 Methods of instruction, experimentation, organization and presentation of appropriate content in biology. Two hours lecture, 3 hours laboratory. Prerequisite: either SED 311† or concurrent enrollment in SED 311† and 20 hours in the biological sciences.

512 Transmission Electron Microscopy. (4) F S
 Theory, use and methods of preparing biological material for transmission electron microscopy. Two lectures, 6 hours laboratory. Material fee. Prerequisite: approval of instructor.

515 Scanning Electron Microscopy. 2 N, S S
 Theory and use of scanning electron microscope for biological materials. Intensive five week mini-course. Three hours lecture, 6 hours laboratory. Material fee. Prerequisite: approval of instructor.

520 Biology of the Desert. 2 N
 Factors affecting plant and animal life in the desert regions and adaptations of the organisms to these factors. Prerequisite: 10 hours of biological sciences or approval of instructor.

526 Quantitative Ecology. (3) N
 Sampling strategies, spatial pattern analysis, species diversity, classification and applications of multivariate techniques to ecology. Two hours lecture, 3 hours laboratory. Prerequisites: one course in ecology; BIO 415† or equivalent.

See page 38 for special courses which may be offered by this academic unit.

ZOOLOGY

ZOL 113 Contemporary Zoology. (4) F S
 Topics emphasizing socially relevant problems. Cannot be used for major credit in the biological sciences. Three hours lecture, 3 hours laboratory.

201 Human Anatomy-Physiology. 4 F S S S
 Structure and dynamics of the human mechanism. Cannot be used for major credit in the Department of Zoology. Three hours lecture, 3 hours laboratory. [Satisfies General Studies Requirement: S2]

202 Human Anatomy-Physiology. 4 F, S S S
 Continuation of ZOL 201. Cannot be used for major credit in the Department of Zoology. Three hours lecture, 3 hours laboratory. Prerequisite: ZOL 201 or approval of instructor.

148 ZOOLOGY

241 Human Genetics. (3 F S)

Introduction to human heredity and variation. Cannot be used for major credit in the Department of Zoology. Prerequisite: a course in the life sciences

270 Vertebrate Zoology. (4 F, S)

Characteristics, classification, evolution and natural history of the major groups of vertebrate animals. Three hours lecture, 3 hours laboratory. Prerequisite: BIO 182†

280 Animal Behavior. (3) F

Evo ut onary, genet c, phys c, og ca and eco og ca bases of an ma behavior. Prerequisite: four hours of B O, or ZOL or approval of instructor

300 Biogenetics of Man. (4 S)

Concepts of ecology, heredity and evolution and the relation to human affairs. Cannot be used for major credit in life sciences

311 Animal Microtechnique. (2 N)

Zoo og cal m crotechnique nc ud ng the preparation for m croscopic exam nat on of an ma structures t issues cells and who e mounts. Sx hours laboratory. Prerequisite: B O 182†

330 Developmental Anatomy. (3 F)

General development: bi ogy (embryology) and comparative structure of organ systems. Illustrated mainly by vertebrate examples. Prerequisite: B O 182†

331 Laboratory in Vertebrate Developmental Anatomy. (2) F S

Morphology of representative embryonic and adult vertebrates. Two 3 hour laboratories. Prerequisite: BIO 182†. ZOL 330 recommended

350 Comparative Invertebrate Zoology. (4 F)

Characteristics, life cycles, adaptations, bi ogy, and evolution of invertebrate animals. Three hours lecture, 3 hours laboratory. Prerequisite: BIO 182† or approval of instructor

354 General Entomology. (4 S 88)

Form, activities and classification of insects. Three hours lecture, 3 hours laboratory. Prerequisites: B O 182†

360 Basic Physiology. (4 F S)

Phys i og ca mechan sms of the higher vertebrates. Three hours lecture, 3 hours laboratory. Prerequisites: BIO 182†, CHM 115†, MAT 115

380 Sociobiology. (3 S)

Survey of animal and human social behavior examined from an evolutionary perspective. Suitable for non majors. Prerequisite: ZOL 280†. s recommended

394 Special Topics (Non-majors). (2-3) N

Topics of current or special interest in one or more aspects of animal bi ogy. Topics vary. Cannot be used for major credit in life sciences. Prerequisite: junior standing.

411 Wildlife Habitat Management. (4 F)

Principles, practices and techniques of managing habitats for wildlife. Three hours lecture, 3 hours laboratory or field trips; weekend field trips. Prerequisites: B O 217, 320, ZOL 471, 472; or approval of instructor

412 Wildlife Population Management. (4 S)

Principles, practices and techniques of managing wildlife populations. Three hours lecture, 3 hours laboratory or field trips; weekend field trips. Prerequisite: ZOL 411

413 Fisheries Management. (4 F)

Principles and theory of fisheries management. Three hours lecture, 3 hours laboratory or field trips; weekend field trips. Prerequisite: 10 hours of biology.

420 Field Zoology. (3 N)

Experience in zoology field techniques. Requires weekend or longer field trips. Prerequisite: approval of instructor

423 Population and Community Ecology. (3) N

Organization and dynamics of populations and communities, emphasizing animal systems. Theoretical and empirical approaches. Prerequisite: B O 320† or approval of instructor.

425 Animal Ecology. (3 N)

Phys i og ca and behavior adaptations of individual animals to both abiotic and biotic environment. Prerequisite: B O 320†

433 Animal Histology. (4 N)

Microscopic study of animal tissues. Three hours lecture, 3 hours laboratory. Prerequisite: B O 182† or approval of instructor.

440 The Nucleus. (3 S 88)

Experimental studies in chromatin and chromosome structure. Molecular mechanisms of chromosome movement and mechanics, cell population kinetics, the nucleus and the nuclear envelope. Prerequisites: CHM 261†, 335†, or 361† and BIO 340†.

441 Principles of Human Genetics. (3 N)

Genetics in human populations, including medical aspects. Prerequisite: B O 340

454 Aquatic Insects. (3 N)

Systematics and ecology of aquatic insects. Prerequisite: ZOL 354†

460 Comparative Physiology. (4 F 87)

The analysis of function in invertebrates and vertebrates, emphasizing evolutionary trends in physiological systems. Three hours lecture, 3 hours laboratory. Prerequisite: ZOL 360† or equivalent

465 Neurophysiology. (3 S 88)

Detailed treatment of cellular and organ system neurophysiology and nervous system function. Prerequisite: ZOL 360†

466 Neurophysiology Laboratory. (2 S '88)

Intracellular and extracellular electrophysiological recording techniques, histology and preparation, and dye filling techniques. Six hours laboratory. Pre or corequisite: ZOL 465†

468 Mammalian Physiology. (4 S 89)

Detailed treatment of mammalian organ system functions, emphasizing integrative mechanisms. Three hours lecture, 3 hours laboratory. Prerequisite: ZOL 360† or equivalent

469 Cellular Physiology. (4 F 89)

Emphasizing the molecular basis for cell structure and function. Three hours lecture, 3 hours laboratory. Prerequisites: ZOL 360†, organic chemistry

470 Systematic Zoology. (3 S '89)

Philosophy, theory, and practice in interpreting patterns of animal diversity, including species concepts and special nomenclature and taxonomy, evolutionary and phylogenetic classification. Prerequisites: junior standing; 18 hours life science

471 Ornithology. (3 S '89)

The biology of birds. Two hours lecture, 3 hours laboratory. Weekend field trips. Prerequisite: ZOL 270† or approval of instructor

472 Mammalogy. (4 F)

Classification, structure, habits, ecology and distribution of mammals, emphasizing North American forms. Three hours lecture, 3 hours laboratory or field trip. Weekend

field trips. Prerequisite: ZOL 270† or approval of instructor.

473 Ichthyology. (3) F '89

Systematics and biology of recent and extinct fishes. Two hours lecture, 3 hours laboratory or field trip. Week-end field trips required. Prerequisites: ZOL 270†, 425† or approval of instructor.

474 Herpetology. (3) S '88

Systematics and biology of recent and extinct reptiles and amphibians. Two hours lecture, 3 hours laboratory or field trip. Prerequisite: ZOL 270†.

481 Research Techniques in Animal Behavior. (3) S '89

Experimental and field studies of animal behavior; description and quantification of animal behavior, interpretation of behavior within an evolutionary framework. One hour lecture, 6 hours laboratory. Prerequisite: ZOL 280.

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. Two hours lecture, 2

hours recitation. Prerequisites: MAT 210† or BIO 415†, plus BIO 320†, ZOL 515†.

532 Developmental Genetics. (3) S '89

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†.

566 Environmental Physiology. (3) S '88

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) Cell Biology
- (c) Ecology
- (d) Genetics
- (e) Physiology
- (f) Evolution
- (g) Adaptations
- (h) Genetic Engineering

May be repeated for credit.

See page 38 for special courses which may be offered by this academic unit.



College of Architecture and Environmental Design

Purpose

The three major functions of the College of Architecture and Environmental Design are

1. Educate and prepare students for specific professional careers in architecture, urban planning, industrial design, interior design, and other problem solving, decision making fields related to the designed and built environment.
2. Provide students opportunities at the graduate level to participate with faculty in research and to expand their professional potential for a diversity of roles related to the environmental design professions.
3. Further develop faculty research relevant to community, professional, and regional needs and provide opportunities for continuing education and post professional development.

Organization

The College is composed of three academic units, the School of Architecture, the Department of Design, and the Department of Planning. A fourth unit, the Professional Development Office, provides special programs for the public and offers advanced professional education courses. 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.

College Facilities

The College of Architecture and Environmental Design building, opened in 1969, provides space for the College's activities. Ground breaking for a major expansion is scheduled for the summer of 1987 with occupancy by the spring of 1989. Facilities include design studios, lecture and seminar rooms, technology laboratories, as well as offices for faculty, administration and

student organizations, the Howe Architecture Library, the Gallery of Design, the Media Center, the Shop, the Slide Collection, and computer laboratories.

Howe Architecture Library. As a branch of the University library, the Howe Library is located in the main building and provides easy access to books, periodicals, and reference materials for students and faculty. The collection includes more than 15,000 volumes as well as special research collections on the work of Paolo Soleri and Frank Lloyd Wright.

Gallery of Design. The Gallery of Design is one of eight University galleries and museums. It provides premium space for traveling exhibitions and exhibitions of student and faculty work.

Special Facilities. College programs are supported by several kinds of special laboratories. Computer facilities in the College provide a teaching and research laboratory for students and faculty. The computer laboratory is operated by University Computing Services with an adjacent research laboratory for computer aided design and graphics operated by the College. The College's photographic laboratory and dark room provide high quality equipment and space for research projects. A shop, equipped to handle wood, plastic, and metal, supplements studio space. The College's Media Center includes traditional graphics and audio-visual equipment as well as portable video equipment. The Slide Collection, with more than 10,000 slides, is available for instructional use. The College maintains an outdoor laboratory adjacent to the main building as a solar workshop and materials testing laboratory. The Research and Service Foundation of the College is a non profit organization contributing faculty and student time to research, community service, and professional development.

Degrees

Undergraduate. The College offers programs leading to a four-year undergraduate degree: Bachelor of Science in Design. Students select one of the following majors within the respective academic units.

School of Architecture

B.S. Design, major in Architectural Studies

Department of Design

B.S. Design, major in Design Sciences
 B.S. Design, major in Industrial Design
 B.S. Design, major in Interior Design

Department of Planning

B.S. Design, major in Urban Planning
 B.S. Design, major in Housing and Urban Development

Each undergraduate program is divided into a lower-division and an upper-division program.

Graduate. The Graduate College awards the master's degree to candidates who have successfully completed graduate programs offered in this College. Two degrees are offered: the professional degree, Master of Architecture (M. Arch.), and the multi-disciplinary degree, Master of Environmental Planning (M.E.P.) with a major in Environmental Planning. For more information consult the *Graduate Catalog*.

Curriculum

Students seeking the Bachelor of Science in Design degree must satisfactorily complete a curriculum of a minimum of 134 to 140 credits depending on the major. Requirements include 6 hours of English Proficiency and meet or exceed General Studies Requirements for the University.

Core courses are regularly reviewed. To determine whether a course meets one or more General Studies Core course credit requirements, see the *General Studies Course Guide* available prior to registration for courses. (See pages 43-46 for specific requirements.)



**Key to General Studies
 Core Credit Abbreviations**

- L1 Literacy and Critical Inquiry Core Courses (Intermediate level)
- L2 Literacy and Critical Inquiry Core Courses (Upper division)
- N1 Numeracy Core Courses (Mathematics)
- N2 Numeracy Core Courses (Statistics and Quantitative Reasoning)
- N3 Numeracy Core Courses (Computer Applications)
- HU Humanities and Fine Arts Core Courses
- SB Social and Behavioral Science Core Courses
- S1 Natural Science Core Courses (Introductory)
- S2 Natural Science Core Courses (Additional Courses)
- G Global Awareness Courses
- H Historical Awareness Courses

Bachelor of Science in Design, Major in:

	<i>Semester Hours</i>
Architectural Studies	134 or 137
Industrial Design	134
Interior Design	140
Design Sciences	134 or 140
Urban Planning	134
Housing and Urban Development	134

Admission

Lower-Division Programs. New and transfer students who have been admitted to the University and select a College major are admitted to lower-division programs. A separate application admission procedure is required for entry to the upper-division programs and graduate programs. Acceptance into lower-division programs does not guarantee acceptance to upper-division programs.

Transfer Credits. While the University accepts credits transferred from other accredited institutions, transfer credits are not applied to specific degree programs until reviewed and accepted by the appropriate academic units. Transfer course work must be equivalent in both *content* and *level* of offering. In addition, a review of samples of work (or portfolio of work) from previous studio classes is required.

Upper-Division Programs. Admission to upper-division programs is competitive. Consult requirements for each major for details. Students applying to more than one academic unit must make separate applications to each

and must submit separate portfolios. Students not enrolled at ASU when they apply to the upper division program must also make a separate application to the University. Transfer applications into upper division programs are considered only if vacancies occur. Admission is limited to students with equivalent course work who are competitive with continuing students.

Graduate Programs. For admission to the graduate programs in the College of Architecture and Environmental Design, see requirements and procedures under the respective academic units and the *Graduate Catalog*. Students must make separate applications and be admissible to the Graduate College and also to the academic unit administering the degree program selected.

Academic Requirements

Incompletes. It is the student's responsibility to contact the instructor regarding the process of requesting and fulfilling an incomplete. Tardiness in contacting the instructor may result in a failing grade. Generally, the student submits a written request for an incomplete to the instructor. The request must include a justification, a listing of requirements that have not been fulfilled, and a proposed schedule of completion. The instructor reviews the request, proposes modifications if necessary, and submits a copy of the request to the Department Chair for approval. An incomplete in a course in an upper division program that is prerequisite for sequential courses automatically places the student on probation and denies enrollment in subsequent courses. Also see University requirements on incompletes, page 40.

Withdrawals. University withdrawal regulations apply to lower division courses. Because the College's upper division programs are modular and sequential and space in the programs is limited, students are expected to progress through the curriculum with their class. Withdrawal from a required course automatically places a student on probation. Withdrawal from a required course in a required sequence automatically removes the student from the program beginning the subsequent semester. Also see University requirements on withdrawals, page 40.

Credit/No Credit. The only courses accepted toward graduation with a grade of pass/fail or credit/no credit are transfer freshman composition courses and Internship.

Retention Standards

Lower-Division Program Retention Standards. Students in the College's lower division programs are placed on probation when they fail to maintain a cumulative grade point average (GPA) of 2.00. Students on probation must observe rules or limitations the College Standards Committee imposes on their probation as a condition of retention. If after one semester on probation the overall GPA is not at least a 2.00 and/or the conditions of probation have not been met, the student will be disqualified. Appeals may be made to the College Standards Committee before the beginning of the following semester. Also see University retention standards, pages 41-43.

Upper-Division Programs Retention Standards. Students in upper division programs are placed on probation when they fail to meet any of the following requirements:

- failure, incomplete, or withdrawal from any required course,
- a semester GPA below 2.00,
- a grade of 'D' or 'E' in a design studio or design laboratory,
- violation of the College code of student responsibility and/or any admission agreement.

Students on probation must observe rules or limitations their Standards Committees place on their probation as a condition of continuation. Students will be removed from programs if

- after one semester on probation the requirements imposed are not met and/or the overall GPA is not above 2.00,
- failures or withdrawals in required courses are not resolved at the next offering of the course,
- failures or withdrawals from required sequential courses are not resolved,
- incompletes in required sequential courses are not completed before the first day of class of the next semester.

Students removed from programs are not guaranteed reinstatement in the program even if probation requirements or requirements placed on readmission after removal from a program are fulfilled. Appeals may be made to the appropriate Standards Committees. Also see University retention standards, pages 41-43.

Dean's List. Undergraduate students who earn 12 or more graded semester 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.

Special Honors at Graduation. At the time of graduation, students with academic distinction in the professional programs of the College are awarded the respective designation *cum laude*, *magna cum laude*, or *summa cum laude*. Also see University requirements for graduation with academic recognition, page 48.

Student Responsibilities

Code of Student Responsibility. The purpose of this code is to promulgate standards of conduct for students of the College of Architecture and Environmental Design and to establish procedures for reviewing violations. Students are expected to support and maintain the highest professional standards with regard to their individual conduct and their personal and common environments in the College of Architecture and Environmental Design during their tenure at this institution. Copies of the Code are available from the Office of the Dean and the Advising Office.

Appeals Procedures. Students who feel they have been unjustly treated in academic or other matters relating to their career as students may appeal to the appropriate College, School, or departmental appeals committee or may take their grievance to the College Ombudsman.

Attendance. Attendance is expected at all classes, laboratories, and seminars and is a criteria for evaluating performance. Unexcused absences may result in failure of a course or academic probation. A student may not be excused from submitting work or from class except for medical reasons or other serious personal conditions beyond the control of the student. Any request for an excused absence or for late submission of work must be submitted in writing to the instructor. If accepted, a student may be allowed to take a late or special examination or submit missing work. Tardiness in contacting the instructor is cause for denying acceptance. Also see University policy regarding religious holidays, page 1.

Advising. While the College and its academic units provide academic advising, it is ultimately the responsibility of each student to fulfill academic and program requirements. Advising and record keeping for lower division program students are the responsibility of the College Academic Advisor. Records for upper division pro-

gram students are kept in the applicable academic units. General career advising is available from all faculty members. Administration of program requirements is the responsibility of the head of the appropriate academic unit and the Dean. Appeals and requests for variances are typically made to the student's advisor, the head of the appropriate academic unit, the College Standards Committee, and the Dean.

Employment. It is difficult for students in professional programs to carry part-time employment while in school. Acceptance to any of the College's programs presumes a commitment of a minimum of eight hours a day for professional studies. Prior work experience is not a requirement for admission to upper division programs.

Retention of Student Work. The College reserves the right to retain any or all projects submitted to meet course requirements for the College's future instructional, publication, and exhibition use.

Student Leave of Absence. Upper division students who withdraw from classes or do not continue sequentially in enrollment must request leave of absence and readmission in writing from the head of the appropriate academic unit. Leaves of absence are for one year increments and may be approved for personal reasons, travel, work, or additional study in other disciplines. Students on leave must make written request for readmission prior to May 1 for the fall semester of the year of the return to the program, or November 1 for the spring semester, in order that a space may be reserved. Failure to request a leave of absence may result in removal from the program.

General Information

Accreditation. The professional degree, Master of 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 Board.

Affiliations. The College of Architecture and Environmental Design maintains active affiliations with the Arizona Society of Architects, the Central Arizona and the Rio Salado 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 American Society of Interior Designers, the Industrial Designers Society of America, the In-

stitute of Business Designers, the Interior Design Educators Council, and the National Student Council of the American Society of Interior Designers.

Foreign Study. The College of Architecture and Environmental Design maintains active communications with several foreign institutions of foreign professional course work similar to programs of the College. 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 the head of their academic unit at the earliest possible date of any intentions for foreign study.

Current exchange programs exist with the Universitat Stuttgart, West Germany, and the Universidad Autonoma de Guadalajara, Guadalajara, Mexico. A foreign study program in London is offered by the School of Architecture.

Students are also encouraged to consider foreign travel for either a semester or an entire academic year. A leave of absence must be requested for foreign study and foreign travel. Each academic unit reserves the right to evaluate the content and the student's competency in each of the courses completed at foreign institutions.

Internships. Upper division students in the School of Architecture and the Department of Design are required to complete an internship program during the summer between the third and fourth year.

College of Architecture and Environmental Design Alumni Association. The College Alumni Association encourages graduates to contribute to the College by acting as liaisons with the College community, students, and the practicing professions. The College also can call on the members of the Architecture Guild of Arizona State and the College Council for Design Excellence for advice and to promote the goals of the College and departments.

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. These include:

- American Institute of Architecture Students
- College of Architecture and Environmental Design Pre Studies Organization
- Student Association of Interior Designers

- Student Chapter/American Planning Association
- Student Chapter/American Society of Landscape Architects
- Student Chapter/Industrial Designers Society of America

School of Architecture

General Information

The faculty of the School of Architecture offers three degree programs: The Bachelor of Science in Design with a major in Architectural Studies, the Master of Architecture, and the Master of Environmental Planning with a concentration in Building Design.

The program in architecture culminates in the Master of Architecture. Accredited by the National Architectural Accrediting Board, this degree program consists of three continuous two-year segments:

- A) Lower division course work (minimum 63 semester hours),
- (B) Upper division course work leading to a B.S. in Design (minimum 71 semester hours),
- (C) Graduate Studies leading to the professional degree M. Architecture (minimum 56 semester hours)

Admission to the upper division (B above) is possible after the completion of two years of required lower division studies (minimum of 63 semester hours) or, second bachelors degree candidates may be accepted if they have accomplished the lower division requirements. In addition, students with 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, may apply to the graduate program.

