

- SPA 543 Structure of Spanish.** (3) S
Analysis and discussion of data on selected topics in Spanish morphology, semantics and syntax. Prerequisite: FLA 400 or equivalent.
- SPA 545 Concepts of Literary Criticism.** (3) S
Aims and methods of modern literary scholarship. Discussion of major theories of literary analysis.
- SPA 555 Spanish American Modernism.** (3) N
Principal works and figures of literary Modernism, 1880–1920, with emphasis on international literary context of the movement. Prerequisite: SPA 325.
- SPA 557 Contemporary Spanish American Poetry.** (3) N
Major works and problems in contemporary poetry and poetics, with emphasis on Paz, Parra, Cardenal, and new poetry since 1960. Prerequisite: SPA 325.
- SPA 560 Medieval Spanish Literature.** (3) N
Major figures and works of the Middle Ages in Spain.
- SPA 561 Golden Age Spanish Prose Fiction.** (3) N
Major figures and works of the 16th and 17th centuries with emphasis on the picaresque novel.
- SPA 562 Golden Age Spanish Poetry.** (3) N
Major figures and works of the 16th and 17th centuries with emphasis on lyric poetry.
- SPA 563 Spanish Romanticism.** (3) N
Principal figures and works of the Spanish Romanticism with emphasis on international literary context of the movement.
- SPA 564 19th-Century Spanish Prose Fiction.** (3) N
Principal figures and works of Realism in the 19th-century novel with emphasis on Galdós.
- SPA 565 20th-Century Spanish Drama.** (3) N
Principal figures and works of Spanish dramatic literature from the Generation of 1898 to the present.
- SPA 566 Generation of 1927.** (3) N
Major poets of the Generation of 1927, with emphasis on works of Lorca, Guillén, Sainas, and Aleixandre.
- SPA 567 Contemporary Spanish Novel.** (3) N
Major works of post-Civil War Spanish fiction.
- SPA 568 Cervantes.** (3) N
An extensive analysis of the prose and theater of Cervantes as a key figure of the Spanish Golden Age. Lecture, seminar.
- SPA 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.
- SPA 571 Colonial Spanish American Literature.** (3) N
The major figures and works from Conquest to independence.
- SPA 572 Spanish American Drama.** (3) N
Major contributions of Spanish American drama with emphasis on contemporary dramatists.
- SPA 573 Spanish American Essay.** (3) N
Major works of the essay within the framework of intellectual history and literary movements.
- SPA 574 Spanish American Vanguard Poetry.** (3) N
Examination of poetic developments 1920–1940, with emphasis on Huerto, Vajó, Neruda and the international context of their works.
- SPA 575 Contemporary Spanish American Novel.** (3) N
Principal novels of the *Nueva Narrativa Hispanoamericana* within the context of contemporary theories of the narrative.
- SPA 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.
- SPA 577 Regional Spanish American Literature.** (3) N
The figures and works of major national (Peru, Argentina, Chile and Mexico) and regional (Caribbean) literatures. Topics offered on a rotating basis. May be repeated for different topics.
- SPA 578 Novel of the Mexican Revolution.** (3) N
Representative works and authors of this genre (Guzmán, Azuela, Urquiza, Muñoz and Romero), including related or peripheral offshoots and indigenous novels.

- SPA 581 Latin American Popular Culture.** (3) N
Studies in selected topics of Latin American popular culture with emphasis on appropriate academic models for the critical analysis of these materials.
- SPA 582 Studies in Latin American Film.** (3) N
Examination of the role of film in contemporary Latin American culture; films viewed and analyzed as casebook examples. Seminar.
- SPA 591 Seminar.** (3) N
Spanish and Spanish American literary, cultural, and linguistic topics.
- SPA 691 Figures and Works Seminar.** (3) N
Topics may be selected from Spanish and Spanish American literatures.

SWEDISH (SWE)

- SWE 101 Elementary Swedish.** (4) F
Reading, writing, speaking and understanding of basic Swedish. 4 hours lecture, 1 hour lab.
- SWE 102 Elementary Swedish.** (4) S
Reading, writing, speaking and understanding of basic Swedish. 4 hours lecture, 1 hour lab. Prerequisite: SWE 101 or equivalent.
- SWE 201 Intermediate Swedish.** (4) F
Review of Swedish grammar with emphasis on the development of the skills of speaking, listening comprehension, reading and writing. 4 hours lecture, 1 hour lab. Prerequisite: SWE 102 or equivalent.
- SWE 202 Intermediate Swedish.** (4) S
Review of Swedish grammar with emphasis on the development of the skills of speaking, listening comprehension, reading and writing. 4 hours lecture, 1 hour lab. Prerequisite: SWE 201 or equivalent.