The architecture program at ASU offers an exceedingly high quality and integrated curriculum of professional studies focused on the design laboratory. In addition, it is the presumption of the faculty that future leaders in the architecture profession will successfully combine specialized skills with a broad scope of related studies, including course work in the humanities and social sciences.

Graduate students are expected to develop an elective stream with emphasis in one of several areas including solar and energy conscious design, computer aided architecture, architectural

administration, urban design and building technology

The program reflects an awareness of the diverse, complex factors affecting the built environment. It attempts to foster the understanding, knowledge, and problem solving skills necessary to meet this complexity through a systematic as well as scholarly approach to understanding technical limitations and state of the art developments

The Master of Environmental Planning degree provides opportunities for advanced specialized studies and research in building design. Areas of emphasis include computer aided design, passive solar design and energy technology analysis, and advanced architectural administration. Students entering this degree program typically have the professional Bachelor of Architecture or Master of Architecture degree, or undergraduate degrees in such areas as physics, engineering, or design. For particulars, consult the *Graduate Catalog*

Degree Requirements. The degree, Bachelor of Science in Design with a major in Architectural 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 are encouraged to fulfill the requirements outlined in Option B. Entering students who have deficiencies in secondary school units (usually in the areas of math and science) shall be required to complete additional university credit course work which will not be applied to the Bachelor of Science in Design degree

The professional degree, Master of Architecture, requires an additional 36 hours of approved graduate level course work. For detailed information consult the *Graduate Catalog*

Formal application and acceptance is necessary before admission to the upper division program. See application procedures for specific information. Completion of lower division requirements does not ensure acceptance at the upper division. Continuarce is competitive and limited to the space available.

**School of Architecture
Lower-Division Requirements**

(Option A)

English (6)

ENG 101 Freshman Composition (or ENG 105 if qualified) 3

ENG 102 Freshman Composition (or H/FA elect if ENG 105) 3

Literacy and Critical Inquiry (3)

COM 225 Public Speaking (or approved communication substitute) 3

Numeracy (9 Numeracy 12 Total)

MAT 210 Mathematical Analysis OR

MAT 260 Technical Calculus 3

MAT 219 Mathematical Structures OR Approved mathematics or statistics elective 3

ECE 105 Introduction to Languages of Engineering OR Approved programming language 3

ECE 106 Introduction to Computer Aided Engineering OR Approved programming language⁷ 3

Humanities Fine Arts (13)

* APH 100 Introduction to Environmental Design I 2

* APH 101 Introduction to Environmental Design II⁴ 2
Approved Humanities/Fine Arts electives 9

Social Behavioral Sciences (9)

ECN 112 Microeconomics Principles OR

ECN 111 Macroeconomic Principles OR approved business course 3
Approved Social/Behavioral Science electives 6

Natural Sciences (8)

PHY 111&R General Physics and Recitation 3

PHY 113 General Physics Lab 1

PHY 112&R General Physics and Recitation 3

PHY 114 General Physics Lab 1

Studio Courses (12)

AVC 141 Design Graphics 2

* AVC 160 Freehand Perspective Drawing I 2

* AVC 161 Freehand Perspective Drawing II 2

† ADE 221 Design Fundamentals I 3

† ADE 222 Design Fundamentals II 3

Lower Division Total. 63

⁴ APH 100,101, AVC 160, 161, ADE 221 and 222 are cross listed with similarly numbered courses in Design and/or Planning

ECE 105 is a prerequisite for ECE 106 and does not count towards the General Studies Requirement in Numeracy

5/1/01

156 SCHOOL OF ARCHITECTURE

Transfer students from schools with no equivalent of ECE 105, 106 may substitute approved computer science courses

³ Fulfills general studies Global Awareness requirement

⁴ Fulfills general studies Historical Awareness requirement

Transfer Credits: Transfer credits are *reviewed by the College* and evaluated as admissible to specific programs. To be admissible, transfer courses must be equivalent in both *content* and *level* of offering. Portfolio review is required for studio work. See Academic Advisor for help in making appointment for review.

School of Architecture Lower-Division Requirements (Option B)

	<i>5 units Hours</i>
English (6)	
ENG 101 Freshman Composition (or ENG 105 if qualified)	3
ENG 102 Freshman Composition (or H/FA elect. if ENG 105)	3
Literacy and Critical Inquiry (3)	
COM 225 Public Speaking (or approved communication substitute)	3
Numeracy (16 Numeracy 19 Total)	
MAT 290 Calculus I	5
MAT 291 Calculus II	5
MAT 274 Differential Equations	3
ECE 105 Introduction to Languages of Engineering	3
ECE 106 Introduction to Computer Aided Engineering	3
Option "B" Engineering Requirements (3)	
ECE 210 Engineering Mechanics I Statics	3
ECE 312 Engineering Mechanics II/Dynamics ¹	(3)
ECE 313 Introduction to Deformable Solids	(3)
ECE 383 Probability and Statistics ³	2)
Humanities Fine Arts (7)	
* APH 100 Introduction to Environmental Design I ⁵	2
* APH 101 Introduction to Environmental Design II ⁶ Approved Humanities/Fine Arts elective	2 3

Social Behavioral Sciences (6)

ECN 112 Microeconomic Principles OR ECN 111 Macroeconomic Principles OR approved business course	3
Approved Social Behavioral Sciences elective	3

Natural Sciences (10)

PHY 115 University Physics	4
PHY 116 University Physics Lab	1
PHY 117 University Physics	4
PHY 118 University Physics Lab	1

Studio Courses (12)

AVC 141 Design Graphics	2
* AVC 160 Freehand Perspective Drawing I	2
* AVC 161 Freehand Perspective Drawing II	2
* ADE 221 Design Fundamentals I	3
* ADE 222 Design Fundamentals II	3

Lower Division Total: 66

⁵ APH 100, 101, AVC 160, 161, ADE 221 and 222 are cross-listed with similarly numbered courses in Design and or Printing

ECE 105 is a prerequisite for ECE 106 and does not count toward the General Studies Requirement in Numeracy

⁶ Transfer students from schools with no equivalent of ECE 105, 106 may substitute approved courses.

These courses may be taken at the upper division level as approved electives and are not required prior to admission to the upper division program

⁴ Fulfills General Education Global Awareness requirement

³ Fulfills General Education Historical Awareness requirement

Transfer Credits: Transfer credits are *reviewed by the College* and evaluated as admissible to specific programs. To be admissible, transfer courses must be equivalent in both *content* and *level* of offering. Portfolio review is required for studio work. See Academic Advisor for help in making appointment for review.

Upper-Division Requirements

Third Year

	<i>Senior Hours</i>
Fall (17)	
ADE 321 Architecture Design/Process Determinants	3
ANP 331 Environmental Analysis and Programming	3
APH 313 History of Western Architecture I ^{nd 5}	3

ATE 353	Architectural Construction I	3
ATE 361	Building Structures I	3
AVC 301	Architectural Communication I	2
Spring (17)		
ADE 322	Architectural Design/Environmental Determinants	5
ANP 431	Architectural Programming ⁴	3
APH 314	History of Western Architecture II ⁴ & ⁵	3
ATE 351	Environmental Control Systems	3
ATE 362	Building Structures II ¹	3
Summer (3)		
ARP 484	Internship	3
Fourth Year		
Fall (17)		
ADE 421	Architectural Design/Human Determinants	5
APH 446	20th Century Architecture I ⁵	3
ATE 461	Building Structures III	3
ATE 452	Environmental Control Systems II	3
	Approved elective	3
Spring (17)		
ADE 422	Architectural Design Societal Determinants	5
APH 447	20th Century Architecture II	3
ATE 462	Building Structures IV	3
ATE 451	Architectural Construction II	3
	Approved elective ³	3
	Upper Division Total:	71
	B.S.D. Program Minimum Total:	134

Approved substitute courses are accepted from College of Engineering and Applied Sciences for Option B students

- These courses may be completed prior to admission to the professional program. If already completed, students may substitute an approved elective

³ Upper division elective course with approval.

⁴ Fulfills upper division General Studies Critical Writing Requirement

⁵ Fulfills General Studies Humanities/Fine Arts requirements

General Studies Requirements

The courses in the Architecture Option A curriculum that fulfill General Studies Requirements of the University are as follows:

A. Literacy and Critical Inquiry		
Written or spoken critical discourse		
COM 225 or Approved substitute		3
Critical Writing		
ANP 431		3
B. Numeracy		
Mathematics		
MAT 210 or 260		3
Computer Applications		
ECE 106		3
C. Humanities and Fine Arts		
APH 100, 101, 314, 446, 447		13
D. Social and Behavioral Sciences		
ECN 112 or 111		3
Approved elective		3
E. Natural Sciences		
PHY 111, 112, 113, 114		8
F. Global Awareness		
(APH 100)		
G. Historical Awareness		
(APH 101)		
Total hours of General Studies Requirements included in the Architecture Option A curriculum.		39

Note: The above distribution of courses exceeds the minimum required credit total of 35 and meets the detailed distribution requirements. Parentheses indicate credits counted under another category.

The courses in the Architecture Option B curriculum that fulfill General Studies Requirements of the University are as follows:

		<i>Semester Hours</i>
A. Literacy and Critical Inquiry		
Written or spoken critical discourse		
COM 225 or Approved substitute		3
Critical Writing		
ANP 431		3
B. Numeracy		
Mathematics		
MAT 290, 274, 291		3
Computer Applications		
ECE 106		3
C. Humanities and Fine Arts		
APH 100, 101, 314, 446, 447		13
D. Social and Behavioral Sciences		
ECN 111 or 112		3
Approved elective		3

158 SCHOOL OF ARCHITECTURE

E. Natural Sciences
 PHY 115, 116, 117, 118 10

F. Global Awareness
 APH 100)

G. Historical Awareness
 (APH 101)

Total hours of General Studies 41
 Requirements included in the
 Architecture Option B curriculum

Note: The above distribution of courses exceeds the minimum required credit total of 35 and meets the detailed distribution requirements. Parentheses indicate credits counted under another category.

Admission to the Upper Division. To be eligible for consideration for admission to the upper division program, the following is required.

1. Completion of all specified lower division requirements (a minimum of 63 hours) or equivalents approved by the academic advisor or faculty of the School
2. A certificate of admission to Arizona State University. (Note: application to the upper division program is separate from admission to Arizona State University.)
3. A minimum University cumulative grade point average (GPA) of 3.00, as well as a 3.00 GPA based only on the required lower division courses

In an unusual circumstance, when the admission standard deficiency is slight, written evidence of extenuating circumstances is convincing, and promise for success is evident, a student may be granted admission on a provisional basis.

The limited number of spaces available each year will be awarded to applicants with the highest promise for professional success, including evidence of ability and prospect for significant public service.

Application Procedures. Students should write to the Academic Advisor for the application form well in advance of the application deadline.

Deadlines:

Application Deadline: 4:00 p.m. April 15 (All material in the application format described below.)

Spring semester transfer credit transcripts: June 15

Notification: July 1.

Return of Letter of Acceptance: A signed receipt of acceptance of admission must be received by the School by the date indicated on the notice of acceptance. Alternates may be accepted at a later date as space becomes available.

Prerequisite waiver acceptance: July 16

Mitigation: Accepted students are expected to begin their upper division programs at the beginning of the immediate fall term. There is no spring admission to the upper division.

Application Format. Application materials are submitted at one time in a presentation binder portfolio with plastic sleeves 8 1/2" x 11" format only. Items must appear in the following order:

Page 1: School application form completely filled out with page 1 visible.

Page 2: School application form with page 2 visible.

Page 3: High school transcripts from a schools attended.

Page 4: Certificate of ACT, SAT, GRE, or TOEFL test scores, as applicable. If this information appears on your high school transcript, include a copy in your portfolio.

Page 5: College transcripts from all schools attended showing completion of lower division program requirements. Note: Transcripts should be complete except for the current spring semester. Spring semester transfer credit transcripts must be received by the Department before June 15.

Page 6: Copy of Arizona State University Certificate of Admission.

Pages following: Examples of the applicant's graphic skill and creative ability.

A. Include as a minimum 2-3 examples from each of the lower division studio courses (141, 160, 161, 221, 222) or work from similar courses taken elsewhere. *Include a concise statement that briefly explains each project being illustrated, the educational goal, the length of time allotted for each project,* and other pertinent information as applicable, including names of other team members.

B. You are encouraged to include additional materials, written or pictorial, that you feel provide additional evidence of your skills and abilities, as well as aptitude and commitment to your field of professional study.

When any work submitted 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. Original ex-

ampes or slides *must not* be submitted. All examples must be photographs or other reproduction graphic media.

Return of Application Materials. The School application form remains the property of the School; however, the remainder of the submitted materials will be returned after July 15 if the applicant encloses a self-addressed return mailer with sufficient prepaid postage. The applicant may also receive it in person at the School office. If the applicant provides signed authorization, another party may receive it for him/her. After one year the unclaimed materials are discarded. The College and the School assume no liability for lost, damaged or unclaimed materials.

Organization and Instruction

The School of Architecture's programs are organized by the faculty under the direction and administration of the Director. Subject matter within the School is categorized in the following instructional areas:

Architectural Administration and Management (AAD) develops the organization and managerial aspects of architectural practice. These studies examine the overall processes relative to management coordination, administration procedures, ethics, legal constraints, and the economics of architectural practice.

Architectural Design and Technology Studios (ADE) encourage synthesis of the knowledge and understanding the student has gained from previous and parallel course work and from other sources in the comprehensive design development of architectural projects. The studios integrate the needs, limitations and determinants of design problems; students apply analytical methods and technical 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 concerned with the rationale for the methods and results of design and construction.

Architectural Technology (ATE) develops knowledge of the technical determinants, resources and processes of architecture. These studies are concerned primarily with the science and technology of design and construction, 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 and includes 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.

Energy Design (EDE) develops advanced problem-solving capabilities with projects relating to building or component design that synthesizes solar or bioclimatic opportunities and/or energy conserving applications.

Energy Technology (ETE) provides specialized instruction in the technical aspects of energy and solar applications to problems and processes that are typically measurable and quantifiable.

Architecture Professional Studies (ARP) provides students with residency and off-campus opportunities and educational experience in group and individual studies relative to specific student interests and faculty expertise.

A summer internship in an architect's office under the direction of an approved preceptor and licensed practitioner is required and provides a distinct educational experience.

The School also provides various required and optional field trips. In addition, several foreign study opportunities are available for qualified students.

Professional Emphasis Elective Course Work

Each student must complete the required professional elective course work. Upper division electives are subject to approval of the student's advisor. Students select courses that contribute to their professional education goals. Some of these courses may be taken in appropriate areas outside the school.

School of Architecture

PROFESSORS:

SCHLUNTZ ARCH 140 BAHADORI, COOK
HERSHBERGER, McSHEFFREY, OLIVER,
PETERSON RAPP

ASSOCIATE PROFESSORS:

BROWN, McGINTY, SCHEATZLE, SHEYDAY

ASSISTANT PROFESSORS:

BERTELSEN, CHR STENSEN, FELLOWS,
FIFELD FNDLEY, KELLY, McNTOSH
PERRELL TANFELD M UNDERWOOD
S. UNDERWOOD WU, ZYGAS

VISITING ASSISTANT PROFESSOR:

KEGAMI

PROFESSORS EMERITI:

ELLNER, STRAUB WHIFFEN

**ARCHITECTURAL ADMINISTRATION
AND MANAGEMENT****AAD 551 Architectural Management I. 3 F**

Organizational, legal, economic and market aspects of architecture. Problem solving approaches to market planning, human resources and organizational dynamics and project management. Prerequisites: AAD 560 approval of instructor

552 Architectural Management II. 3 S

Negotiation, risk management, project and firm definitions, issues and management in architecture. Modeling and simulation management planning and design strategy. Prerequisite: AAD 551 or approval of instructor

553 Construction Contract Administration I. 3 F

Construct on contract administration on budget control, scheduling, cash flow, changes and claims and monitoring systems for traditional, fast track and design build methods. Two hours lecture three hours additional field trips. Prerequisite: AAD 560

554 Construction Contract Administration II. 3 S

Advanced topics and problems in construction contract administration. Prerequisite: AAD 553 or approval of instructor.

555 Architect as Developer. 3 F, S

Development building, real estate construction funding, land acquisition and the sources for capital. Prerequisite: site approval of instructor

560 Professional Practice I. 3 F

Professional practice issues including legal requirements, ethics, financial and marketing mechanisms management centered on shops and new developments in practice. Prerequisite: admission to M. Arch program or approval of instructor

**ARCHITECTURAL DESIGN
AND TECHNOLOGY STUDIOS****ADE 221 Design Fundamentals I. 3 F**

Exercises in basic visual organization. Include design vocabulary principles of 2D and 3D composition, color

and aesthetic reactions to design. One hour lecture six hours studio. Prerequisite: Major or corequisite: Cross listed with DSC 221

222 Design Fundamentals II. 3 S

Application of design fundamentals to environmental design problems. Introduces human scale, performance criteria, function and aesthetic spatial organization and movement. One hour lecture six hours studio. Prerequisites: major or corequisite: AVC 141 AVC 160 ADE 221

321 Architectural Design Process Determinants. 3 F

Fundamentals of architectural design problem solving techniques and the design process. Investigation, analysis, synthesis and development of design projects. Lecture studio and field trips. Prerequisite: approval of instructor

322 Architectural Design Environmental Determinants. 5 S

Building and site design in response to site climate and other environmental determinants. Housing and other building types. Lecture studio and field trips. Prerequisite: ADE 321

421 Architectural Design Human and Behavioral Determinants. 5 F

Emphasis on the design of community facilities, user needs and activities. People and their behavior as a primary architectural determinant. Lecture studio and field trips. Prerequisites: ADE 322 ARP 484

422 Architectural Design Societal Determinants. (5 S

Comprehensive development of multi-building complexes relating to community, cultural and urban services. Emphasis on societal needs and expectations. Lecture, studio and field trips. Prerequisite: ADE 421

521 Architectural Design Urban and Spatial Determinants. 5 F

Comprehensive design with emphasis on medium rise structures in the urban context. Form as a design determinant. Lecture, studio and field trips. Prerequisite: ADE 422

522 Architectural Design Building Systems. 5 S

Comprehensive design of multi-story structures. Analysis of building systems as form determinants. Economic feasibility studies of commercial buildings. Lecture, studio and field trips. Prerequisite: ADE 521

621 Architectural Design: Selected Issues. 2 6 F

Comprehensive investigations and design for various building types. Lecture studio and field trips. Prerequisites: ADE 522 approval of instructor and Director.

622 Architectural Design: Final Project. 5 S

Individual final design project integrating major architectural design determinants. Studio. Prerequisites: ADE 621 and approval of instructor

**ENVIRONMENTAL ANALYSIS AND
PROGRAMMING****ANP 331 Environmental Analysis and Programming. (3 F**

Analysis of the natural and human environmental determinants as the basis of the programming and design of the built environment. Emphasis on site and climate analysis and landscape space theory. Prerequisite: Professional evening standing

431 Architectural Programming. 3 S

Theory and methods of architectural programming including determinants of architecture, information gathering and

techniques program preparation and methods of evaluation. Prerequisite: Professional level standing

433 Building Codes and Ordinances. 3 F S
See PUD 433

442 Site Planning Principles and Analysis. 3 S
Effects of topography climate energy zoning and landscaping upon design development of external spaces Programing and analysis, and integration of architectural design to the site and site to the region.

475 Computer Programming in Architecture. 3 F S
Computer programming for architectural problems and applications. Lecture/lab. Prerequisite: CUC 183 or equivalent

477 Computer Applications to Design Problems. 3 F
Examination of general microcomputer software in solving architectural design problems. Emphasis on the logic of problem formulation. Lecture/lab. Prerequisite: approval of instructor.

530 Computer Graphics in Architecture. 3
Fundamentals of computer graphics programming in architecture, including graphics hardware development packages two and three dimensional transformations and data structures. Two hours lecture/three hours lab. Prerequisite: ANP 475 or approval of instructor

535 Building Programming. 3 F
Design problem definition including client interviews, literature review, user needs analysis, existing building evaluation and program preparation. Prerequisite: Third Professional Level in Architecture or approval of instructor

576 Community Housing. 3 F
History, practices, trends and forms of housing, includes growth of public programs, national and local programs, zoning law, housing distribution planning principles and policies, design review, standards and private development practice

577 Housing Environments. (3) S
Contemporary housing environments, housing types and life styles as determined by user preference, density, development and property standards, cost, community and privacy, security, density movement and the need for open space

581 Urban Structure and Design. (3) F
The nature and dynamics of urbanization and its relation to architecture and urban design, including growth, decay, socialization, planning processes, and visual perception. Case studies. Prerequisite: Professional level standing.

681 Professional Seminar: Societal Influences of Architectural Practice. (2) F
Examination of legal, moral, and ethical issues confronting the practice of architecture. Alternative approaches in practice. Assessment of potential changes in the profession. Prerequisite: approval of instructor

682 Architectural Theory and Criticism. 2 S
Attitudes of evaluation of the built environment. The philosophical basis for aesthetic judgement. Methods and styles of criticism and architectural journalism on a comparative basis. Prerequisite: approval of instructor

ARCHITECTURAL PHILOSOPHY AND HISTORY

APH 100 Introduction to Environmental Design I. 2 F, S
Survey of environmental design includes historic examples and the theoretical, social, technical and environ-

mental forces that shape them. Cross-listed with PUP 100. [Satisfies General Studies Requirements. HU, G, H]

101 Introduction to Environmental Design II. 2 F, S
Survey of environmental design issues, responses, and directions. Cross-listed with PUP 401. [Satisfies General Studies Requirements. HU, H]

300 World Architecture I/Western Cultures. 3 F
Historical and contemporary built environments of Western civilizations: Mediterranean, Europe and the Americas as manifested in cultural history and responses to environmental determinants. Non-architecture majors only. [Satisfies General Studies Requirements. G, H]

301 World Architecture II Eastern Cultures. 3 S
Historical and contemporary built environments of Eastern civilizations: Middle East, Central Asia, Far East and South Pacific as manifested in cultural history and responses to environmental determinants. [Satisfies General Studies Requirements. G, H]

304 American Architecture. 3 N
Architecture in the U.S. from earliest colonial times to present. Non-architecture majors only. [Satisfies General Studies Requirements. HU, H]

305 Contemporary Architecture. 3 N
Europe and America from the foundations of the modern movement to the present. Non-architecture majors only. [Satisfies General Studies Requirements. HU, G, H]

311 Survey of Mexican Architecture. 2) N
Overview of historical through contemporary examples of Mexican architecture, landscape and urban design. [Satisfies General Studies Requirements. HU, H]

313 History of Western Architecture I. 3 F, S
Representative buildings and sites with emphasis on the physical and social settings from antiquity through the middle ages. Prerequisite: junior standing or approval of instructor. [Satisfies General Studies Requirements. HU, H]

314 History of Western Architecture II. 3 S
Representative examples of architecture and urban design with emphasis on the social and historical contexts from the middle ages to the present. Prerequisite: junior or standing or approval of instructor. [Satisfies General Studies Requirement. H]

348 Theory of Built Environments. 3 N
Focused study of built environmental forms, the theoretical foundation and relation to social processes. Cross-listed with PUP 320. Prerequisite: sophomore standing. [Satisfies General Studies Requirement. HU]

411 History of Landscape Architecture. 3 F
The physical record of human attitudes toward the land. Selected examples of ancient through contemporary landscape planning and design. Cross-listed with PLA 210

414 History of the City. 3 F
The city from its ancient origins to the present day with emphasis on cities of Europe and America during the last five centuries. Cross-listed with PUP 412

441 Ancient Architecture. 3 N
Architecture of the ancient Mediterranean world with selective emphasis on major historical complexes and monumental sites. Prerequisite: APH 313. [Satisfies General Studies Requirements. HU, H]

442 Preservation Planning. 3 F
Principles and practices in planning for preservation, conservation and neighborhood redevelopment. Emphasis on evaluation of historic resources. Off-campus field practicum required. Prerequisite: approval of instructor. Cross-listed with PUP 444

162 SCHOOL OF ARCHITECTURE

443 Renaissance Architecture. 3 N

Selected examples of Renaissance architecture and urban planning with emphasis on the relationship between architecture and culture. Setings. Prerequisite: APH 314 [Satisfies General Studies Requirements HU H]

444 Baroque Architecture. 3 N

Selected examples of Baroque architecture and urban planning with emphasis on relationships between architecture and other arts. Prerequisite: APH 314 [Satisfies General Studies Requirements HU H]

445 19th Century Architecture. 3 N

Architecture and urban planning in Europe and North America from the French Revolution to Art Nouveau. Emphasis on the change of new materials and techniques in the context of revolution and tradition. Architecture. Prerequisite: APH 314 [Satisfies General Studies Requirements HU H]

446 20th Century Architecture I. 3 F

Architecture in Europe and America from the foundations of the modern movement to the culmination of the international style. Prerequisite: majors only [Satisfies General Studies Requirements HU G H]

447 20th Century Architecture II. 3 S

Developments in architecture since the international style. Prerequisite: APH 446 [Satisfies General Studies Requirements HU, G, H]

682 Architectural Theory and Criticism. 2 S

Attitudes of evaluation of the built environment. The philosophical basis for aesthetic judgments. Methods and styles of criticism and architectural journalism on a comparative basis. Prerequisite: approval of instructor

ARCHITECTURAL TECHNOLOGIES

ATE 351 Environmental Control Systems I. 3) F

Architectural design implications of solar radiation, heat and moisture transfer. Trends in environmental control and energy conscious design. Passive techniques to heat, cool and light. Two hours lecture, three hours lab. Prerequisite: admission to upper division.

353 Architectural Construction I. (3) F

Basic materials and methods of architectural construction for residential scaled systems. Includes effects of zoning and code requirements. Lecture/lab. Prerequisite: admission to upper division.

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 design of simple structural systems. Lecture, lab. Prerequisite: admission to upper division.

362 Building Structures II. (3) S

Analysis and design of wood and masonry structural systems and connections. Lateral analysis and design of vertical shear walls and diaphragms in multi-story structures. Lecture, lab. Prerequisite: ATE 361.

451 Architectural Construction II. 3 F

Selection and employment of materials and systems according to their nature and the techniques of their use and basic construction cost estimating procedures for architects. Lecture/lab. Prerequisite: ATE 353

452 Environmental Control Systems II. 3 S

Architectural design implications of HVAC systems. Heating and cooling loads, psychrometrics, the refrigeration cycle, air/water distribution, control systems, energy performance standards and utility rates. Two hours lecture

three hours laboratory and field trips. Prerequisite: ATE 351

461 Building Structures III. 3 F

Analysis, design and detailing of steel buildings and frames. Lateral analysis of moment-resisting and braced frame systems. Lecture/lab. Prerequisite: ATE 362.

462 Building Structures IV. 3 S

Analysis, design and detailing of concrete systems, considering continuity, moment-resisting frames and shear walls, and lateral analysis. Computer application using existing programs. Prerequisite: ATE 461.

553 Building Systems I. 3 F

Principles of lighting, daylighting and acoustics and their application in the design of buildings. Prerequisite: admission to upper division or approval of instructor

557 Construction Documents I. 3 F

Production of architectural working drawings, legal status, organization, layout, site survey plans, sections, elevations, details, schedules and coordination. Laboratory lecture. Prerequisite: admission to upper division

558 Construction Documents II/Specifications and Cost Analysis. 3 S

Coordination of working drawings with preparation of construction specifications and cost estimates. Emphasis on alternative methods and office procedures. Contract conditions, bonds and bidding procedures. Prerequisite: ATE 557

582 Building Systems II. (3) S

Design of building systems including electrical, plumbing, security, communications, fire protection and transportation. Field trips. Two hours lecture, three hours lab. Prerequisite: ATE 352, ATE 553

588 Building Structures V. 3 F

New developments in high-rise structural systems. Effects of wind and seismic forces. Preliminary analysis, design and detailing of tall buildings using code requirements and computer applications. Lecture/lab. Prerequisite: ATE 462

ARCHITECTURAL COMMUNICATION

AVC 141 Design Graphics. 2) F, S, SS

Orthographic, perspective, axonometric and perspective projection, shades and shadows, and basic descriptive geometry for designers. One hour lecture, four hours studio. Prerequisite: Major in college

160 Freehand Perspective Drawing I. 2) F, S, SS

Freehand perspective drawing methods applied to drawing objects and interior and exterior environments in line and tone. One hour lecture, four hours studio. Prerequisite: major in college. Cross-listed with DSC 160

161 Freehand Perspective Drawing II. 2) F, S, SS

Continuation of AVC 160. Introduction of color media, and analytical and design drawing exercises. Four hours studio. Prerequisite: major in college. AVC 160. Cross-listed with DSC 161

301 Architectural Communication I. 2 F

Basic graphic skills, drawing conventions, values, graphic symbols and lettering, sketching and presentation vocabulary. Two afternoons in laboratory per week. Lecture and field trips. Prerequisite: admission to upper division.

302 Architectural Communication II. 2 S

Continuation of AVC 301. Introduction to theory and effects of color. Prerequisite: AVC 301

410 Architectural Presentation Techniques. 3 F, S
 Specific techniques of graphic communication as primary
 presentation tools for the design professional. Pre-
 requisite: AVC 301 or approval of instructor

411 Architectural Watercolor Presentation Techniques. (2 N
 Introduction of architectural presentation techniques using
 watercolor as a primary media. Emphasis on color
 composition and technique. Prerequisite: AVC 301 or
 approval of instructor

444 Architectural Photography. 2 3 N
 Use of photography as a means of architectural study and
 evaluation and record. Introduction to 35mm camera and
 darkroom techniques. Lecture-laboratory. Prerequisite:
 approval of instructor

PROFESSIONAL STUDIES

ARP 451 Architecture Field Studies. 1 6 F S SS
 Organized field study of architecture in specified national
 and international locations. Credit non-credit. May be re-
 peated with approval of director

484 Clinical Internship. 3 SS
 Full-time internship under the supervision of practitioners
 in the Phoenix area or other overseas. Credit non-credit
 Prerequisite: approval of instructor

684 Professional Internship. 2 6 S
 Field experience in an architectural firm specializing in
 an area directly related to the student's advanced study
 integration of theory and state-of-the-art practices. Credit
 non-credit. Prerequisite: approval of instructor

SOLAR ARCHITECTURE AND TECHNOLOGY

EDE 532 Earth Sheltering Techniques. (3 S
 Principles of earth sheltering for energy conscious building
 including orientation, structure, insulation, moisture
 proofing and building codes. Prerequisite: ETE 551

661 Climatic and Solar Design. (4) F
 Laboratory and field experience in architectural synthesis
 emphasizing climatic criteria and analysis with emphasis
 on appropriate technology and passive thermal
 systems. Prerequisite: First professional degree or ap-
 proval of instructor

662 Energy Efficient Design and Planning. 4 S
 Laboratory and field experience in energy efficient design
 emphasizing solar energy and related renewables in ur-
 ban and institutional complexes for comfort prototypes
 Prerequisite: EDE 661

See page 38 for special graduate courses which
 may be offered by this academic unit.

ENERGY PLANNING AND TECHNOLOGY

ETE 501 Introduction to Solar Energy. 3 S
 Introduction to theoretical and practical aspects of use
 of solar radiation and nocturnal cooling for control of
 building environments

511 Energy Environment Theory. 3 F
 Historical, contemporary and practical influences of solar
 and other resource systems on the designed environ-
 ment, architecture, landscape, urban and regional im-
 plications of resource strategies. Other renewable re-
 sources

521 Solar Energy Technology. 3 F
 Introduction of solar radiation and nocturnal cooling for
 heating and cooling buildings in arid and other regions
 Prerequisite: MAT 115

522 Desert Habitation Technology. 3 F
 Analysis of habitation approaches in non-technological
 and technological societies as a function of the nature of
 desert areas. Prerequisite: ATE 352

541 Solar Collector and Storage Design. 3 F
 Fundamental understanding and practical applications of
 solar energy collectors and storage technologies em-
 phasized. Prerequisites: MAT 290 MET 380 ETE 521

**542 Building Thermal System Simulation and Optimi-
 zation.** 3
 Mathematical models of building envelope and comfort
 conditioning systems will be developed to simulate build-
 ing energy systems. Optimization techniques are also
 presented. Prerequisite: ETE 541

544 Solar Thermal Subsystem Design. (3 S
 Fundamental understanding and practical applications of
 solar subsystems such as controls, heat exchangers,
 heat transfer fluids in buildings emphasized. Pre-
 requisite: ETE 541

551 Passive Heating. 3 F
 Theory, classification and evaluation of low energy heat-
 ing systems for thermal comfort in buildings. Prerequisite:
 ATE 452 ETE 521

552 Advanced Modeling of Passive Systems. 3 S
 Advanced computer-aided evaluation techniques to de-
 termine environmental influence on comfort in passive
 and low energy heated and cooled buildings. Pre-
 requisite: ETE 551 or permission.

553 Energy Conservation in Buildings. 3 S
 Impact of natural forces on the design of buildings em-
 phasizing pre-design decisions and post-construction
 practices leading to minimum energy consumption. Inves-
 tigation of new energy sources. Prerequisite: ATE 452

**558 Bioclimatic and Energy Parameters for Build-
 ings.** 3 S
 Analysis and evaluation of techniques for design synthesis
 of energy related parameters in site, climate, human com-
 fort and building program. Prerequisite: ETE 521

560 Advanced Computer-Aided Energy Analysis. 3
 Develop new and advanced algorithms to analyze envi-
 ronmental problems with emphasis on energy perform-
 ance. Topics include: climatic bioclimatic lighting acous-
 tics passive solar and HVAC systems. Two hours
 lecture three hours lab. Prerequisite: ANP 475 or ANP
 477 ATE 352

562 Energy Efficient Systems Evaluation. 3 N
 Field performance data of active and passive solar sys-
 tems and components compared with fundamental
 principles and formulations. Prerequisite: ETE 521

See page 38 for special courses which may be
 offered by this academic unit

Department of Design

Purpose

Professional designers work within areas requiring an understanding of systems, functions, scientific and technical processes including public welfare and safety, and human factors studies. They must also integrate aesthetic considerations into the products and spaces for which they design.

Organization

The professional programs within the Department of Design are organized under the direction of the Chair. The following majors are offered

- Industrial Design
- Interior Design
- Design Science

Curriculum

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 with 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 provide for applications of this education. The profession demands from the recipient of the Bachelor of Science in Design a certifiable level of technical and professional training, hence the program thrust is toward developing the most technically accomplished and conceptually sophisticated designer possible within a formal educational setting.

One summer of internship in design related activities under the direction of an approved preceptor is required and provides a distinct educational experience

Admission. Students are admitted to the Department of Design upon approval of admission to Arizona State University and the College of Architecture and Environmental Design.

Retention Standards. To be eligible to continue in professional programs in the Department of Design, a student must remain in good standing as established by the University, the College of Architecture and Environmental Design, and the Department of Design

Entry into Upper-Division Studio

Courses. When students have completed the lower-division curriculum requirements, they may apply for acceptance to upper division programs in industrial design, interior design, or design science. Students not accepted to upper-division and who wish to reapply to programs may take upper division lecture courses, but may not take upper division studio or laboratory courses

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.

Application Procedures. Students should write to the Academic Advisor for the application form well in advance of the application deadline. The College Academic Advising Office can supply further details and information if desired.

Deadlines and Schedule:

Application deadline 4:00 p.m. April 15 (or the following Monday if the 15th falls on a weekend). All material in the application format is described below.

Spring semester transcripts: June 15.

Notification: July 1.

Return of Letter of Acceptance: A signed receipt of acceptance of admission must be received by the Department of Design July 15.

Alternates. July 16, notification of admission status for alternates.

Portfolios available for return: July 16.

Matriculation. Accepted students are expected to begin their upper-division programs at the beginning of the immediate fall term. There is no spring admission to the upper division.

Application Format. Application materials are submitted at one time in a presentation binder (portfolio) with plastic sleeves (8 1/2" x 11" format only.) Items must appear in the following order:

Page 1 Department application form completely filled out with page 1 visible.

Page 2 Department application form 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 lower division program requirements. Note: Transcripts should be complete except for the current spring semester. Spring semester transcripts

must be received by the Department before June 15.

Page 6 - Copy of Arizona State University Certificate of Admission or Readmission.

Additional Supportive Visuals. Pages following Examples of the applicant's graphic skill and creative ability:

- A. Include 2-3 examples from each of the lower division studio courses (DSC 160, 161, 220, 221, 224, 225, 226, ECE 105, 106) or work from similar courses taken elsewhere. Include a one sentence caption that briefly explains each project being illustrated, the educational goal, the length of time allotted for the project, and, as applicable, names of other team members and so forth. 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. Original examples or slides must not be submitted.
- B. You may include additional materials, written or pictorial, that you feel provide evidence of your skills and abilities, as well as aptitude and commitment to your field of professional study. For applicants to the Department of Design, this section may include letters of recommendation. All examples must be photographs or other reproduction graphic media.

Return of Application Materials. The Department Application Form remains the property of the department, however the remaining portfolio materials will be returned after July 15 if the applicant encloses a self-addressed return mailer with sufficient prepaid postage. The applicant may also receive his/her submittals in person at the department office or if he/she provides written authorization for someone to receive it in person at the departmental office. After one year the unclaimed materials are discarded. The College and the departments assume no liability for lost, damaged or unclaimed materials.

Degree Requirements

The degree Bachelor of Science in Design requires the following minimum number of hours of required and approved courses for its majors:

Bachelor of Science in Design

Major in Industrial Design	136 hours
Major in Interior Design Science	140 hours

Major in Design

Industrial Design emphasis	136 hours
Interior Design emphasis	140 hours

The program includes required field trips. Students are responsible for these additional costs. Foreign study opportunities are available for honor students.

Industrial Design

Industrial design is primarily concerned with how humans perceive and use manmade 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.

Curriculum. At the lower division level the curriculum balances a foundation in academic subjects such as English, math, computers and physics with a core of design courses that include history as well as studio courses in drawing, graphics, and design fundamentals. At the upper division level the curriculum includes both studio and laboratory work in industrial design, color theory, and materials, and manufacturing techniques, as well as lecture courses in human factors, graphic design, design methods and practice. A supervised summer internship is a part of the program.

The upper division level emphasizes studio projects which promote an interdisciplinary approach to solving problems and is based on an intellectual understanding of the philosophy and direction of industrial design. Problems proceed from small consumer products with simple task functions to larger and more complex problems and systems. Studio projects also emphasize the design process and student's progress through its stages including: problem analysis and statement, concept ideation, final product development, presentation, and packaging.

166 DEPARTMENT OF DESIGN

Graduates of the program accept entry positions in industry and firms doing product and packaging design. They may focus on consumer products, transportation, electronics, medical devices, health products, recreational products, or materials application among others

**Industrial Design
Lower-Division Requirements**

First Year

		<i>Semester Hours</i>
Fall (15)		
ENG 101	Freshman Composition (or ENG 105 if qualified)	3
MAT 115	College Algebra and Trigonometry	4
DSC 100	Contemporary International Design	3
ECE 105	Introduction to Languages of Engineering	3
* DSC 160	Freehand Perspective Drawing I	2
Spring (17)		
ENG 102	Freshman Composition (or H/FA elect if ENG 105)	3
COM 207	Introduction to Communication Inquiry (or COM 222 or COM 225)	3
PHY 111&R	General Physics and Recitation	3
PHY 113	General Physics Lab	1
ECE 106	Introduction to Computer Aided Engineering	3
* DSC 161	Freehand Perspective Drawing II	2
	Approved Program Elective	2

Second Year

Fall (18)		
PGS 100	Introduction to Psychology (or approved Social/Behavioral Sciences substitute)	3
* DSC 221	Design Fundamentals I	3
DSC 224	Color	3
DSC 226	Color Sketching	3
DSC 316	20th Century Design I	3
DSC 342	Materials	3
Spring (15)		
ECN 112	Microeconomics Principles	3
DSC 317	20th Century Design II	3
DSC 343	Material Processes (cross listed with MET 343)	3

DSC 225	Design Methods	3
	Social/Behavioral Sciences elective	3

Lower Division Total 65

* DSC 160, 161 and 221 are cross listed with similarly numbered courses in Architecture and/or Planning

A list of courses that fulfill the approved electives is available from the Academic Advisor

Transfer Credits: Transfer Credits are reviewed by the College and evaluated as admissible to specific programs. To be admissible, transfer courses must be equivalent in both content and level of offering. Portfolio review is required for studio work. See Academic Advisor for help in making appointment for review

Upper Division Requirements

Third Year

		<i>Semester Hours</i>
Fall (18)		
DSC 344	Human Factors in Design	3
DSC 354	Mechanics of Materials	4
DSC 360	Design Methodology and Techniques	5
	Approved Program elective	3
ENG 301	Writing for the Professions	3
Spring (18)		
DSC 323	Imagining and Presentation for Visual Designers	3
DSC 361	Concept Development	5
DSC 440	Plastics Design	3
	Approved Program elective	3
	Natural Science Laboratory elective	4
Summer (3)		
DSC 484	Internship	3

Fourth Year

Fall (16)		
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
	Approved Program elective	2
Spring (16)		
DSC 431	Package Design	3
DSC 461	Systems Synthesis and Design	5
DSC 475	Design Project	3

DEPARTMENT OF DESIGN 167

Approved Program electives ¹	5
Upper Division Total:	71
B.S.D. Program Total:	136

¹ Approved Program electives Courses selected with approval of advisor.

The courses in the Industrial Design curriculum that fulfill General Studies Requirements of the University are as follows:

	<i>Semester Hours</i>
A. Literacy and Critical Inquiry	
Written or spoken discourse COM 207 or 222 or 225	3
Critical Writing ENG 301	3
B. Numeracy	
Mathematics MAT 115	4
Computer Applications ECE 106	3
C. Humanities and Fine Arts	
DSC 100, 316, 317	9
D. Social and Behavioral Sciences	
Psychology PGS 100 and Social/Behavioral Sciences elective PGS 341 or SOC 101 or SOC 360 or HIS 303 or HIS 304	3 3
E. Natural Sciences	
PHY 111 and 113 Natural Science Laboratory	4 4
F. Global Awareness (DSC 100)	
G. Historical Awareness (DSC 316, 317)	

Total hours of General Studies Requirements included in the Industrial Design curriculum.	36
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Note: The above distribution of courses exceeds the minimum required credit total of 35 and meets the detailed distribution requirements. Parentheses indicate credits counted under another category.

Interior Design

The curriculum for the major in Interior Design emphasizes design process, technical skill development, problem solving, and management skills needed to work in collaboration with the allied design professions in providing high quality environments for human use. Significant changes in the interior design profession over

the last two decades are reflected in the interior design program. The department is committed to integration of computer technology into each level of the curriculum. In doing so, the program offers an excellent environment for experimenting with and testing innovative applications of computer aided design and drafting to interior design.