THAI (THA)

- THA 101 Elementary Thai I.** (5) F
Basic communication, reading, and writing skills. Intensive oral and classroom drill supplemented by prose readings in Thai script. 4 hours lecture, 1 hour lab.
- THA 102 Elementary Thai II.** (5) S
Basic communication, reading, and writing skills. Intensive oral and classroom drill supplemented by prose reading. 4 hours lecture, 1 hour lab. Prerequisite: THA 101 or equivalent.
- THA 201 Intermediate Thai I.** (5) F
Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Prerequisite: THA 102 or equivalent. *General Studies: G*
- THA 202 Intermediate Thai II.** (5) S
Systematic review of grammar. Continued development of communication skills with increased emphasis on reading and writing. 4 hours lecture, 1 hour lab. Prerequisite: THA 201 or equivalent. *General Studies: G*

VIETNAMESE (VTN)

- VTN 101 Elementary Vietnamese I.** (5) F
Basic skills in modern conversational Vietnamese and development of basic reading and writing skills with special emphasis on tones. 4 hours lecture, 1 hour lab.
- VTN 102 Elementary Vietnamese II.** (5) S
Basic skills in modern conversational Vietnamese and development of basic reading and writing skills with special emphasis on tones. 4 hours lecture, 1 hour lab. Prerequisite: VTN 101 or equivalent.
- VTN 201 Intermediate Vietnamese I.** (5) F
Improve students speaking, listening, reading and writing competence through dialogues, reading passages, pattern drill, and grammar and communication exercises. 4 hours lecture, 1 hour lab. Prerequisite: VTN 102 or equivalent. *General Studies: G*
- VTN 202 Intermediate Vietnamese II.** (5) S
Improve students speaking, listening, reading and writing competence through dialogues, reading passages, pattern drill, and grammar and communication exercises. 4 hours lecture, 1 hour lab. Prerequisite: VTN 201 or equivalent. *General Studies: G*

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.

Department of Mathematics

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 math.la.asu.edu

REGENTS' PROFESSOR
 TROTTER

PROFESSORS

ARMBRUSTER, BREMNER, BUSTOZ FELDSTE N,
 GARDNER, HELTON, HOPPENSTEADT, IHRIG
 JACKIEW CZ KADELL KAWSKI, KIERSTEAD,
 KOSTEL CH, KUANG, KUIPER, LEONARD, McDONALD,
 MITTELMANN, NICOLAENKO QUIGG RENAUT,
 RINGHOFER, H.A. SMITH, H.L. SMITH, THIEME
 WEISS, YOUNG

ASSOCIATE PROFESSORS

BAER BARCELO, BLOUNT, CHILDRESS DR SCOLL, FAN,
 FARMER HURLBERT, J. JONES, KURTZ, LA LOHR,
 LOPEZ, MAHALOV, McCARTER, MOORE, SPIELBERG,
 SWIMMER, TAYLOR, TURNER WELFERT

ASSISTANT PROFESSORS

CARLSON, CZYGRINOW, GELB, D. JONES,
 KALISZEWSKI, N K TIN PREW TT, G. SM TH, SUSLOV,
 ZANDIEH, ZUO

The Department of Mathematics offers the B.A. and B.S. degrees in Mathematics. Students who plan to attend graduate school in mathematics or statistics should choose the B.S. degree. The B.S. degree in Mathematics is available with a concentration in computational mathematical sciences, however, the requirements for the degree with the concentration are distinct from the requirements for the degree without the concentration.

The department also offers a minor in Mathematics and an academic specialization in mathematics for students pursuing the B.A.E. degree in Secondary Education.

Related Field Course List. All students majoring in Mathematics need to refer to the related field course list. It is available from an advisor, in PS A211, or from the department Web site at math.la.asu.edu/~undergrd/underprog/degree/related_fields.html.

MATHEMATICS—B.A.

The B.A. degree in Mathematics requires a minimum of 36 semester hours of course work in mathematics and statistics, and additional course work in closely related fields, for a total of 51 semester hours. A grade of "C" or higher is required in all courses taken for the major. MAT 370 and 371 may not be used to satisfy these degree requirements. The required course work has the following components.

Core Courses

MAT 270	Calculus with Analytic Geometry I	MA	.....	4
MAT 271	Calculus with Analytic Geometry II	MA	.....	4
MAT 272	Calculus with Analytic Geometry III	MA	.....	4

MAT 300	Mathematical Structures	L	.....	3
MAT 342	Linear Algebra		.....	3
MAT 370	Intermediate Calculus		.....	3
	or MAT 371	Advanced Calculus I	(3)	
Total	.....			21

Computer Science Requirement

CSE 100	Principles of Programming with C++	CS	.....	3
	or CSE 200	Concepts of Computer Science	CS	(3)
Total	.....			3

Advanced Courses in Mathematics and Statistics

Two courses from the following list, both preferably taken from the same grouping 6

Algebra, Topology, and Number Theory

MAT 410	Introduction to General Topology	(3)
MAT 442	Advanced Linear Algebra	(3)
MAT 443	Introduction to Abstract Algebra	(3)
MAT 444	Intermediate Abstract Algebra	(3)
MAT 445	Theory of Numbers	(3)

Analysis and Applications

MAT 372	Advanced Calculus II	3
MAT 461	Applied Complex Analysis	(3)
MAT 472	Intermediate Real Analysis	(3)