Curriculum. At the lower division level, the curriculum balances a foundation in academic subjects such as English, math, computers, and physics with a core of design courses that include architectural history, as well as studio courses in drawing, computer graphics, and design fundamentals. Sixty eight (68) hours are required. The upper division curriculum includes studio work in interior and furniture design, as well as drawing and lecture courses in history of interior design, human factors, interior codes, specifications, environmental technologies, and practice. A supervised summer internship is also a part of this program. Seventy two (72) hours are required at this level.

Graduates from the program accept entry level professional positions in a variety of settings, including interior design firms, departments of space planning or interior design in architectural firms, public institutions, or industry. Students may also choose to continue their education through graduate studies offering greater enrichment in their studio disciplines, and contributing to the possibility for post secondary level academic appointments giving the recipients highly sought after academic credentials

**Interior Design
Lower-Division Requirements**

First Year

	<i>Semester Hours</i>
Fall (15)	
ENG 101 Freshman Composition or ENG 105 if qualified	3
MAT 115 College Algebra and Trigonometry	4
DSC 100 Contemporary International Design	3
ECE 105 Introduction to Languages of Engineering	3
* DSC 160 Freehand Perspective Drawing I	2
Spring (17)	
ENG 102 Freshman Composition (or H/FA elect. if ENG 105	3

168 DEPARTMENT OF DESIGN

PHY 111&R	General Physics and Recitation	3
PHY 113	General Physics Lab	1
ECE 106	Introduction to Computer Aided Engineering	3
* DSC 161	Freehand Perspective Drawing II	2
ARS 100	Introduction to Art	3
DSC 223	Introduction to Interior Design	2

Second Year

Fall (18)

DSC 221	Design Fundamentals I	3
DSC 224	Color	3
DSC 246	Programming for Interior Design	3
DSC 316	20th Century Design I	3
DSC 216	History of Interior Design I	3
ENG 301	Writing for Professionals	3

Spring (18)

COM 207	Introduction to Communication Inquiry or COM 222 or COM 225	3
DSC 217	History of Interior Design II	3
DSC 220	Interior Rendering	3
DSC 225	Design Methods	3
DSC 324	Color for Interior Design	3
DSC 344	Human Factors in Design	3

Lower Division Total: 68

* DSC 160, 161, and 221 are cross listed with similarly numbered courses in Architecture.

Transfer Credits: Transfer credits are reviewed by the College and evaluated as admissible to specific programs. To be admissible, transfer courses must be equivalent in both content and level of offering. Portfolio review is required for studio work. See Academic Advis or for help in making an appointment for review.

Upper Division Requirements

Third Year

		<i>Semester Hours</i>
Fall (17)		
DSC 318	Decorative Arts Cultural Influences	3
DSC 340	Interior Codes Public Welfare and Safety	3
DSC 341	Interior Materials and Finishes	3
DSC 346	Furniture and Millwork	3
DSC 364	Interior Design Studio I	5

Spring (17)

CON 366	Construction Methods	3
DSC 319	Decorative Textiles	3
DSC 321	Specifications and Documents for Interiors	3
DSC 365	Interior Design Studio II	5
DSC 458	Lighting for Interior Design	3

Summer (3)

DSC 484	Internship	3
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Fourth Year

Fall (17)

DSC 455	Environmental Control Systems	3
DSC 464	Interior Design Studio III	5
DSC 457	Acoustics for Interior Design Social/Behavioral Design elective	3
	Approved Program Elective I	3

Spring (18)

DSC 472	Professional Practice for Interior Design	3
DSC 465	Interior Design Studio IV Natural Science Lab elective Social/Behavioral Science elective	4
	Approved Program Elective II	3

Upper Division Total: 72
B.S.D. Program Total: 140

¹ Approved Program elective Courses selected with approval of advisor

The courses in the Interior Design curriculum that fulfill General Studies Requirements of the University are as follows:

	<i>Semester Hours</i>
A. Literacy and Critical Inquiry	
Written or spoken critical discourse COM 207 or 222 or 225	3
Critical Writing ENG 301	3
B. Numeracy	
Mathematics MAT 115	4
Computer Applications ECE 106	3
C. Humanities and Fine Arts	
DSC 100 ARS 100, DSC 318	9
D. Social and Behavioral Sciences	
Select two courses in the same department from:	

1. Sociology	
301 and 332 or 348 or 351 or 360 or 448 or 457 or	
2. Psychology	
100 and 306 or 350 or 427 or	
3. Anthropology	
102 and 351	6
E. Natural Sciences	
PHY 111 and 113	4
Natural Sciences Laboratory (elective)	4
F. Global Awareness	
(DSC 100)	
G. Historical Awareness	
DSC 216	3
	—
Total hours of General Studies	39
Requirements included in the Interior Design curriculum.	

Note: The above distribution of courses exceeds the minimum required credit total of 35 and meets the detailed distribution requirements. Parentheses indicate credits counted under another category.

Design Science

The Design Science major is an individualized upper-division program of study for students who are academically above average and who have specific academic and professional goals that are not achievable in the department's established curriculum. Applications for admission to this program are made directly to the Department Chair. The Design Sciences major does not necessarily take studio or lab courses. An internship may be a part of each program of study.

Applications must include a program of study developed in conjunction with an advisor and accepted by the faculty. Students must fulfill lower-division program requirements in either Industrial or Interior Design, and the program must total 136 hours if one chooses an Industrial emphasis and 140 hours if one declares an Interior Design emphasis.



Design

PROFESSORS:

REZNIKOFF, WOLF

ASSOCIATE PROFESSORS:

BUSH, KNIGHT, KROELINGER, NIELSEN,
STREUFERT, WITT

ASSISTANT PROFESSORS:

JOHNSON, LAFFITTE, QUESADA, SADLER,
VERNON

DSC 100 Contemporary International Design. (3) F, S

Twentieth-century Western and Asian design in light of the historical events, economic forces, cultural values, and aesthetic ideals that have shaped it. Three hour lecture. [Satisfies General Studies Requirements: HU, G]

160 Freehand Perspective Drawing I. (2) F, S, SS

Freehand perspective drawing methods applied to drawing objects and interior and exterior environments in line and tone. Five hour studio. Prerequisite: Major in College. Cross-listed with AVC 160.

161 Freehand Perspective Drawing II. (2) F, S, SS

Continuation of 160. Introduction of color media, and analytical and design drawing exercises. Five hour studio. Prerequisite: Major in College, DSC 160. Cross-listed with AVC 161.

216 History of Interior Design I. (3) F

The design on interior spaces as expression of cultural influences to 1900. [Satisfies General Studies Requirements: HU, H]

217 History of Interior Design II. (3) S

Design of American Interiors as an expression of cultural and technological influence, 1900 to contemporary. Prerequisite: DSC 216 preferred. [Satisfies General Studies Requirement: H]

220 Interior Rendering. (3) S

Graphic representation methods used to describe and analyze space, emphasis on quick presentation techniques. Six hours studio. Prerequisites: DSC 161, 221.

221 Design Fundamentals. (3) F

Exercises in basic visual organization: includes design vocabulary, principles of 2D and 3D composition, color, and aesthetic reactions to design. Seven hour studio. Prerequisite: Major in College. Cross-listed with ADE 221.

223 Introduction to Interior Design. (2) S

Interiors issues, theories, and philosophies. Emphasis on subjective and objective analysis of problems of design and their solutions. [Satisfies General Studies Requirement: HU]

224 Color. (3) F

Theory and practice of basic color concepts, color systems, color relationships, psychology of color, color in industry. 2 hours lecture, 2 hours studio. Prerequisite: DSC 161 or equivalent.

225 Design Methods. (3) S

Issues of physical form development related to product and interior design; form development properties of paper, fibers, wood, metal and plastics. 2 hours lecture, 2 hours studio. Prerequisite: DSC 221 or equivalent. Majors only.

170 DEPARTMENT OF DESIGN

226 Color Sketching. (3 F, S

Felt markers quick representational and conceptual communication on sketching Forms in space; light and shade. Material reflectance properties Six hours studio. Prerequisite DSC 161 or equivalent

228 Electronic Imaging. (3 N

Introduction to the technologies involved in the production of computer graphics for designers in a non-technical format One hour lecture 4 hours studio

246 Programming for Interior Design. (3 F, SS

Design programming and methodologies for interior design 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 [Satisfies General Studies Requirements. HU H]

317 20th Century Design II. (3 S

Modern European Asian and American design since 1940 Emphasis on transportation product, furniture, exhibition and graphic design [Satisfies General Studies Requirements HU H]

318 Decorative Arts Cultural Influences. (3) F

Focus on how diverse cultures have expressed themselves through the decorative arts May include field trips Prerequisite DSC 217 [Satisfies General Studies Requirement HU]

319 Decorative Textiles. (3 S

Investigation of the fabrication and aesthetic qualities of textiles Cultural and historical expression of design as related to interiors May include field trips Prerequisite DSC 318 or approval of instructor

321 Specifications and Documents for Interiors. (3 S

Contract specifications, documents schedules, and bidding procedures for interior design Prerequisites DSC 340 and DSC 364

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 using computer imaging Six hours studio. Prerequisite DSC 221

324 Color for Interior Design. (3 S

Psychological and decorative applications of color emphasis on the functional and visual effects based upon context Prerequisite DSC 224

340 Interior Codes: Public Welfare and Safety. (3 F

Codes and regulations as performance criteria for interior design

341 Interior Materials and Finishes. (3) F

General analysis of quality control measures relating to interior design materials, finishes, and performance criteria. Prerequisite DSC 340.

342 Materials. (3) S

Materials application in design Characteristics and properties of ferrous and nonferrous metals plastics and elastomers

343 Material Processes. (3 F

Industrial processing as applied to wood, medium and high volume manufacturing. Basic and secondary processing fastening and joining, coding quality control. (as MET 343) Prerequisite: DSC 342

344 Human Factors in Design. (3 F

Man-machine environment systems, human characteristics and behavior applied to design of products systems and the operating environment.

346 Furniture and Millwork. (3 F

Design construction, cost estimating and installation of interior furniture and millwork One hour lecture, four hours studio Prerequisite departmental approval.

347 Interior Furnishings. (3) N

Evaluation of furnishings in a functional, economic, and aesthetic framework Three hour lecture May include field trips Prerequisite DSC 223 or TXC 223.

354 Mechanics of Materials. (4 N

Vectors force systems friction equilibrium, centroids and moment of inertia Concepts of stress strain, and stress analysis applied to beams, columns and combined loading (as MET 354). Prerequisites: PHY 11 MAT 115

360 Design Methodology and Techniques. (5 F

Acquaints the student with methods of visual thinking, conceptualization, and deal with building skills in professional design presentation on techniques Ten hour studio Prerequisite departmental approval

361 Concept Development. (5 S

Emphasis on developing ideas into a complete functional product including survey and application of aesthetics human factors, materials and manufacturing Ten hour studio Prerequisite DSC 360.

364 Interior Design Studio I. (5 F

Studio problems in interior design related to behavioral response in personal and small group spaces Ten hour studio Prerequisite departmental approval.

365 Interior Design Studio II. (5) S

Studio problems in interior design with emphasis on issues of public and private use of interior spaces of assembly. Ten hour studio Prerequisite DSC 364.

367 Electronic Packaging. (3) N

Industrial design problems in packaging electronic devices Emphasis is placed on packaging, displays and controls Prerequisite approval of instructor

420 Graphic Design. (3 F

Visual design relating to products packaging, display and signage Mixed media Six hour studio Prerequisite DSC 323

421 Concept and Style in Presentation Documents. (3 N

Methods of analyzing portfolio design for interiors Forming presentation concepts and establishing a communications style Prerequisite Senior status

431 Package Design. (3) S

Aesthetic and marketing considerations of containing, protecting and promoting a product through packaging Six hour studio Prerequisite DSC 420

440 Plastics Design. (3 S

Mod design for part requirements, molded hoses threads inserts fastening and joining; decorative, extrusion design reinforced plastics Prerequisite DSC 224

441 Product Liability. (2 N

Manufacturer's liability Statutes regulations and common law rules role of expert witnesses; insurance and product safety programs

443 Value Analysis. (2 N

Critical investigation of functions cost and design manufacturing interface in component development Case histories

- 454 Kitchen Design.** 3 N
 Holistic approach to the design of energy efficient residential kitchens including storage areas Prerequisite DSC 141 or equivalent
- 455 Environmental Control Systems.** 3 F
 Methods of specifying and constructing systems which control the sensory input from the ambient environment Field trips Prerequisite MAT 115 PHY 111, 113 and senior status
- 457 Acoustics for Interior Design.** 3 S
 Physical properties of sound Studies pertaining to sound absorption materials constructions and room acoustics Prerequisite MAT 115 PHY 111, 113, and senior status
- 458 Lighting for Interior Design.** 3 S
 Light as an aspect of interior design Evaluation of light sources for distribution, color and cost Prerequisite senior status
- 460 Unit Analysis and Design.** 5 F
 Complete analysis of the product unit as an element of mass production emphasizing packaging, cost development esthetics and detailing Specification to professional presentation Ten hours studio Prerequisite DSC 361
- 461 System Synthesis and Design.** 5 S
 Product design with emphasis on systems interaction Cumulative design process and technique and visual project directions encouraged Ten hours studio Prerequisite DSC 460
- 464 Interior Design Studio III.** 5 F
 Studio problems in interior design related to commercial spaces Ten hour studio Prerequisites DSC 365.
- 465 Interior Design Studio IV.** 5 S
 Studio problems in interior design related to health and educational facilities Ten hour studio Prerequisite DSC 464
- 470 Professional Practice for Industrial Design.** 3 F
 Business procedures management techniques accounting systems ethics and legal responsibilities of the design professions Prerequisite senior status May be repeated for credit
- 472 Professional Practice for Interior Design.** 3 F
 Business procedures project control fee structure professional product abilities Prerequisites senior status
- 474 Design Project.** 3 F
 Large scale interdisciplinary class project involving project planning and control design, prototype development feasibility study and reporting Prerequisite senior status and approval of instructor
- 475 Design Project.** 3 S
 Design finalization model fabrication and summary reports graphics oral presentation of results Prerequisite DSC 474
- 484 Internship.** 3 SS
 Full time summer internship under supervision of practitioners in the professional area or other locales Prerequisite approval of instructor
- 518 Interior Design Studio V.** 3 N
 Advanced interior design problem solving design theory and criticism. Specified projects based upon the majors program Prerequisite approval of instructor
- 519 Sensitive Design for Historic Buildings.** N
 Specific techniques and processes used in the rehabilitation restoration and/or adaptive uses for interiors of historic structures Prerequisites DSC 216, 217

- 552 Computer Applications for Interior Design.** 3 N
 Conferences and workshops directed toward the use of computer technology in the design process for space planning
- 553 Computer Applications for Industrial Design.** 3 N
 Conferences and workshop directed toward the use of computer technology in the student's area of specialization.
- 558 Daylighting.** 3 SS
 Daylighting as a design determinant concepts, techniques, methodology experiment and case studies See page 38 for special courses which may be offered by this academic unit.

Department of Planning

Purpose

The Department of Planning provides educational preparation for careers in urban and regional planning, landscape architecture, and urban development.

The undergraduate program leads to the four year degree Bachelor of Science in Design (B.S.D.) with two majors and concentrations described below. The program prepares graduates for 1) employment in the area of concentration and 2) entrance into a professional graduate program at ASU or elsewhere. The graduate program leads to the two-year degree, Master of Environmental Planning (M.E.P.)

Organization

The programs are organized under the direction of the chair and are administered by faculty advisors

Bachelor of Science in Design

The Bachelor of Science in Design program in the Department of Planning has two two year segments totaling 134 units of credit. Completion of 65 units of credit in the lower division curriculum is required. This is an additional requirement of 69 upper division credits. Requirements include 6 hours of English Proficiency and exceed the minimum General Studies credit and distribution requirements

	S H N C R E D I T S
Lower division Courses	65
Upper division Courses	
Core	34
Approved Electives	32
Internship	3
 Total	 134

172 DEPARTMENT OF PLANNING

**Department of Planning
Lower Division Requirements**

	<i>Semester Hours</i>
English (6)	
ENG 101 Freshman Composition (or ENG 105 if qualified)	3
ENG 102 Freshman Composition (or H/FA elect if ENG 105)	3
Literacy and Critical Inquiry (6)	
COM 225 Public Speaking	3
PUP 301 Introduction to Urban Planning	3
Numeracy (7)	
MAT 115 College Algebra and Trigonometry	4
Approved statistics or quantitative reasoning	3
Humanities/Fine Arts (9)	
APH/PUP 100 Introduction to Envi- ronmental Design	2
APH/PUP 101 Introduction to Envi- ronmental Design II	2
Approved Humanities/Fine Arts OR Social/Behavioral Science elective	3
Approved Humanities/Fine Arts elective	2
Social Behavioral Sciences (6)	
ECN 112 Principles of Economics (Micro)	3
Approved Social/Behavioral Science elective	3
Natural Sciences (8)	
Approved Natural Science Lab	4
Approved Natural Science Lab	4
Electives (10)	
PLA 301 Introduction to Landscape Architecture (reccommended)	10
Studio Courses (13)	
AVC 141 Design Graphics	2
AVC 160 Freehand Perspective Drawing I	2
ADE 221 Design Fundamentals I	3
PUP 222 Design Fundamentals II (cross listed with ADE 222)	3
PUP 264 Planning Communications or approved substitute	3
Lower Division Total:	65

Transfer Credits: Transfer credits are reviewed by the College and evaluated as admissible to specific programs. To be admissible,

transfer courses must be equivalent in both content and level of offering. Portfolio review is required for studio work. See Academic Adviser or for help in making an appointment for review.

Upper Division Requirements

All students accepted to the upper division take a core of courses in a single, consolidated program. This core program includes a series of studio courses and lecture courses that introduce the skills, theory, and history basic to the field. The curriculum also includes an optional summer internship. Students use approved elective courses to fulfill requirements of their chosen concentrations. A list of additional electives approved for all concentrations is available in the Department office.

Upper-Division Requirements

Third Year

	<i>Semester Hours</i>
Fall (17)	
PLA/PUP 361 Landscape Design I (Site Planning)	5
PUP 332 Planning Methods Using Computers	3
Approved electives ¹	9
Spring (17)	
PLA/PUP 362 Landscape Design II (Urban Design)	5
PUP 442 Urban Design	3
PUP 424 Quantitative Methods Approved electives	6
Summer (3)	
PLA/PUP 484 Internship or Approved Elective	3

Fourth Year

Fall (17)	
PLA/PUP 461 Landscape Design III (Urban Planning)	5
PUP 494 Special Topics: Proposal Writing	1
PUP 432 Planning, Society and Law Approved electives	8
Spring (15)	
PLA/PUP 462 Landscape Architecture IV Independent Project	5
PUP 494 Special Topics: Professional Practice	1
Approved electives ¹	9

Upper Division Total: 69

Semester Hours

The courses in the Planning curriculum that fulfill General Studies Requirements of the University are as follows:

3	GPH 361	Urban Geography
3	PUP 442	Environmental Planning
3	PUP 444	Preservation Planning
3	PUP 412	History of the City
3	CON 472	Land Development
3	FEAS	Feasibility
3	REA 441	Real Estate Land Development
3	SOC 332	The Modern City
3	TRA 405	Urban Transportation
8	PUP/PLA Special Courses OR other approved electives	

3	A. Literacy and Critical Inquiry	Written or spoken critical discourse COM 225 or approved substitute
3		Critical Writing
3	B. Numeracy	Mathematics MAT 115
4		Approved Statistics or quantitative reasoning
3	C. Humanities and Fine Arts	APH/PUP 100, APH/PUP 101
6		Approved Humanities and Fine Arts elective
3	D. Social and Behavioral Sciences	ECN 112 or 111
3		Approved Social and Behavioral Science elective
3	E. Natural Sciences	Approved Natural Science with Lab
4		Approved Natural Science with Lab
4	F. Global Awareness	(APH/PUP 100)
32	G. Historical Awareness	APH/PUP 101)

Total hours of General Studies Requirements: included in the Planning curriculum.
 Note: The above distribution of courses meets the minimum required credit total of 35 and meets the detailed distribution requirements. Parentheses indicate credits counted under another category.

B.S.D. Program Total: 134

¹ Courses that fulfill approved electives for the concentration should be selected in consultation with Departmental Advisors.

Major: Housing and Urban Development (HUD)

Provides familiarity with housing technology, planning and development in both public and private sectors. Any interested student should contact the department chair for information about the HUD major.

Major: Urban Planning

Concentration: Landscape Architecture (PLA) Students in the Landscape Architecture concentration explore the reasons for and the techniques involved in the analysis, planning and design of land and the exterior environment, both natural and built. Students fulfill this concentration's requirements by taking a minimum of 32 semester hours of approved electives from the following list: 15 units of credit from the first list and 17 units of credit from the second list

1) PLA courses:
 PLA 411 History of Landscape Architecture
 PLA 442 Landscape Construction and Materials
 PLA 432 Plant Materials
 PLA 444 Landscape Architecture
 PLA 446 Site Preparation
 PLA 446 Landscape Structures and Systems

2) Other courses:
 CBE 341 Surveying
 ERA 325 Soils
 GPH 372 Air Photo Interpretation
 CON 472 Land Development
 PUP 442 Environmental Planning Feasibility
 PUP 442 Environmental Planning
 PUP/PLA Special Courses OR other approved electives

Major: Urban Planning Concentration: Urban Planning (PUP)

The concentration in Urban Planning exposes the student to the theories, methods and interdisciplinary concerns of the urban planning field. Students fulfill this concentration's requirements by taking a minimum of 32 semester hours of approved electives from the following list:

174 DEPARTMENT OF PLANNING

Advisement

Advising for the lower division program is through the college academic advisor. Advising for the upper division program is by the department chair and faculty advisors.

Application and Admission

Admission to the department requires the completion of the following requirements and procedures:

Application to the University: see requirements and procedures given in the section titled "Undergraduate Admission" beginning on page 22.

Lower Division Program

Admission to the lower division program of the Department of Planning is automatic if it is requested on the application and admission to the University is granted.

Upper Division Program

Admission to the upper division programs of the Department of Planning is limited to applicants who have completed the lower division program requirement, and who are determined by the admissions committee to have the best potential for academic success. Spaces in the program are limited by available facilities, faculty and qualified applicants. A lower division program GPA of 3.00 may be required.

Application Documents

Forms for application to upper division programs of the department may be obtained from the Planning Department or from the academic advisors office.

Application Procedures

Students should write to the Academic Advisor for the application form well in advance of the application deadline.

Deadlines and Schedule:

Application deadline: 4:00 p.m. April 15 (or the following Monday if the 15th falls on a weekend). All applications are due according to the following schedule.

Spring Semester transcripts: June 15

Notification: July 1

Return of Letter of Acceptance: A signed receipt of acceptance of admission must be received by the department by July 15.

Alternates: July 16, notification of admission status for alternates.

Portfolios available for return: July 16.

Matriculation: Accepted students are expected to begin their upper-division programs at the beginning of the immediate fall term. There is no spring admission to the upper division.

Application Format

Application materials are submitted at one time in a presentation binder (portfolio) with plastic sleeves (8 1/2 x 11 format only.) Items must appear in the following order:

Page 1: Department application form completely filled out with page 1 visible.

Page 2: Department application form 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 lower division program requirements. Note: Transcripts should be complete except for the current spring semester. Spring semester transcripts must be received by the Department before June 15.

Page 6: Copy of Arizona State University Certificate of Admission or Readmission.

Pages following: Examples of the applicant's graphic skill and creative ability:

- A. Includes 2-3 examples from each of the lower division studio courses (141, 160, 221, 222, 264) or work from similar courses taken elsewhere. Include a one sentence caption that briefly explains each project being illustrated, the educational goal, the length of time allotted for the project, and, as applicable, names of other team members, and so forth.
- B. Additional materials, written or pictorial, that provide additional evidence of your skills and abilities, as well as aptitude and commitment to field of study. For applicants to the departments of Design or Planning, this section may include letters of recommendation.

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. Original examples or slides must not be submitted. All examples must be photographs or other reproduction graphic media.

Return of Application Materials. The Departmental Application Form remains the property of the department, however the rest of the materials will be returned after July 15 if the

DEPARTMENT OF PLANNING 175

applicant encloses a self addressed return mailer with sufficient prepaid postage. The applicant may also receive it in person at the Department office or if he/she provides written authorization for someone to receive it in person at the departmental office. After one year the remaining materials are discarded. The college and the departments assume no liability for lost, damaged or unclaimed materials.

Inquiries

For further information on the lower division or upper division programs in planning please contact the Academic Advisor, College of Architecture and Environmental Design, Arizona State University, Tempe, Arizona 85287. For further information on admissions to Arizona State University, contact: Office of the Director of Admissions, Arizona State University, Tempe, Arizona 85287.

Master of Environmental Planning

The Department of Planning offers an Urban Planning concentration in the Master of Environmental Planning degree (M.E.P. offered by the College of Architecture and Environmental Design. This concentration is a two year program with the following requirements:

	<i>Semester Hours</i>
Required Courses	18
Approved Electives	27
Optional Summer Internship	3
Thesis or Research Project	6
 Total	 54

Students with a terminal degree may be accepted into a program of study of 42-54 hours depending on their preparation. For further information, see the *Graduate Catalog*.

Planning

PROFESSORS:

BURNS ARCH 135), BURGESS

ASSOCIATE PROFESSOR:

K M, LA

ASSISTANT PROFESSORS:

COOK GARCIA, PIHLAK

PROFESSOR EMERITUS:

ELMORE

URBAN PLANNING

PUP 100 Introduction to Environmental Design I. 2) F S

Survey of environmental design includes historic examples and the theoretical social technical and environmental forces that shape them. Two hours lecture. Cross listed with APH 100. [Satisfies General Studies Requirements. HU G H]

101 Introduction to Environmental Design II. 2 F S

Survey of environmental design issues responses and directions. Two hours lecture. Cross listed with APH 101. [Satisfies General Studies Requirements. HU H]

264 Planning Communication. 3 S

Communication techniques for urban planning and landscape architecture presentations. Prerequisites: AVC 141 AVC 160 ADE 221

300 The Planned Environment. 3 F

Aesthetic social, economic political and other factors influencing urban development in the 20th century

301 Introduction to Urban Planning. 3 F S

Theoretical and practical aspects of city planning. Interrelationships between physical planning, environment, government and society. Cross listed with CEE 371

320 Theory of Built Environments. 3 N

Focused study of built environmental forms. Theoretical foundation and relation to social processes. Three hours lecture. Prerequisite: sophomore standing. Cross listed with APH 348. [Satisfies General Studies Requirement. HU]

322 Planning Methods Using Computers. 3) F

Planning methods using database word processors, spreadsheets. CAD and mapping packages on micro computers.

403 Interdisciplinary Urban Planning. 3 F

Basic theories and methods of urban planning with introduction to substantive issues of concern to urban planners. Visiting lecturers

412 History of the City. 3 F

The city from its ancient origins to the present day. Emphasis on European and American cities during the last five centuries. Cross listed with APH 414

424 Planning Research Methods. 3 S

Tools useful for urban planning research. Emphasis on research design and survey methods. Prerequisite: PUP 301 or approval of instructor

432 Planning, Society, and the Law. 3 F

Law as a determinant of urban planning and development. Urban history and in the context of present laws on police power, eminent domain, tax policy and governmental programs

442 Environmental Planning. 3) F

Environmental planning problems, including food, air, water quality and quantity, solid and hazardous waste, air quality, and noise. Field trips. Prerequisite: PUP 301 or approval of instructor

444 Preservation Planning. 3 F

Principles and practices of planning for preservation, conservation and neighborhood redevelopment. Emphasis on evaluation of historic resources. Off campus field practicum required. Cross listed with APH 442. Prerequisite: approval of instructor

446 Urban Design. 3 F

Analysis of the visual and cultural aspects of urban design. Theories and techniques applied to selected study models.

176 DEPARTMENT OF PLANNING

484 Internship. 3 F S, SS SS1 on y
Full time internship under the supervision of practitioners in the Phoenix area or other locale. Credit/no credit. Prerequisite: department major or approval of instructor.

520 Planning Theories and Processes. 3 F
Review of past and current theoretical development related to social change perspectives, the role and ethics of planners. Prerequisite: approval of instructor.

532 Planning and Development Control Law. 3 S
Legal case study on and development and public planning. Topics include police power, eminent domain, zoning subdivisions, and design controls.

542 Energy Policy Planning. 3 N
Energy conservation issues and strategies at the neighborhood to metropolitan scale. Prerequisite: ETE 521 or approval of instructor.

544 Urban Land Use Planning. 3 F
Theory and method of urban and use planning, including the rational planning process, comprehensive, functional, and neighborhood plans. Prerequisite: PUP 301 or approval of instructor.

572 Urban Planning Practicum I. 5 F
Comprehensive planning workshop dealing with actual problems in an Arizona community. Data gathering and analysis, formulation, and recommendation of a tentative plans and policies. Prerequisite: PUP 520 or approval of instructor.

574 Urban Planning Practicum II. 5 N
Applied workshop emphasizing large scale, physical project planning by either a public agency or private enterprise. Prerequisite: PUP 572 or approval of instructor.

584 Internship. 3 F S, SS SS1 on y
Internship under the supervision of practitioners in the Phoenix area or other locale. Credit/no credit. Prerequisites: admission to regular graduate student status or approval of instructor.

622 Urban Statistical Analysis. 3 F
Quantitative analysis in the urban context, demographic analysis, data processing, planning application and urban systems.

642 Land Economics. 3 F
Economic determinants for urban and regional planning analytical techniques, elementary market analysis and feasibility studies, economic incentives in urban planning. Prerequisite: approval of instructor.

644 Public Sector Planning. 3 S
Urban fiscal problems and public goods provision in state and local governments. Prerequisites: approval of instructor and one course in macroeconomics.

See page 38 for special courses which may be offered by this academic unit.

HOUSING AND URBAN DEVELOPMENT

PUD 359 Tourist Resort Design. 3 F
Internship on projects of social, economic and physical aspects of total tourist resort design, emphasis on physical development of tourist centers and resort areas.

433 Building Codes and Ordinances. 3 F
Analysis of national, state and local building codes and ordinances relative to their impact on architectural programming design and construction documentation. See ANP 433.

442 Construction Administration II: Commercial. 3 S
Emphasis on field observation of construction, shop drawings, reports and materials testing. Meetings, records, field orders, schedules, arbitration of disputes, architect's responses to client during construction, applications for payment and project closeout.

LANDSCAPE ARCHITECTURE

PLA 301 Introduction to Landscape Architecture. 3 F
The relevance of landscape architecture to the creation of humanized environments with emphasis on natural factors.

310 History of Landscape Architecture. 3 F
Physical record of man's attitude toward the land. Accent through contemporary landscape planning and design.

361 Landscape Design I. 5 F
Site planning analysis of natural and cultural features, site systems and applications on site planning and design. Prerequisite: major in department or approval of instructor.

362 Landscape Design II. 5 S
Urban Design analysis of urban form and design applications within an urban context. Prerequisite: PLA 361 or approval of instructor.

432 Plant Materials. 3 S
Natural components of landscape design; characteristics, applications, selection and use. Field trips.

442 Landscape Construction and Materials. 3 F
Characteristics of materials and methods used in landscape architecture construction.

444 Landscape Architecture Site Preparation. 3 F
Landscape construction drawings focusing on site transformation. Topics include grading, earthwork, computations, roadway alignments and layout. Prerequisite: admission to department's professional level or approval of instructor.

446 Landscape Structures and Systems. 3 S
Landscape construction drawings for structures and systems including wood construction, retaining walls, irrigation systems, planting, specifications, cost estimation, contract administration. Prerequisite: PLA 444 or approval of instructor.

461 Landscape Design III. 5 F
Urban Planning; correlation and analysis of economic, social and environmental data relevant to urban planning development of and use patterns. Prerequisite: PLA 362 or approval of instructor.

462 Landscape Design IV. 5 S
Independent project, students select and develop projects relative to topics of individual interest or desired specializations. Prerequisite: PLA 461 or approval of instructor.

484 Internship. 3 F S, SS SS1 on y
Full time internship under the supervision of practitioners in the Phoenix area or other locale. Credit/no credit. Prerequisite: department major or approval of instructor.

See page 38 for special courses which may be offered by this academic unit.

College of Business

John Kraft, Ph.D.
Dean

Purpose

The primary objective of the College of Business 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 50 percent of work in general education and other non-business courses and 40 percent in courses offered by the College of Business, 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 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 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 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 academic units: Accountancy, Decision and Information Systems, Economics, Finance, General Business, Management, Marketing, and Purchasing, Transportation, Operations.

The School of Health Administration and Policy offers a master's degree program designed to prepare qualified individuals for management careers in hospitals, group practices, health maintenance organizations, consulting firms, long term facilities and other health services organizations.

The Center for Business Research collects, analyzes, and disseminates information on the economy and business climate of Arizona. Forecasts and analyses of Gross State Product, prices, income, employment, real estate activity, and demographic data for Arizona are made available to business and the general public. The Center coordinates interdisciplinary sponsored research efforts which will provide useful information to business and a learning experience for students and faculty researchers.

The Decision Systems Research Center monitors and advances the state of the art in the management of data, information, and planning analyses. Members include leading industry and academic professionals in the decision sciences and information systems.

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 Center for Private and Public Sector Ethics conducts research and offers educational programs on ethical issues in business, government and the professions.

The First Interstate Center for Services Marketing provides research, specialized education and training, and management assistance for the professions and to firms engaged in banking, insurance, health care, tourism, and transportation.

The Hahn Center for Entrepreneurship and Innovation provides hands-on experience for students together with applied research and interdisciplinary course work for students and entrepreneurs.

The Arizona Real Estate Center collects and analyzes data concerning the multi-faceted real estate market to provide insight into solutions for problems confronting the real estate industry.

The Dean's Council of 100, a group of 100 distinguished business and professional leaders, provides liaison between the College and the business community and develops private support for the priority needs of the College.

The Economic Club of Phoenix, in conjunction with the Dean's Council of 100, provides programs that foster discussion of economic and business issues among the academic, business, labor and public sectors of Phoenix.

The Council of Emeritus Advisers, founded by the ASU College of Business and Dean's Council of 100, is a select group of retired executives who advise the dean and invite nationally known experts to Arizona as visiting scholars, lecturers and speakers.

Degrees

Bachelor's Degrees. The College of Business awards the Bachelor of Science degree upon successful completion of a four-year curriculum of 126 semester hours as prescribed below. Students may select one of the following 12 majors:

- Accountancy
- Advertising
- Computer Information Systems
- Economics
- Finance
- General Business
- Management

- Marketing
- Operations/Production Management
- Purchasing/Materials Management
- Real Estate
- Transportation

Students who wish to qualify to teach business subjects at the secondary level should major in secondary education with subject matter in business. This curriculum leads to the Bachelor of Arts in Education degree and certification for teaching business subjects in Arizona schools. Courses to meet university and professional education requirements for this program are listed under the secondary curriculum section of the College of Education. Required business courses may be found on page 180.

Master's Degrees. The Master of Business Administration degree, the Master of Health Services Administration degree, the Master of Accountancy degree, the Master of Quantitative Systems degree, the Master of Taxation, and the Master of Science degree in Economics are awarded upon successful completion of programs detailed in the *Graduate 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 without 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.

The College of Business and the College of Liberal Arts and Sciences have defined a program whereby outstanding students may obtain a Bachelor of Arts or Bachelor of Science with in the Liberal Arts and Sciences College and a Master of Business Administration in five years of study. While obtaining the Liberal Arts degree, the capable student will also complete the business prerequisites for the MBA degree.

Master of Health Services Administration Degree: A program designed to prepare qualified individuals seeking careers as administrators of hospitals and health care organizations, consultants to health management firms, accounting firms, and policy makers in state and

federal agencies. This preparation is carried out by providing the students with selected theories, tools and techniques—the understanding, analysis, and application—which are essential for effective health services administration.

The program consists of a minimum of 48 semester hours: 15 hours of business administration, 24 hours of health services administration, and 9 hours of electives. Students serve internships and residencies in major organizations throughout the United States and abroad. During the course of their training, students act as consultants to major health care organizations throughout the United States. This is accomplished through the Program's innovative Graduate Technical Assistance Program (GTAP).

Master of Accountancy: A program designed to provide professional competency in a variety of fields in accounting. In addition to a broadly oriented degree program, the student may choose to specialize in accounting information systems, electronic data processing, auditing.

Master of Quantitative Systems: The Master of Quantitative Systems program provides a specialization that stresses the application of decision and information systems to business, economic, governmental, and social issues. It includes substantial familiarization with computer-based systems and quantitative methods to facilitate managerial planning, decision analysis, and control. The program of study consists of a minimum of 30 semester hours with 6 hours in required study and 24 hours in electives to support an area of specialization.

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 economics. The master's program in economics requires graduate work in macroeconomic analysis, microeconomic analysis and quantitative methods.

Master of Taxation. A specialized program to equip persons with the highly technical and demanding skills required to administer the tax laws in both the private and public sectors of the economy.

Doctoral Degrees. The Doctor of Philosophy degree (Ph.D. in Business) prepares individuals to teach and conduct scholarly research in a specialized area of concentration in the field of Business Administration, and prepares individuals for positions in business or government where the required educational background is doctoral level study. The Ph.D. degree program requires mathematical competence through in-

ear algebra and calculus, undergraduate or graduate level study in the core areas of business administration and some advanced graduate work in chosen areas of concentration. The program of study includes graduate study in economic analysis, research and teaching methods, and quantitative analysis. The advanced program is comprised of an area of concentration and supporting course work that will best prepare students for conducting scholarly work in their area of interest. 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. Students seeking a Bachelor of Science degree in the College of Business must satisfactorily complete a curriculum of 126 semester hours as indicated below:

	<i>Semester Hour</i>
General Studies Requirements	63
Business Core Curriculum	33
Major	18 21
Electives	9 12
 Total	 126

General Studies

Graduation Requirements. All students in the College of Business are required to complete a total of 63 semester hours of combined University General Studies courses. These General Studies and required College of Business courses are enumerated in *Policy Statement 63* of the College of Business. Students, in consultation with their advisors, *must select all General Studies courses from this list*. Any exceptions must be approved by the Office of the

180 COLLEGE OF BUSINESS

Dean, Undergraduate Programs, in the College of Business prior to enrollment in the course.

Core courses are regularly reviewed. To determine whether a course meets one or more General Studies Core course credit requirements, see the *General Studies Course Guide* available prior to registration for courses. (See pages 43-46 for specific requirements)

Key to General Studies Core Credit Abbreviations

- L1 Literacy and Critical Inquiry Core Courses (Intermediate level)
- L2 Literacy and Critical Inquiry Core Courses (Upper division)
- N1 Numeracy Core Courses (Mathematics)
- N2 Numeracy Core Courses Statistics and Quantitative Reasoning)
- N3 Numeracy Core Courses (Computer Applications)
- HU Humanities and Fine Arts Core Courses
- SB Social and Behavioral Science Core Courses
- S1 Natural Science Core Courses (Introductory)
- S2 Natural Science Core Courses Additional Courses)
- G Global Awareness Courses
- H Historical Awareness Courses

Specific courses from the following areas must be taken to obtain the designated *minimum* number of semester hours required for graduation:

	<i>Semester Hours</i>
Humanities and Fine Arts	8
At least one course in Humanities and Fine Arts or Social and Behavioral Sciences must be upper division.	
Social and Behavioral Sciences	15
Must include two of these: ASB 102, PSG 100, and SOC 101. ECN 111 and ECN 112 are <i>required</i> . At least one course in Social and Behavioral Sciences or Humanities and Fine Arts must be upper division.	
Science and Mathematics	14
Must include 2 laboratory sciences, MAT 119* and MAT 210 (or more advanced course).	

* QBA 222 will be taken in lieu of MAT 119 during AY 1987-1988

Global Awareness and Historical Awareness Courses

General Studies requirements must include one approved global awareness course and one approved historical awareness course selected from *Policy Statement 63*

Other General Studies 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 63 hour minimum (see *Policy Statement 63*). All students must complete ENG 101 and 102 First Year Composition) and one of the following communication courses—COM 100, 230, 259 as part of the General Studies requirement.

Total General Studies Courses 63

Business Core Requirements. 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 must complete the following courses:

	<i>Semester Hour</i>
ACC 211 Introductory Financial Accounting	3
ACC 212 Introductory Managerial Accounting	3
CIS 200 Computers in Business	3
QBA 221 Statistical Analysis	3
GNB 233 Business Communication	3
GNB 305 Legal Environment of Business	3
FIN 300 Fundamentals of Finance	3
OPM 301 Operations and Logistics Management	3
MGT 301 Management and Organization Behavior	3
MKT 300 Principles of Marketing	3
MGT 463 Business Policies	3
Total	33

Major Requirements

A major consists of a pattern of 18-21 semester hours in related courses falling primarily within a given subject field. Majors are available in accountancy, advertising, computer information systems, economics, finance, general business, management, marketing, operations/production management, purchasing/materials management, real estate, and transportation.

Accountancy. 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 accountancy shall consist of the following 21 semester hours

	<i>Semester Hours</i>
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

Note: All Accountancy majors must complete PHI 103, Principles of Sound Reasoning; ENG 301, Writing for the Professions. PHI 306, Applied Ethics; and COM 259, Communication in Business and the Professions (in addition to COM 100 or COM 230), as part of their General Studies Requirements

An accountancy major may take a maximum of 30 semester hours of upper division accounting courses as a part of the 126 semester hours required for graduation.

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. Employment opportunities include positions with advertising agencies, retail stores, manufacturing firms, newspapers and broadcasting stations.

A major in advertising shall consist of 18 semester hours. The following 15 hours must be included.

	<i>Semester Hours</i>
ADV 301 Advertising Principles	3
ADV 311 Advertising Creative Strategy I	3
ADV 371 Advertising Media	3
MKT 351 Marketing Intelligence	3
ADV 461 Advertising Management	3

To complete the major, students, in consultation with their faculty advisors, shall select 3 hours from among the following list of courses:

	<i>Semester Hours</i>
ADV 312 Advertising Creative Strategy II	3
ADV 452 Strategic Issues in Advertising	3
MKT 304 Consumer Behavior	3
MKT 310 Principles of Selling	3
MKT 321 Principles of Retailing	3
MKT 434 Industrial Marketing	3
MKT 435 International Marketing	3

In addition, all advertising majors are required to take a three hour communications course and a three hour behavioral science course from among a list of general studies courses approved by the Department of Marketing. The list of approved courses is contained in the 'Advertising Field of Specialization Student Curriculum Guide,' a copy of which can be obtained from the departmental office

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 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 18 semester hours. The following 15 hours must be included:

	<i>Semester Hours</i>
CIS 235 Computer Information Systems I	3
CIS 330 Interactive Business Systems	3
CIS 335 Computer Information Systems II	3
CIS 420 Business Database Concepts	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 faculty advisor.

182 COLLEGE OF BUSINESS

Note: All Computer Information Systems majors must complete MAT 242, Elementary Linear Algebra, and CSC 100, Introduction to Computer Science I. CSC 100 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 119; MAT 210 or higher level; MAT 242, CSC 100; QBA 221

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 also for those intending to pursue graduate education 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.

Economics majors are required to take MAT 270 Calculus and Analytic Geometry I and earn a minimum grade of "C" before taking upper-division courses in economics.

The major in economics shall consist of 18 semester hours of upper division courses in economics. The following 6 hours must be included:

	<i>Semester Hour</i>
ECN 313 Intermediate Macroeconomic Theory	3
ECN 314 Intermediate Microeconomic Theory	3

ECN 313 and ECN 314 are required. They must be taken after the completion of MAT 270 and prior to other upper division courses in economics. Concurrent enrollment in ECN 313 and ECN 314 is permitted. Concurrent enrollment with one of the above and other upper division courses in economics is subject to approval of the faculty advisor.

Finance. The study of finance prepares students to understand the financial implications inherent in virtually all business decisions. Students majoring in finance are prepared for entry level careers in corporate management, de-

pository institutions, investment management, or financial services. The finance curriculum emphasizes financial markets, evaluation of investments, and efficient allocation of resources.

The major in finance consists of 15 semester hours. All students must complete ACC 321, Intermediate Accounting, before taking 400 level finance courses. The following courses must be included in the major

	<i>Semester Hour</i>
FIN 331 Financial Markets and Institutions	3
FIN 361 Managerial Finance	3
FIN 421 Security Analysis and Portfolio Management	3

To complete the major, the student must:

- (a) select two additional 400 level finance courses designated in the *Catalog* with the prefix FIN, and
- (b) select one additional upper division course approved by the Department of Finance faculty. This course may be, but is not restricted to, an additional finance course or ACC 321. Students have the option of including ACC 321 as part of the major or as a free elective to satisfy the credit hour requirements for the baccalaureate degree.

General Business. Offering the opportunity for a general business degree 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.

The following 9 semester hours must be included in the student's program:

	<i>Semester Hour</i>
ACC 301 Management Uses of Accounting	3
FIN 331 Financial Markets and Institutions	3
MKT 302 Fundamentals of Marketing Management	3

In addition students must select two of the following four courses.

	<i>Semester Hour</i>
GNB 320 Entrepreneurship	3
GNB 451 Business Research Methods	3
MGT 352 Human Behavior in Organizations	3

OPM 331 Production and Operations Management 3

The remaining three hours will be upper division business courses selected in consultation with a General Business faculty advisor.

Business Teaching. This area prepares students who desire to teach business subjects in secondary schools. A student seeking a major in business teaching would complete the General Business area of specialization as well as any current state requirements for certification. A teaching minor is also available, consisting of 24 hours of credit in business. Interested students should contact the business teaching advisor in the Department of General Business.

The Department of General Business participates in programs leading to the degrees of Master of Education; Doctor of Education; and Doctor of Philosophy, Curriculum and Instruction. Consult the *Graduate Catalog* for requirements.

Management. Management includes the functions of planning, organizing, staffing, motivating and controlling in the business setting. Yet management is more than mere administration; it is the ability to change an organization so that it may accomplish something. Good managers make things happen through their actions within the organization and through responsible contributions to the society. The Department of Management offers students two specializations or tracks in management: Management Systems and Human Resource Management.

Management Systems

The purpose of management is to maximize desirable organizational outputs and minimize undesirable organizational outputs given realistic constraints. The desirable outputs include physical goods, beneficial services, human satisfaction and happiness, employee security, material well being, and socially responsible actions. Some of the undesirable outputs are human dissatisfaction, high turnover and externalities such as pollution and wasted resources. Many tools and systems are used to achieve these ends. These tools and systems are topics of discussion in the Management Systems track. The following courses must be taken to complete this track

	<i>Semester Hours</i>
MGT 311 Personnel Management	3
MGT 352 Human Behavior in Organizations	3

Three of the following four courses:

MGT 433 Management Decision Analysis	3
MGT 434 Social Responsibility of Management	3
MGT 459 International Management	3
MGT 468 Management Systems	3

In addition, students must take one MGT elective approved by a management advisor.

All Management majors are required to take 6 upper division hours selected from the College of Business *Policy Statement* and approved by a management advisor.

Human Resource Management

Effective organizational management depends upon creating an internal organization which is designed to accomplish the organizational mission. The Human Resource Management track introduces the student to issues surrounding the human component of organizations. The curriculum encompasses planning, staffing, motivating, training and development, compensation, performance appraisal, labor relations and labor law. The courses are designed to provide knowledge and skills that will allow HRM graduates to function as personnel specialists. The following courses must be taken to complete the Human Resource Management track:

	<i>Semester Hours</i>
MGT 311 Personnel Management	3
MGT 352 Human Behavior in Organizations	3
MGT 413 Wage and Salary Management	3
MGT 423 Industrial Relations and Collective Bargaining	3

In addition, students must take two MGT electives in human resource management approved by a Management advisor.

All Management majors are required to take 6 upper division hours selected from the College of Business *Policy Statement* and approved by a Management advisor.

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,

184 COLLEGE OF BUSINESS

(6) industrial marketing, or (7) international marketing.

A major in marketing shall consist of 18 semester hours. The following 12 hours must be included:

	<i>Semester Hours</i>
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, students, in consultation with their faculty advisors, shall select 6 additional hours from among the following list of courses:

	<i>Semester Hours</i>
ADV 301 Advertising Principles	3
MKT 310 Principles of Selling	3
MKT 321 Principles of Retailing	3
MKT 325 Public Relations in Business	3
MKT 411 Sales Management	3
MKT 412 Marketing Communications	3
MKT 424 Retailing Management	3
MKT 434 Industrial Marketing	3
MKT 435 International Marketing	3
MKT 444 Marketing Channels	3

Note: Students may not receive credit for both ADV 301 and MKT 412.

In addition, all marketing majors are required to take a three-hour communications course and a three hour behavioral science course from among a list of general studies courses approved by the Department of Marketing. The list of approved courses is contained in the 'Marketing Field of Specialization Student Curriculum Guide,' a copy of which can be obtained from the departmental office.

Operations/Production Management.

OPM majors study the planning and control of internal operations of manufacturing and service businesses. Topics covered include job design, facilities location and layout, work measurement, production planning and scheduling, quality control, inventory control, materials management, purchasing, and transportation. The goal is to design, implement and operate a productive system to produce goods and services in a competitive global economy. OPM majors are prepared for careers in the operations area of large and small firms in a wide variety of industries.

A major in operations production management consists of the following 18 semester hours

	<i>Semester Hours</i>
OPM 331 Production and Operations Management	3
PUR 432 Materials Management	3
OPM 435 Service Operations Management	3
OPM 440 Productivity and Quality Management	3
TRA 445 Logistics Systems	3
OPM 475 Operations Strategies	3

Purchasing/Materials Management. The major includes the functions of planning, organizing, 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, materials acquisition, requirements planning, transportation (inbound and out bound), distribution of finished products, and the disposal of scrap and surplus materials.

A major in purchasing/materials management shall consist of the following 18 semester hours:

	<i>Semester Hours</i>
OPM 331 Production and Operations Management	3
PUR 355 Purchasing	3
TRA 345 Traffic and Distribution Management	3
PUR 432 Materials Management	3
PUR 455 Purchasing Research and Negotiation	3
PUR 479 Purchasing and Materials Management Strategy	3

Real Estate. The Real Estate program is designed for students with a professional interest in real estate. Academic preparation can lead to careers in land development, investment analysis and counseling, appraisal, property management, sales and finance.

The Real Estate major consists of a minimum of 18 semester hours with at least 15 hours in real estate courses. REA 300 and REA 411 must be completed before taking other real estate courses. REA 251 is not open to real estate majors.

The following 12 hours must be included:

	<i>Semester Hours</i>
REA 300 Real Estate Analysis	3
REA 331 Real Estate Finance	3
REA 401 Real Estate Appraisal	3
REA 411 Real Estate Law	3

To complete the major, the student must select one of the following:

- REA 441 Real Estate Land Development
- REA 456 Real Estate Investments
- REA 461 Current Real Estate Topics

and one additional upper-division course approved by the Department of Finance faculty.

Transportation. The major in transportation covers the management of the flow of materials and passengers from both the shipper/receiver and carrier perspective domestically and internationally. Emphasis is on the efficient use of transportation services by business management within a framework of logistics systems, government transportation policy relative to freight and passenger transportation, and the management of transportation shipper and carrier organizations. Students are prepared for employment by industrial firms, carriers and governmental agencies.

A major in transportation shall consist of the following 18 semester hours:

	<i>Semester Hours</i>
TRA 301 Principles of Transportation	3
TRA 345 Traffic and Distribution Management	3
PUR 355 Purchasing	3
PUR 432 Materials Management	3
TRA 445 Logistics Systems	3
TRA 460 Carrier Management	3

Elective Courses. Sufficient elective courses are to be selected by the student to complete the total of 126 semester hours required for graduation.

Pass-Fail. Students majoring in Business may not include among the credits required for graduation any courses taken at this University on a pass-fail basis.

General Regulations. The student should follow the sequence of courses suggested in the four year curriculum outline and the recommendations of the academic advisor in completing the prescribed background and tool courses in preparation for the subsequent professional program.

Each student, upon entering the professional program in the College of Business, will be assigned a faculty advisor upon the basis of the subject matter field in which he/she is primarily interested. The student, in consultation with a faculty advisor, shall select the necessary upper division business courses to complete the major.

The Pre-professional Program. Each student admitted to the College of Business 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 average of 2.50;
2. All Business core curriculum courses numbered below 300 and ECN 111, 112, and MAT 119*, 210 with a minimum cumulative grade point average in these courses of 2.25; and a grade of 'C' or better in each of these courses; and
3. At least 32 semester hours in General Studies, including ECN 111, 112, and MAT 119*, 210; COM 100 or COM 230 or COM 259; a laboratory science class; and two of the following: PGS 100 or SOC 101 or ASB 102.

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.

To be accepted for credit as part of the professional program in Business, 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 register for 300-400 level business courses only if:

- (a) at the time of registration each student has junior standing (56 semester hours completed),
- (b) they have a 2.00 cumulative GPA, and a 2.00 GPA for all business courses completed at ASU.

* QBA 222 will be taken in lieu of MAT 119 during AY 1987-1988

Non business majors are limited to a maximum of 15 semester hours of upper division business courses (excluding economics courses).

Unclassified Undergraduate Students.

Unclassified undergraduate business students will be permitted to enroll in 300-400 level business courses only during on line registration and only if.

- (a) they have at least a 2.50 ASU cumulative GPA and,
- (b) at least a 2.25 ASU cumulative business GPA at the time of on line registration, or
- (c) they have never attended ASU, i.e., they will be given a one semester opportunity to register during on line registration and establish GPAs at ASU

Unclassified undergraduate business students are limited to a maximum of 15 semester hours of upper division business courses (excluding economics courses). Unclassified undergraduate students in other colleges will not be permitted to register for 300-400 level business courses. All requests for overrides for upper division accounting courses are processed jointly by the Office of the Dean, Undergraduate Programs and the School of Accountancy. Overrides for these courses are issued only with the specific written approval of the School's Director.

Non-degree Graduate Students. Non-degree graduate business students not declaring a degree program will be permitted to enroll in 300-400 level business courses only during on line registration and only if:

- a) they have at least a 2.50 ASU cumulative GPA and,
- (b) at least a 2.25 ASU cumulative business GPA at the time of on line registration, or
- (c) they have never attended ASU, i.e., they will be given a one semester opportunity to register during on line registration and establish cumulative GPAs at ASU.

Non degree graduate business students are limited to a maximum of 15 semester hours of upper division business courses (excluding economics courses). Non degree graduate students in other colleges will not be permitted to register for 300-400 level business courses. All requests for overrides to 300-400 level accounting courses will be processed jointly by the Office of the Dean, Undergraduate Programs and the School of Accountancy. Overrides for these courses are issued only with the specific written approval of the School's Director.

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 courses completed at ASU of 2.00 or be placed on probation. During any semester in which the student is on probation, the student will not be eligible to early register or participate in on line registration until the probationary period has expired and the student has been restored to good standing

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 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 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 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

Academic Dishonesty. The faculty of the College of Business has adopted a policy on academic dishonesty. A copy of the policy may be obtained in the Undergraduate Programs Office.

Graduation Requirements. In addition to completion of the pattern of courses outlined on page 180, to be eligible for the Bachelor of Science degree in the College of Business 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 major taken at this University.

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 baccalaureate 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 Committee of the College of Business.

Application for Graduation. A professional program business student must apply for graduation during the semester in which the student will complete 87 semester hours.

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 economics that are offered as freshman or sophomore level courses at any of the three state supported Arizona universities. These lower division courses are numbered 100 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 administration.*

Professional business courses taught in the junior or senior year in the three State universities may not be completed at a two year college for transfer credit in the business core or major. The introductory course in legal environment of business will be accepted as an exception to this policy, but only lower-division credit will be granted. Such courses may be utilized in the 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 accepted for credit toward a

bachelor's degree. Courses taught in the upper division 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:

	<i>Semester Hours</i>
Pre professional Courses	30
Accounting	6
Economics	6
Statistical Analysis	3
Computers in Business	3
Business Communication	3
Lower-division Business Electives	9
General Studies	34
English	
Mathematics	
Science	
Humanities and Fine Arts	
Social and Behavioral Sciences	

Four-Year Curriculum Outline

First Year

	<i>Semester Hours</i>
ENG 101, 102	6
ECN 111, 112	6
MAT 119*	3
MAT 210	3
General Studies Requirements	13 15
	31 33

Second Year

ACC 211, 212	6
QBA 221	3
CIS 200	3
GNB 233	3
COM 100, 230 or 259	3
General Studies Requirements	13-15
	31 33

* QBA 222 will be taken in lieu of MAT 119 during AY 1987-1988

Third Year	
FIN 300	3
MKT 300	3
MGT 301	3
OPM 301	3
GNB 305	3
Major, General Studies Requirements, and Electives	14
	33

Fourth Year	
MGT 463	3
Major, General Studies Requirements, and Electives	28
	31
Total	126

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 major.

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. IBS 300, Principles of International Business, and ECN 436, International Trade Theory, 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 331 Comparative Economic Systems
 - ECN 360 Economic Development
 - ECN 365 Economics of the Soviet Union and Eastern Europe
 - ECN 438 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 an International Business Faculty Advisor as early as possible.

Certificate in Quantitative Business Analysis. The program of study leading to the Certificate in Quantitative Business Analysis prepares students to use quantitative analysis methods in business practice and also provides a background for graduate studies in quantitatively oriented business fields. This program is not a substitute for the listed areas of business specialization; rather, the courses required for the Certificate add quantitative strength to the student's chosen field of specialization.

The requirements for the Certificate are:

1. Completion of a Bachelor of Science degree in Business Administration at Arizona State University.
2. Completion of a minimum of 14 semester hours of approved course work. The following eight (8) hours must be included:

	<i>Semester Hours</i>
MAT 242 Elementary Linear Algebra	2
QBA 321 Intermediate Business Statistics	3
QBA 391 Intermediate Management Science	3

To complete the Certificate, the student shall select an additional six hours of quantitative courses approved in advance by the advisor for the Certificate program.

3. Completion of MAT 119*, MAT 242, MAT 210, CIS 200, QBA 221, QBA 321, QBA 391, and the additional six hours of approved electives with a minimum grade point average in these courses of 2.50

* QBA 222 will be taken in lieu of MAT 119 during AY 1987-1988.

NOTES:

- 1) MAT 270 may be taken in place of MAT 210.
- 2) Computer information systems majors may count CSC 100 in place of CIS 200.
- 3) Courses taken as part of an approved program of study for the Certificate do not count against the College restriction on business free electives.

Asian Studies. Students in the College of Business may pursue a program with emphasis in Asian Studies. As part of the Bachelor of Science degree requirements in Business, at least 30 upper-division semester hours of the program must be in Asian Studies content courses. Reading knowledge of an Asian language is required. The Asian studies content program must be approved by the Center for Asian Studies. (See page 63) 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 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 listed above under Certificate in International Business Studies (except ECN 365), and 15 semester hours of Latin American content courses in other disciplines. 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 64). 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 major offered by the College of Business. 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 Undergraduate Programs Office.

Pre-Law Studies. Pre law students may pursue a program of study in the College of Business. 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. Many pre law students find it desirable to major in General Business. This gives the student a broad background for the study of law. Within the College of Business are faculty members who are lawyers and who serve as advisors for students desiring a pre law general business major.

School of Accountancy

PROFESSORS:

SCHULTZ (BA 267A), BOATSMAN, BOYD, FLAHERTY, FRITZMEYER, HARIED, IMD EKE JOHNSON, MCKENZ E, PANY, RECKERS R E. SMITH, TIDWELL WILKINSON

ASSOCIATE PROFESSORS:

KNEER, ODELL, RENEAU, D B SMITH, WYNDELTS

ASSISTANT PROFESSORS:

ANDERSON, CHEWNING CHRIST AN, DeBERG DUNCAN, KAPLAN, MITTELSTAEDT, MOECKEL, PEI, REG ER, SHRIVER

ACC 211 Introductory Financial 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: Sophomore standing

190 ACCOUNTANCY

212 Introductory Managerial Accounting. (3) F, S, SS

Selection and analysis of accounting information for internal use by management. Prerequisite: ACC 211

301 Management Uses of Accounting. (3) F, S

Uses of accounting information for managerial decision-making, budgeting and control. Prerequisite: ACC 212. Restricted to non-accountancy majors

315 Financial Accounting and Reporting. (3) N

Accounting theory and practice related to uses of financial statements by external decision makers. Prerequisite: ACC 212. Restricted to non-accountancy majors

321 Intermediate Accounting. (3) F, S, S

Accounting theory and practice applicable to determination of asset values and related problems of income determination. Prerequisite: ACC 212. Restricted to professional program business students

322 Intermediate Accounting. (3) F, S

Accounting theory and practice applicable to liabilities and owner's equity. Special problem areas related to income determination and financial reporting. Prerequisite: grade of "C" or higher in ACC 321. Restricted to professional program business students

331 Cost Accounting. (3) F, S

Cost accumulation systems for product costing; cost behavior concepts for planning and control with the integration of quantitative methods. Prerequisites: ACC 212, QBA 221, MAT 119* and MAT 210 or equivalent. Restricted to professional program business students

351 Income Tax Accounting. (3) F, S

Federal income taxation of individuals, partnerships, corporations and fiduciaries. Estate and gift tax. Basic tax planning and research. Prerequisite: ACC 212. Restricted to professional program business students.

383 Advanced Accounting. (3) F, S

Accounting theory applicable to partnerships, branches, business combinations and non-business organizations. Prerequisite: ACC 322. Restricted to professional program business students majoring in Accountancy. Grade of "C" or higher in ACC 322.

432 Problems in Managerial Accounting. (3) A

Cases and computer applications in decision making, planning and control, and capital budgeting. Prerequisite: Grade of "C" or higher in ACC 331. ACC 331. Restricted to professional program business students majoring in Accountancy

447 Accounting Information Systems. (3) F, S

Information requirements and transaction processing procedures relevant to integrated accounting systems, emphasizing systems analysis and design, controls and computer processing. Prerequisite: CIS 200. Restricted to professional program business students

452 Advanced Taxation. (3) F, S

Advanced problems in business and fiduciary income tax, estate and gift tax, planning and research. Prerequisite: grade of "C" or higher in ACC 351. Restricted to professional program business students majoring in Accountancy

467 Management Advisory Services. (3) N

Concepts and methods of providing advisory services with respect to accounting information systems and financial analysis. Administration of consulting practices. Prerequisites: grade of "C" or higher in ACC 447. Restricted to professional program business students

475 Accounting in Public-Sector Organizations. (3) S

Principles of accounting and reporting, budgeting, and financial control systems applied in governmental units and other non-business organizations. Prerequisite: grade of "C" or higher in ACC 301 or 331. Restricted to professional program business students majoring in Accountancy

481 Auditing Theory and Practice. (3) F, S

Concepts, standards and methods in audit judgment for mutation, internal control evaluation, program development and sampling techniques. Ethical and legal considerations. Prerequisites: grade of "C" or higher in ACC 322 and ACC 447; PHI 306. Restricted to professional program business students majoring in Accountancy

495 Contemporary Accounting Theory. (3) F, S

Theory of financial accounting and reporting requirements for profit-oriented enterprises. Prerequisite: grade of "C" or higher in ACC 383. Restricted to professional program business students majoring in Accountancy

500 Accounting Survey and Analysis. (3) F, S

Basic accounting concepts and procedures for external reporting and internal use by management. Open only to students without previous credit in Accountancy

501 Managerial Accounting. (3) A

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) F, S

Economic implications of selected management decisions involving application of federal income tax laws. Recognition of tax hazards and tax savings. Prerequisite: ACC 501 or equivalent

515 Professional Practice Seminar. (3) F, S

History, structure, environment, regulation and emerging issues of the accounting profession

521 Tax Research. (3) F, S

Tax research source materials and techniques. Application to business and investment decisions. Prerequisite: ACC 351

533 EDP Auditing. (3) S

Analysis of EDP audit techniques and evaluation methods. Emphasis on current topics such as distributed processing and microcomputers. Prerequisite: ACC 481.

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) N

Accounting measurement theories. Income determination and financial reporting alternatives

571 Taxation of Corporations and Shareholders. (3) F, S

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, S

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) F, S

Tax treatment of wealth transfers at death and during lifetime, with emphasis on tax planning. Prerequisite: ACC 351

577 Taxation of Real Estate Transactions. (3) A

Income tax aspects of acquisition, operation, disposition of real estate. syndications, installment sales, exchanges,

* QBA will be taken in lieu of MAT 119 during AY 1987-1988

dealer investor issues alternative financing, planning.
Prerequisite ACC 521 or approval of instructor

579 Multinational Taxation. 3) A
Taxation of Multinational Businesses foreign individual subject to U.S. income tax, and U.S. citizens with foreign residency

582 Auditing Theory and Practice. 3) N
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) N
Application of quantitative techniques to accounting problems Prerequisites ACC 501 and MAT 210 or equivalent

586 Problems in Financial Accounting. 3) N
Problems in controversial areas. External reporting requirements for selected industries Influence of government regulation

587 Computerized Accounting Systems. 3) F
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

791 Doctoral Seminar in Accounting. 3) F, S
See page 38 for special courses which may be offered by this academic unit

C S 200 F N 300 restricted to professional program business students.

307 Systems Modeling. 3) F, S
Procedures for investigation and analyzing decision systems Use of special languages as tools of analysis and simulation Prerequisites CSC 100, MAT 119* and either MAT 210 or MAT 270 Restricted to professional program business students

330 Interactive Business Systems. 3) F, S
Algorithms, data structures design and representation on techniques, program generators for interactive applications. Prerequisites CSC 100, CIS 235

335 Computer Information Systems II. 3) F, S
Overview of business software concepts and recent developments Business applications of the computer via high level procedure-oriented languages Prerequisites CIS 235, ACC 212, MAT 242 and either MAT 210 or MAT 270

420 Business Database Concepts. 3) F, S
Overview, applications and management of business database systems and methods Prerequisites CIS 335 CIS 330

430 Advanced Topics in Information Systems. 3) N
Applications development and advanced programming concepts. Program structure and design Software development cycle Prerequisite approval of instructor Restricted to professional program business students.

440 Systems Analysis and Design. (3) F, S, SS
Principles and applications of computer based management information systems and analysis and design Prerequisite CIS 420

500 Information Systems I. 3) A
Fundamentals of information systems, including such topics as structured language concepts, file and database systems and systems analysis Prerequisite MAT 210.

505 Information Systems II. 3) A
Data structures for information representation and manipulation, database management systems design of database and information systems Prerequisites ACC 500 C S 500, and C S 335

510 Systems Models and Simulation. (3) A
Design of computer based decision systems. Simulation as a research and decision making tool Prerequisites MAT 210, QBA 501, and a computational programming language.

515 Management Information Systems. 3) A
Systems theory concepts applied to the collection, retention, and dissemination of information for management decision making Prerequisite CIS 500 or equivalent

520 Systems Design and Evaluation. (3) A
Methodologies of Systems Analysis and Design issues include project management interface organizational requirements, constraints, documentation implementation, control and performance evaluation Prerequisite: C S 505 or equivalent.

530 Information Systems Development. 3) A
Evaluation of languages and quality assurance techniques for system implementation and maintenance Prerequisite C S 420

Decision and Information Systems

PROFESSORS:

KIRKWOOD (BAC 549), ECK, HERSHAUER,
KAZMIER, MAYER, PHIL PPAKIS WOOD

ASSOCIATE PROFESSORS:

BROOKS, BURDCK GREEN, HUSTON, KEIM
OLEARY, ST. LOUIS, VERDINI

ASSISTANT PROFESSORS:

CARROLL, GODLEWSKI, GOUL,
MUTHUSWAMY PADDOCK, RAMIREZ
ROY, WILSON

COMPUTER INFORMATION SYSTEMS

CIS 200 Computers in Business. 3) F, S, SS
Uses of computers in processing business data introduction to business programming Not open to students with credit in a higher level C S class Prerequisites ACC 212 or concurrent registration, and MAT 210. [Satisfies General Studies Requirement N3]

235 Computer Information Systems I. 3) F, S, SS
Development of computer generated business reports from business data files Use of a high level, file oriented language Prerequisites CSC 100 MAT 242, QBA 221 and either MAT 210 or MAT 270

300 Computers in Business II. (3) N
Introduction to information systems in business Use of computers for business problem solving Prerequisites*

* QBA will be taken in lieu of MAT 119 during AY 1987-1988

192 DECISION AND INFORMATION SYSTEMS

535 Distributed Information Systems. 3 A
Introduction to networking and its impact on information systems in business. Prerequisite: CIS 440 or CIS 515 or ACC 587

541 Business Database Systems. 3 A
Comparative analysis of hierarchical, network, and relational systems. Theory of information storage and retrieval and design of business information structures. Prerequisites: CIS 505 or equivalent, QBA 501 and MAT 210

551 Decision Support Systems. 3 A
Definition, description and evaluation of decision support systems, structure and application of selected DSS languages. Prerequisites: QBA 501 and MAT 210

591 Seminar in Selected Computer Information Topics. (3) A

593 Applied Project. F, S, SS

791 Doctoral Seminar in Computer Information Systems. (3) A

See page 38 for special courses which may be offered by this academic unit.

QUANTITATIVE BUSINESS ANALYSIS

QBA 221 Statistical Analysis. (3) F, S, SS
Methods of statistical description. Application of probability theory and statistical inference in business. Prerequisite: MAT 119* and MAT 210. [Satisfies General Studies Requirement, N2]

222 Introduction to Management Science. (3) N
Introduction to quantitative models and their application to the analysis of managerial problems in the functional areas of business. Prerequisites: ACC 211 or concurrent registration, MAT 210 and QBA 221. [Satisfies General Studies Requirement, N2]

321 Intermediate Business Statistics. (3) A
Application of regression and analysis of variance models to business and economic problems. Prerequisite: QBA 221 or equivalent. Restricted to professional program business students.

391 Intermediate Management Science. (3) A
Study of mathematical models and solution techniques which can be used to aid decision makers. Prerequisite: QBA 221, MAT 119*, MAT 210 and MAT 242. Restricted to professional program business students.

405 Sampling Techniques in Business. (3) A
Planning, execution and analysis of surveys in business research. Prerequisite: QBA 221 or equivalent. Restricted to professional program business students.

410 Applied Business Forecasting. (3) A
Application of forecasting techniques in business and institutional environments. Prerequisite: QBA 321. Restricted to professional program business students.

421 Advanced Business Statistics. 3 N
Applications of probability and statistical inference to business decisions. Probability theory, decision theory and Bayes inference. Prerequisites: QBA 221, MAT 270. Restricted to professional program business students.

450 Decision Analysis Applications. 3 N
Implementation of quantitative techniques for the analysis and solution of managerial problems. Prerequisites: QBA 391, QBA 405, QBA 410. Restricted to professional program business students.

500 Fundamentals of Business Statistics. 3 F, S, SS
Basic statistical measures. Probability concepts and statistical inference. Prerequisite: MAT 210 or concurrent registration.

501 Managerial Statistics. 3 F, S, SS
Statistical methods used in decision making, including analysis of variance, multiple regression, time series, decision theory, and nonparametric statistics. Prerequisite: MAT 210 and QBA 500.

523 Management Science. 3 F, S
Quantitative approaches to decision making, including linear programming and simulation, with an emphasis on business applications. Prerequisites: MAT 210 and QBA 500.

524 Nonparametric Statistics. 3 A
Nonparametric statistical tests for location, dispersion, trend, association, correlation, and goodness of fit. Nonmetric scaling techniques. Prerequisites: MAT 210 and QBA 501.

525 Applied Regression Models. (3) F, S
Simple linear regression, multiple regression, and indicator variables, and logistic regression. Emphasis on business and economic applications. Prerequisites: MAT 210 and QBA 501.

527 Categorical Data Analysis. 3 A
Discrete data analysis in business research. Multidimensional contingency tables and other discrete models. Prerequisite: QBA 525.

528 Exploratory Data Analysis. (3) A
Introduces student to principles and methods of exploratory data analysis. Prerequisite: QBA 501.

530 Experimental Design. (3) A
Experimental designs used in business research. Balanced and unbalanced factor designs, repeated measures designs, and multivariate analysis of variance. Prerequisite: QBA 525 or equivalent.

535 Multivariate Methods. (3) A
Advanced statistical methods used in business research. Multivariate analysis of association and interdependence. Prerequisite: QBA 525.

540 Forecasting. 3 A
Foundation of statistical forecasts and forecast intervals. Application of classical and computer-assisted forecasting methods to business forecasting problems. Prerequisites: QBA 501 and MAT 210.

550 Decision Analysis. 3 A
Quantitative decision analysis methods for business decisions under uncertainty, including decision diagrams, subjective probabilities, and preference assessment. Prerequisites: QBA 501 and MAT 210.

552 Statistical Decision Theory. 3 A
Statistical decision methods for business decisions under uncertainty, including Bayes inference, optimal statistical decisions, and use of information assessment. Prerequisites: QBA 501 and MAT 210.

560 Probabilistic Models. 3 A
Development and application of probabilistic models for quantitative business analysis. Prerequisites: QBA 501 and MAT 210.

* QBA will be taken in lieu of MAT 119 during AY 1987-1988

561 Mathematical Programming. 3 A
Techniques for solving mathematical programming models of business problems. Prerequisites: MAT 210 and MAT 242

562 Network Flow Models. 3 A
Introduction to network structure applications and algorithms. Development of data structures for network algorithms applied to business problems. Prerequisites: QBA 561 or both QBA 523 and MAT 242

564 Nonlinear Optimization. 3 A
Basic properties of solutions and algorithms for constrained and unconstrained minimization. Basic descent methods and barrier methods. Prerequisites: QBA 561 or both MAT 242 and QBA 523

591 Seminar. 3 A

593 Applied Project. F S SS

791 Doctoral Seminar in Quantitative Business Analysis. (3 A)

See page 38 for special courses which may be offered by this academic unit

Economics

PROFESSORS:

BOYES (BAC 651), BRADA, BURGESS
COCHRAN, FAITH, GOODING, HOGAN,
M. JACKSON, KAUFMAN, KINGSTON KNOX,
LADMAN McPHETERS SCHLAGENHAUF

ASSOCIATE PROFESSORS:

BLAKEMORE, COX, DeSERPA, HAPPEL,
HOFFMAN, LOW, LOWE McDOWELL,
MELVIN, MENDEZ, J SMITH WINKELMAN

ASSISTANT PROFESSORS:

FINN, ORMISTON, VILLEGAS, WRASE

LECTURER:

ROBERTS

ECN 111 Macroeconomic Principles. (3 F S SS)
Basic macroeconomic analysis. Economic institutions and factors determining income levels, price levels and employment levels. [Satisfies General Studies Requirement SB]

112 Microeconomic Principles. (3) F S, SS
Basic microeconomic analysis. Theory of exchange and production including the theory of the firm. [Satisfies General Studies Requirement SB]

313 Intermediate Macroeconomic Theory. 3 F S SS
Determinants of aggregate levels of employment, output and income of an economy. Prerequisites: ECN 111 and 112. MAT 270 with a grade of "C" or higher. [Satisfies General Studies Requirement SB]

314 Intermediate Microeconomic Theory. 3 F S SS
Role of the price system in organizing economic activity under varying degrees of competition. Prerequisites: ECN 111 and 112. MAT 270 with a grade of "C" or higher. [Satisfies General Studies Requirement SB]

315 Money and Banking. 3 F S SS
Functions of money. Monetary systems. Credit functions. Banking practices and central banking policy. Prerequisite: ECN 111. [Satisfies General Studies Requirement SB]

321 Labor Economics. 3 A
Origins of labor movements. A day's of labor unions. Labor markets. Collective bargaining and current policy issues. Prerequisite: ECN 112. [Satisfies General Studies Requirement SB]

331 Comparative Economic Systems. 3 A
Alternative institutions: past and present for organizing the social division of labor. Property rights. Information and incentives in industrial societies. Prerequisite: ECN 111 or 112. [Satisfies General Studies Requirements SB, G]

341 Public Finance. 3 A
Public goods. Externalities. Voting models. Public expenditures. Taxation and budget formation with emphasis on the federal government. Prerequisite: ECN 112. [Satisfies General Studies Requirement SB]

360 Economic Development. 3 A
Theories of economic growth and development. Role of capital formation, technological innovation, population and resource development in economic growth. Prerequisite: ECN 111 or 112. [Satisfies General Studies Requirements SB, G]

365 Economics of the Soviet Union and Eastern Europe. 3 A
Origins and analysis of contemporary institutions. Comparative development and differentiation in the 20th century. Prerequisite: ECN 111. [Satisfies General Studies Requirements SB, G]

404 History of Economic Thought. 3 A
Development of economic doctrines: theories of mercantilism, physiocracy, classical, neoclassical, Marxist and contemporary economics. Prerequisites: ECN 111 and 112. [Satisfies General Studies Requirement SB]

436 International Trade Theory. (3) F S, SS
The comparative advantage doctrine, including practices under varying commercial policy approaches. The economic impact of international trade. Prerequisite: ECN 111 and 112. [Satisfies General Studies Requirements SB, G]

438 International Monetary Economics. (3) F S, SS
History, theory and policy of international monetary economics. Balance of payments and exchange rates. International financial markets including Eurocurrency markets. Prerequisite: ECN 111. [Satisfies General Studies Requirements SB, G]

453 Government and Business. 3 A
Development of public policies toward business. Antitrust activity. Economic effects of government policies. Prerequisite: ECN 112. [Satisfies General Studies Requirement SB]

480 Introduction To Econometrics. 3 A
Elements of regression analysis. Estimation, hypothesis tests, prediction. Emphasis on use of econometric results in assessment of economic theories. Prerequisite: ECN 314. [Satisfies General Studies Requirement N2]

484 Economics Internship. 3 F S, SS
Academic credit for professional work organized through the Internship Program

485 Mathematical Economics. 3 A
Integration of economic analysis and mathematical methods into a comprehensive body of knowledge with contemporary economic theory. Prerequisite: ECN 314 or

194 ECONOMICS / FINANCE

approval of instructor [*Satisfies General Studies Requirement N2*]

498 Pro-Seminar. 3 A

Chosen from selected topics e.g. money development, urban economics, economic regulation, area studies, etc. Prerequisite: Economics major or approval of instructor

500 Fundamentals of Economic Analysis. 3 F S SS

Microeconomic and macroeconomic analysis. Price and output determination in various market structures. Functional distribution of income. Theory of income and employment. Open only to students without previous credit in economics.

501 Managerial Economics. 3) F S SS

Application of economic analysis to managerial decisions on making decisions in areas of demand, production, cost and pricing. Evaluation of competitive strategies.

504 Development of Economic Analysis. (3 A

Historical development of economic theory. Emphasis on the development of economic analysis from preclassical economics through Keynes.

509 Macroeconomic Theory and Applications. (3 A

Theory of income, output, employment and price level. Influence on business and economic environment.

510 Microeconomic theory and Applications. 3 A

Theory of exchange, production and pricing in a market economy. Influence on business and economic environment.

511 Macroeconomic Analysis I. 3) A

The nation's income, output, employment and general price level. Examination of current theoretical and empirical research and policy problems.

512 Microeconomic Analysis I (3 A

Theory of exchange, production, resource use and pricing in capitalistic and mixed systems.

513 Macroeconomic Analysis II 3) A

Advanced topics in macroeconomics. Emphasis on applied macroeconomic models. Prerequisite: ECN 511

514 Microeconomic Analysis II. 3 A

Advanced topics in microeconomics. Emphasis on general equilibrium, welfare economics and production and capital theory. Prerequisite: ECN 512

516 Monetary Theory. 3 N

Traditional and post-Keynesian monetary theory, interest rate determination, the demand and supply of money.

517 Monetary Policy. 3 N

Determinants of the money supply and interest rate levels. Federal Reserve policy and its effectiveness.

521 Labor Economics I 3 N

Development of basic theoretical models for analyzing labor market issues.

522 Labor Economics II. 3 N

Extensions and criticisms of labor market theories. Application to a variety of policy issues. Prerequisite: ECN 521

531 Economic Systems and Organizations. 3 N

Philosophical foundations of major economic systems and of properties of principal system models. Comparison of alternative institutions and system components of contemporary economies.

536 International Trade Theory. 3 A

Theories of comparative advantage and the reciprocal verification. Theory and policy: economy of commerce and policy. Resource transfers and the role of the MNC.

538 International Monetary Theory and Policy. 3 A

The foreign exchange market, balance of payments and international financial institutions and arrangements, theory and applications.

543 Public Sector Economics. (3 N

Economics of collective action, public spending, and taxation. Impact of central government activity on resource allocation and income distribution.

553 Industrial Organization. (3) N

Analysis of structure, conduct and performance in industry, markets and recent developments in antitrust policies.

561 Economics of Developing Nations. (3 N

Economic problems, issues and policy decisions facing the less developed nations of the world.

572 Regional Economics. 3) N

Introduction to export base, input-output, linear programming, simulation and econometric modeling as tools of regional analysis.

573 Urban Economics. 3) N

Models of urban growth and intra-urban location, the urban public sector and cost-benefit analysis as a tool of urban analysis.

580 Econometrics I. 3 A

Application of mathematical and statistical techniques to problems of economic theory. Problems in the formulation of econometric models. Prerequisite: 6 hours of statistics.

581 Econometrics II. 3 A

Advanced topics in econometrics. Emphasis on extending the simple linear model and on simultaneous relationships. Prerequisite: ECN 580

584 Economics Internship. (1-3) SS

Academic credit for professional work organized through the Internship Program.

591 Seminar in Selected Economics Topics. (3) N

791 Doctoral Seminar in Economics. (3 A

See page 38 for special courses which may be offered by this academic unit.

Finance

PROFESSORS:

GUNTERMANN, JOEHNK, KRAFT, NELSON,
POE, SUSHKA

ASSOCIATE PROFESSORS:

SMITH (BA 352), BOOTH, BUTLER, CESTA,
DAVIS, HOFFMEISTER, MARTIN, MOREHART,
MYLER, WILT

ASSISTANT PROFESSORS:

DERMODY, GALLINGER, FFLANDER,
PRISMAN, STOLZ

FINANCE

FIN 251 Principles of Personal Investments. 3 F S, SS

Investment concepts for individual investors, fundamentals of investment techniques and principles of sound investment. For non-majors. Course may be used only for elective credit by College of Business students.

300 Fundamentals of Finance. 3 F S SS

Theory and problems in financial management of business enterprises. Prerequisites ACC 212 ECN 112 QBA 221

331 Financial Markets and Institutions. 3 F S SS

Analysis of financial markets and intermediaries. Theory of financial intermediation, interest rate theory, money and capital market instruments, government regulation. Prerequisite: FIN 300 Restricted to professional program business students

361 Managerial Finance. 3 F S SS

Theories and problems in resource allocation cost of capital CAPM and capital budgeting asset valuation on capital structure and financing policy Prerequisite: F N 300.

421 Security Analysis and Portfolio Management.

(3) F, S, SS

Security analysis theory and practice Selection and management of financial asset portfolios Securities markets and portfolio risk return analysis Prerequisites FIN 331 FIN 361, ACC 321. Restricted to professional program business students

427 Speculative Securities. 3 A

Study of stock options, index options convertible securities, financial futures, warrants, subscription rights arbitrage pricing theory Prerequisite: F N 421 Restricted to professional program business students

431 Management of Financial Institutions. 3 A

Asset/liability and capital management in financial institutions. Influence of market factors and regulatory agencies. Emphasis on commercial banks Prerequisites FIN 331, ACC 321 Restricted to professional program business students

441 Financial Planning. 3 A

Integrates finance insurance real estate, investments, taxation and law into the life cycle financial planning process. Prerequisites F N 300 ACC 321 Restricted to professional program business students

451 Working Capital Management (3) A

Analysis of short term profitability and liquidity Emphasis on managing cash, accounts receivable inventory and current liabilities Prerequisites F N 300, ACC 321 Restricted to professional program business students

461 Financial Cases and Modeling. 3) A

Case oriented capstone course in managerial finance Contemporary issues of quality management, capital budgeting, capital structure and financial strategy Prerequisites: 12 hours of upper division F N courses Restricted to professional program business students.

500 Finance Fundamentals. 3 F, S SS

Theories and problems in financial management of firms, working capital management, capital budgeting, and characteristics of securities issued by corporations. Prerequisites ACC 500, QBA 500

501 Managerial Finance. 3) F S SS

Current theoretical developments and techniques in financial decision making including valuation working capital, financial structure, resource allocation, international Prerequisite: F N 500 or equivalent

521 Security Analysis. 3 A

Valuation techniques for bonds common stock preferred stock, warrants and options operation and regulation of security markets introduction to portfolio management. Prerequisite: F N 500

526 Portfolio Management. 3 A

Capital market theory and security valuation in a portfolio context Mathematical approaches to selection of optimal portfolios Prerequisite: F N 521

531 Capital Markets and Institutions. 3 A

Recent theoretical and operational developments in economic sectors affecting capital markets and institutions. Prerequisite: FIN 500

561 Financial Management. 3 A

Case oriented course in applications of finance theory to management issues Acquisition operation and management of funds within the business enterprise Working capital management capital budgeting capital structure and financial strategy Prerequisites: FIN 500 ACC 501

581 Theory of Financial Decisions. 3 F S

Theories and applications of managerial finance and investments Capital budgeting, capital structure dividend theory, and valuation. Prerequisites: ECN 500 FIN 500 and QBA 501

791 Doctoral Seminar in Finance. 3

a Investments F88
Investments and market theory efficient markets hypotheses, option and commodity markets Prerequisite: FIN 581

b Financial Institutions and Markets F87

Economic and monetary theory applied to financial markets and institutions Implications of financial structure for market performance and efficiency Prerequisite: F N 581

c Financial Management S88

Financial theory pertaining to capital structure dividend policy valuation cost of capital and capital budgeting Prerequisite: F N 581

See page 38 for special courses which may be offered by this academic unit.

INSURANCE**INS 251 Principles of Insurance.** 3 N

Coverages available, buying methods regulation, claims, insurance institutions, career opportunities.

321 Life and Health Insurance. 3 N

Types and uses of life and health policies industry organization regulations, underwriting and other company operations Prerequisite: restricted to professional program business students

331 Property Insurance Principles and Coverage. 3) N

Principles of property and liability insurance industry organization types and forms of coverages and commercial coverage fundamentals Prerequisite: INS 251 or approval of instructor Restricted to professional program business students

431 Insurance Law. (3) N

Legal concepts and doctrines applicable to the field of insurance. Prerequisite: 6 hours of insurance Restricted to professional program business students

461 Estate Planning. 3 N

Use of life insurance with trusts and buy sell agreements, tax aspects Needs approach to estate planning Restricted to professional program business students

481 Risk Management, Theory and Practice. 3 N

Identification measurement and treatment of business risk from viewpoint of management Emphasizes control reduction and insurance of commercial risks Prerequisite: 3 hours of insurance or approval of instructor Restricted to professional program business students

REAL ESTATE

REA 251 Real Estate Principles. (3) A

Regulation, practices, legal aspects and professional opportunities of the real estate industry. Not open to Real Estate majors.

300 Real Estate Analysis. (3) A

Application of economic theory and analytical techniques to real estate markets. Topics include law, finance, appraisal, market analysis, investments, development. Restricted to professional program business students.

331 Real Estate Finance. (3) A

Legal, market and institutional factors related to financing proposed and existing properties. Emphasis on current financing techniques and quantitative methods. Prerequisite: FIN 300. Restricted to professional program business students.

401 Real Estate Appraisal. (3) A

Factors affecting the value of real estate. Theory and practice of appraising and preparation of the appraisal report. Appraisal techniques. Prerequisite: REA 300. Restricted to professional program business students.

402 Income Property Appraisal. (3) A

Valuation of net income streams for various types of income producing properties. Prerequisite: REA 401. Restricted to professional program business students.

411 Real Estate Law. (3) A

Legal practices as applied to the real estate field and to the fields of titles, mortgages, lending and trust work.

441 Real Estate Land Development. (3) A

Neighborhood and city growth. Municipal planning and zoning. Development of residential, commercial, industrial, and special purpose properties. Prerequisite: REA 300. Restricted to professional program business students.

456 Real Estate Investments. (3) A

Analysis of investment decisions for various property types. Cash flow and rate of return analysis. Prerequisite: FIN 300. Restricted to professional program business students.

461 Current Real Estate Topics. (3) N

Current real estate topics of interest are discussed and analyzed. Prerequisite: REA 300. Restricted to professional program business students.

591 Seminar in Selected Real Estate Topics. (3) N

See page 38 for special courses which may be offered by this academic unit.



General Business

PROFESSORS:

BOGGS (BA 319), GRYDER, HENNINGTON, JENNINGS

ASSOCIATE PROFESSORS:

ARANDA, BOHLMAN, DUNDAS, GARCIA, GILSDORF, GOLEN, HUTT, KELLER, LEONARD, LOCK, LYNCH, MURRANKA, OLIVAS, OLNEY, RADER, SMELTZER, SMITH, VAN HOOK, WILSON

ASSISTANT PROFESSORS:

FANN, HURSTON, LEWIS, REISS

ADJUNCT PROFESSOR:

WRIGHT

PROFESSORS EMERITI:

BATY, JACKS, SMITH, TATE

GNB 101 Elements of Business Enterprise. (3) F, S, SS

Business enterprise as an integral part of American society. Emphasis on social, functional, political, legal, technological, and ethical considerations. [Satisfies General Studies Requirement: SB]

233 Business Communication. (3) F, S, SS

Written and oral reporting. Organization, analysis, and presentation of business information, using electronic and other media. Prerequisite: ENG 102 and at least sophomore standing. [Satisfies General Studies Requirement: L1]

305 Legal Environment of Business. (3) F, S, SS

Legal framework governing rules of conduct among businesses and the impact on establishing business policy.

306 Business Law. (3) F, S, SS

Legal aspects of contracts, sales, commercial paper, secured transactions, documents of title, letters of credit, and bank deposits and collections.

307 Business Law. (3) F, S

Legal aspects of agency, partnerships, corporations, regulation of businesses, bankruptcy and property.

320 Entrepreneurship. (3) F, S

Opportunities, risks and problems associated with small business development and operation.

351 Administrative Office Management. (3) F, S

Principles and procedures of office management and information resources management in the organization.

401 Small Business Administration. (3) F, S, SS

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.

420 Venture Design and Development. (3) F, S

Analysis, design and development of a business plan for a new venture. Prerequisite: ACC 212.

431 Business Report Writing. (3) F, S

Organization and preparation of reports incorporating electronic data bases, word processing, and graphics. Prerequisite: GNB 233.

432 Office Automation. (3) A

Organization and management of automated administrative systems

451 Business Research Methods. (3) F S

Methods of solving business research problems, including design, data collection, analysis, interpretation and presentation

461 Theory of Administrative Communication. (3) F S

Intrapersonal, interpersonal and administrative communication.

480 Teaching Business Subjects. (3) S

Organization and presentation of appropriate content for business subjects in the secondary school.

491 Organization and Management of Cooperative Programs. (3) A

Work-study programs for business occupations in high schools and community colleges

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 GNB 305 or equivalent.

501 Business Research Methods. (3) F S, SS

Selection, design and completion of a business oriented research project

502 Principles of Business Education. (3) N

History, philosophy, principles and objectives of business education

503 Tests and Measurements in Business Education. (3) N

Construction, administration and evaluation of tests in business subjects

504 Professional Report Writing. (3) F

Preparation and presentation of professional reports

505 Current Literature in Business Education. (3) N

Critical analyses, generalizations and trends.

506 Information Processing for Business Teachers. (3) N

Development of curriculum, lesson plans and strategies for teaching information processing hardware software evaluations and equipment acquisition techniques

507 Executive Communication. (3) F S

Analysis of various business problems situations and development of appropriate communication strategies

511 Instructional Development in Business Education. (3) N

Emerging curriculum and instructional strategies in business education.

515 Observation and Work Experience. (3) N

Observation and/or participation in business

591 Seminar. (3) A

Topics such as the following will be offered:

- (a) Current issues in Business Teaching
- (b) Research in Business Teaching
- (c) Selected Office Automation Topics
- (d) Individualized Progress on
- (e) Consumer Education
- (f) Competency Based Instruction

594 Study Conference or Workshop. (3) A**700 Research Methods.** (3) A**791 Doctoral Seminar in Business Education.**

(3) A

See page 38 for special courses which may be offered by this academic unit.

School of Health Administration and Policy

PROFESSORS:

SCHNELLER (BA 252), BOISSONEAU

ASSOCIATE PROFESSORS:

KIRKMAN LEE, WILLIAMS

ASSISTANT PROFESSORS:

HUGHES, OHSFELDT

HSA 494 Special Topics in Health Administration.

(3) A

Seminar topics including comparative health care systems, ambulatory care administration, behavioral health, long term care and health economics. Prerequisite: Approval of instructor

501 Health Care Organization. (3) F S

Concepts, structures, functions and values which characterize contemporary health care systems in the United States

504 Community Health Care Perspectives. (3) A

Epidemiological, sociological and political perspectives and techniques for analyzing health problems and responding to health care needs in communities. Prerequisite: HSA 501.

520 Hospital Structure and Policy. (3) A

Functional relationships among managerial elements of health care institutions with major focus on hospital governance and policy dynamics. Prerequisite: HSA 501.

522 Healthcare Management Systems. (3) A

Systems concepts, quantitative methods and information systems applied to management problems in health institutions and community health planning. Prerequisite: HSA 501 and 504, QBA 501

532 Financial Management of Health Services. (3) A

Acquisition, allocation and management of financial resources within the health care enterprise. Budgeting, cost analysis, financial planning and internal controls. Prerequisites: HSA 501 and ACC 501

542 Health Care Jurisprudence. (3) A

Legal aspects of health care delivery for hospital and health services administration. Legal responsibilities of the hospital administrator and staff. Prerequisite: HSA 501, 504, 520

571 Ambulatory Care Management. (3) A

The evolution, planning and management of multi-specialty group practices, health maintenance organizations, and other alternative delivery systems

589 Integrative Seminar. (3) A

Capstone assessment of current policies, problems and controversies across the broad spectrum of health services administration. Prerequisites: HSA 501, 504, 520

591 Seminar. (3) A

Seminar topics such as the following may be offered:

- a) Comparative health care systems
- (b) Cost containment and quality assurance
- (c) Behavioral health
- (d) Long term care
- (e) Health economics

198 INTERNATIONAL BUSINESS STUDIES MANAGEMENT

593 Applied Project. 3 F, S, SS

Supervised on-site experience in advanced development of managerial skills in health services administration and policy. Minimum of 10 weeks. Prerequisites: 18 hours of credit toward Program of Study and approval of Director.

See page 38 for special courses which may be offered by this academic unit.

International Business Studies

IBS 300 Principles of International Business. 3 F, S, SS

Multidisciplinary analysis of international economic and financial environment. Operations of multinational firms and their interaction with home and host societies. Prerequisite: ECN 112. [Satisfies General Studies Requirement G]

591 Seminar in International Business. 3 N

Descriptions of the following courses can be found in the appropriate departmental listing:

ACC	591	Seminar in Multinational Tax
ECN	331	Comparative Economic Systems
ECN	360	Economic Development
ECN	365	Economics of the Soviet Union and Eastern Europe
ECN	367	Economics of Latin America
ECN	436	International Trade Theory
ECN	438	International Monetary Economics
ECN	531	Economic Systems and Organizations
ECN	536	International Economic Theory
ECN	538	International Monetary Theory and Policy
ECN	561	Economics of Developing Nations
MGT	459	International Management
MGT	559	International Comparative Management
MKT	435	International Marketing
MKT	591	Seminar: Marketing in International Operations
TRA	463	International Transportation

Management

PROFESSORS:

PENLEY BA 367E) BOHLANDER,
GROSSMAN KREITNER PASTN RE F
SCHABACKER WHITE

ASSOCIATE PROFESSORS:

BASSFORD BRENNSTUHL, COOK HOM
MENDLESON MONTANAR MOORHEAD,
SHIPPER

ASSISTANT PROFESSORS:

BRACKER, CARSON DAVY, HARRISON,
KEATS, KINICK

MGT 301 Management and Organization Behavior.

3 F, S, SS

Administrative organization and behavioral theories and functions of management contributing to the effective and efficient accomplishment of organizational objectives.

311 Personnel Management. 3 F, S, SS

Manpower planning, staffing, training and development, compensation, appraisal and labor relations. Prerequisite: MGT 301.

352 Human Behavior in Organizations. (3) F, S, SS

Human aspects of business as distinguished from economic and technical aspects and how they influence efficiency, morale and management practice. Prerequisite: MGT 301.

413 Wage and Salary Management. 3 F, S

Installation and administration of a complete wage and salary program, includes objectives, policies, organization, control, job evaluation and wage surveys. Prerequisite: MGT 311. Restricted to professional program business students.

422 Training and Development. (3) F, S

Learning theory, orientation and basic employee training management development, resource materials and methods. Prerequisite: MGT 311. Restricted to professional program business students.

423 Industrial Relations and Collective Bargaining.

(3 F, S)

Processes and procedures of collective bargaining. Scope and negotiation of union contracts.

433 Management Decision-Analysis. (3) A

Decision-making concepts and methods in the private and public sectors and their application to organizational problems. Understanding of individual and group decisions in making. Prerequisite: MGT 301. Restricted to professional program business students.

434 Social Responsibility of Management. (3) F, S, SS

Relationship of business to the social system and its environment. Criteria for appraisal of management decisions. Managers as change agents. Prerequisite: MGT 301. Restricted to professional program business students.

452 Organizational Behavior Applications. 3 F

The complex set of behavioral forces and relationships that influence organizational effectiveness. Intervention strategies and application skills. Prerequisite: MGT 352. Restricted to professional program business students.

459 International Management. (3) F, S

Concepts and practices of multinational and foreign firms. Objectives, strategies, policies and organizational structures for operating in various environments. Prerequisite: MGT 301.

463 Business Policies. 3 F, S, SS

Policy formulation and administration of the total organization including integrative analysis and strategic planning. Prerequisite: Completion of 96 hours, including another Business Administration core requirements. Recommended for last semester of senior year. Restricted to professional program business students. [Satisfies General Studies Requirement L2]

468 Management Systems. 3 A

Systems theory and practice applied to organization process and research. Organizations seen as open systems interacting with changing environments. Prerequisite: MGT 301.

500 Fundamentals of Management. 3) F, S, SS
A survey of management functions and roles with emphasis on strategic management, planning, organizing, staffing and control. Not open to students who have earned credit in MGT 301 or equivalent.

501 Managerial Concepts. 3) F, S, SS
Important concepts and applications in management including motivation, leadership, group dynamics, organization design, decision making, communication and organizational change. Prerequisite: MGT 301 or 500

503 Complex Organizations. 3) A
Concepts and applications in macro organization theory. Topics include organization structure, strategic choice, culture, boundary spanning, effectiveness and different perspectives of interorganizational relations.

520 Problems in Personnel Management. 3) A
Selecting, developing, maintaining and utilizing a competent labor force. Case studies of personnel problems. Preparation of a written personnel program.

522 Labor Relations and Public Policy. 3) A
State and federal legislation. Recent decisions of courts and labor boards. Legal rights and duties of employers unions and public.

559 International Comparative Management. 3) A
Analysis of comparative management practices, problems and issues. Management strategies for the multinational organization. Impact of national and cultural environments.

589 Business Strategy and Policy. (3) F, S, SS
Formulation of strategy and policy in the organization emphasizing the integration of decisions in the functional areas. Prerequisites: ACC 501, ECN 501, FN 561, MGT 501, MKT 501 and QBA 501.

591 Seminar. 3) F, S, SS
Topics such as the following will be offered:
(a) Managerial Planning and Control
(b) Business and Society
(c) Research and Development Management
(d) History of Management Thought
(e) Comparative Administration

791 Doctoral Seminar in Management. 3) F, S
See page 38 for special courses which may be offered by this academic unit.

Marketing

PROFESSORS:

WALKER, BAC 471) BROWN, GW NNER,
D JACKSON LUSCH, OSTROM, ROWE
SCHLACKER

ASSOCIATE PROFESSORS:

BELTRAM, N. BLASKO CROSBY EVANS,
GOURLEY, HUTT, MOKWA REINGEN,
STEPHENS, SWARTZ

ASSISTANT PROFESSORS:

BITNER, CROSS, GARDIS, GILL, KALE, WARD

ADVERTISING

ADV 301 Advertising Principles. 3) F, S, SS
Advertising as a communication tool in marketing and business management. Survey of market segmentation, creative strategy, media and effectiveness measures. Not open to students with credit in MKT 412. Prerequisite: MKT 300

311 Advertising Creative Strategy I. 3) F, S
Application of communication theory to advertising identification of agency approaches to the creative discipline. Evaluation of advertising strategies and executions. Prerequisite: ADV 301. Non-business majors must obtain departmental approval.

312 Advertising Creative Strategy II. (3) A
Development and expansion of creative strategies into print and broadcast advertising messages. Evaluation of the creative component of advertising campaigns. Prerequisite: ADV 311

371 Advertising Media. 3) F, S
Media strategy as an extension of marketing strategy. Conceptual aspects of media planning, quantitative and qualitative analysis of media. Prerequisite: ADV 301. Non-business majors must obtain departmental approval.

452 Strategic Issues in Advertising. (3) N
Contemporary theoretical and research considerations in advertising strategy development, focus on positioning, concept and copy testing, media, and budgeting. Prerequisites: ADV 311, ADV 371, and MKT 351. Restricted to professional program business students.

461 Advertising Management. 3) F, S
A capstone course in advertising dealing with the management of advertising from both the client and agency perspectives. Prerequisites: ADV 311, ADV 371, and MKT 351

591 Seminar in Advertising. 3) N
See page 38 for special courses which may be offered by this academic unit.

MARKETING

MKT 300 Principles of Marketing. 3) F, S, SS
Role and process of marketing within the society, economy, and business organization. Prerequisite: ECN 112

302 Fundamentals of Marketing Management. (3) F, S, SS
Marketing planning, implementation and control by organizations, with special emphasis on identifying market opportunities and developing marketing programs. Prerequisite: MKT 300

304 Consumer Behavior. (3) F, S, SS
Application of behavioral concepts in the analysis of consumer behavior and the use of behavioral analysis in marketing strategy formulation. Prerequisite: MKT 300

310 Principles of Selling. 3) F, S
Basic principles underlying the selling process and the practical application in the sale of industrial goods, consumer goods and intangibles. Prerequisite: MKT 300

321 Principles of Retailing. 3) F, S
Role of retailing in marketing. Merchandising, buying and selling, location, promotion, organization, personnel and control in a retail enterprise. Prerequisite: MKT 300.

200 MARKETING PURCHASING, TRANSPORTATION, OPERATIONS

325 Public Relations in Business. 3 F, S

Role of public relations in business, government and social institutions emphasizing policy formulation from a managerial perspective. Prerequisite: MKT 300

351 Marketing Intelligence. 3 F, S

Integrated treatment of the traditional approaches to marketing research and analysis of environmental factors affecting marketing decisions in the firm. Prerequisite: MKT 300 and QBA 221

411 Sales Management. 3 A

Application of management concepts to the administration of the sales operation. Prerequisite: MKT 302

412 Marketing Communications. 3 F, S

The communication process as it relates to the promotional activities of the firm from a strategic point of view. Prerequisite: MKT 302. Not open to students with credit in ADV 301

424 Retailing Management. 3 A

Problems of retailing management including functions with various institutions and retailing of goods and services. Prerequisite: MKT 321

434 Industrial Marketing. 3 A

Strategies for marketing products and services to industrial, commercial and governmental markets. Changing industry and market structures. Prerequisite: MKT 302 or approval of instructor. Restricted to professional program business students

435 International Marketing. 3 F, S

Analysis of marketing strategies developed by international firms to enter foreign markets and to adapt to changing international environments. Prerequisite: MKT 302 or approval of instructor

444 Marketing Channels. 3 A

Distribution channels used by firms engaged in marketing and manufacturing. Strategies for marketing channels management. Relationships among marketing intermediaries. Prerequisite: MKT 302. Restricted to professional program business students

460 Strategic Marketing. (3) F, S, SS

Policy formulation and decisions making by the marketing executive. Integration of marketing programs and consideration of contemporary marketing issues. Prerequisite: MKT 302, MKT 304 and MKT 351. Restricted to professional program business students

500 Fundamentals of Marketing. 3 F, S

An introduction to marketing concepts and functions utilized by organizations to achieve their goals within dynamic external environments. Not open to students who have earned credit in MKT 300

501 Marketing Management. 3 F, S, SS

Development and implementation of marketing objectives and strategies in response to market opportunities, environmental change and competition. Prerequisite: MKT 500 or MKT 300.

520 Strategic Perspectives of Buyer Behavior. 3 A

Concepts and theories from the behavioral sciences as they relate to marketing strategy formulation. Prerequisite: MKT 500 or equivalent. Approval of instructor

522 Marketing Information. 3 A

Marketing research, marketing information systems and modern statistical techniques in marketing decisions making. Prerequisite: MKT 501

563 Marketing Strategy. 3 F, S

Planning and control concepts and methods for development and evaluation of strategic policy from a marketing perspective. Prerequisite: MKT 501

591 Seminar. 3 N

Topics such as the following will be offered

- Product Strategy
- Channel Strategy
- Promotion Strategy
- Marketing in International Operations
- Marketing Strategy in Not for Profit and Public Sector Organization

791 Doctoral Seminar in Marketing. 3 F, S

See page 38 for special courses which may be offered by this academic unit.

Purchasing, Transportation, Operations

PROFESSORS:

RUCH (BA 323), FARRIS, FEARON
HENDRICK, SHROCK, VELLENGA

ASSOCIATE PROFESSORS:

CALLARMAN, DANIEL, PEARSON

ASSISTANT PROFESSORS:

GRITZMACHER, LANDEROS

OPERATIONS PRODUCTION MANAGEMENT

OPM 301 Operations and Logistics Management.

(3 F, S, SS)

Identification and integration of major components of operations and logistics management, and their impact on organizational productivity and performance. Restricted to professional program business students

331 Production and Operations Management. (3) F, S

Use of resources in producing goods and services. Concepts of planning, scheduling and controlling product activities and physical resources. Prerequisite: OPM 301. Restricted to professional program business students

335 Methods Management. 3) A

Theory and practice in work design, methods improvement and work measurement. Relationship of attitudes and productivity. Prerequisite: OPM 331 or approval of instructor. Restricted to professional program business students

435 Service Operations Management. 3 A

Operations management techniques used in manufacturing and the application in service organizations. Prerequisites: OPM 301, OPM 331 or approval of instructor. Restricted to professional program business students

440 Productivity and Quality Management. 3 A

Productivity concept at the national organization, and individual levels. Quality management and its relationship to productivity in a organization. Prerequisite: OPM 301, OPM 331 or approval of instructor. Restricted to professional program business students

470 Production Systems. 3 A

Systems theory and management functions. Basic tools of systems analysis. Organization systems design