Applied Mathematics and Dynamics

MAT 451	Mathematical Modeling	CS	(3)
MAT 452	Introduction to Chaos and Nonlinear Dynamics	(3)	
MAT 455	Introduction to Fractals and Applications	(3)	

Computational Mathematics

MAT 420	Scientific Computing	(3)	
MAT 421	Applied Computational Methods	(3)	
MAT 423	Numerical Analysis I	CS	(3)
MAT 425	Numerical Analysis II	CS	(3)
MAT 427	Computer Arithmetic	CS	(3)

Differential Equations

MAT 462	Applied Partial Differential Equations	(3)
MAT 475	Differential Equations	(3)
MAT 476	Partial Differential Equations	(3)

Discrete Mathematics

MAT 415	Introduction to Combinatorics	(3)	
MAT 416	Introduction to Graph Theory	(3)	
MAT 419	Introduction to Linear Programming	CS	(3)

Statistics and Probability

STP 420	Introductory Applied Statistics	CS	(3)
STP 421	Probability	(3)	
STP 425	Stochastic Processes	(3)	
STP 427	Mathematical Statistics	(3)	
STP 429	Experimental Statistics	CS	(3)

Additional Course Work in Mathematics and Statistics

Three courses in mathematics and statistics 9

Related Field Course Work

Twelve hours of course work in mathematics, statistics, or related fields? 12

Acceptable mathematics courses are MAT 274 and upper-division MAT courses, with the exception of MAT 362, 485, and ASU West MAT 411. Acceptable statistics courses are upper division STP courses.

- See "Related Field Course List," page 402

MATHEMATICS—B.S.

The Department of Mathematics has two avenues for earning a B.S. degree. The B.S. requirements are similar to the B.A. requirements, but they require more extensive courses in advanced mathematics. The program is flexible

enough to allow students to focus their studies on mathematics, applied mathematics, or statistics. The computational mathematical sciences concentration is an interdisciplinary program with significant components of computer science, physical and biological sciences, and mathematics and statistics. The requirements for the B.S. degree and for the B.S. degree with the computational mathematical sciences concentration are distinct, neither is a subset of the other.

B.S. Requirements. The B.S. degree in Mathematics requires a minimum of 42 semester hours of course work in mathematics and statistics, and additional course work in closely related fields, for a total of 55 semester hours. A grade of "C" or higher is required in all courses taken for the major. MAT 370 and 371 may not both be used to satisfy these degree requirements. The required course work has the following components:

Core Courses

MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 300 Mathematical Structures L	3
MAT 342 Linear Algebra	3
MAT 371 Advanced Calculus I	3
Total	21

Computer Science Requirement

CSE 200 Concepts of Computer Science CS	3
Total	3

Depth Requirement

Two courses chosen from the following list of advanced courses 6

MAT 423 Numerical Analysis I CS (3)	
MAT 425 Numerical Analysis II CS (3)	
MAT 442 Advanced Linear Algebra (3)	
MAT 444 Intermediate Abstract Algebra (3)	
MAT 462 Applied Partial Differential Equations (3)	
MAT 472 Intermediate Real Analysis (3)	
MAT 475 Differential Equations (3)	
MAT 476 Partial Differential Equations (3)	
STP 421 Probability (3)	
STP 427 Mathematical Statistics (3)	

Advanced Courses in Mathematics and Statistics

Two courses from the following list, both preferably taken from the same grouping. 6

Algebra, Topology, and Number Theory

MAT 410 Introduction to General Topology (3)	
MAT 442 Advanced Linear Algebra (3)	
MAT 443 Introduction to Abstract Algebra (3)	
MAT 444 Intermediate Abstract Algebra (3)	
MAT 445 Theory of Numbers (3)	

Analysis and Applications

MAT 372 Advanced Calculus II (3)	
MAT 461 Applied Complex Analysis (3)	
MAT 472 Intermediate Real Analysis (3)	

Applied Mathematics and Dynamics

MAT 451 Mathematical Modeling CS (3)	
MAT 452 Introduction to Chaos and Nonlinear Dynamics (3)	
MAT 455 Introduction to Fractals and Applications (3)	

Computational Mathematics

MAT 420 Scientific Computing (3)	
MAT 421 Applied Computational Methods CS (3)	
MAT 423 Numerical Analysis I CS (3)	
MAT 425 Numerical Analysis II CS (3)	
MAT 427 Computer Arithmetic CS (3)	

Differential Equations

MAT 462 Applied Partial Differential Equations (3)	
MAT 475 Differential Equations (3)	
MAT 476 Partial Differential Equations (3)	

Discrete Mathematics

MAT 415 Introduction to Combinatorics (3)	
MAT 416 Introduction to Graph Theory (3)	
MAT 419 Introduction to Linear Programming CS (3)	

Statistics and Probability

STP 421 Introductory Applied Statistics CS (3)	
STP 421 Probability (3)	
STP 425 Stochastic Processes (3)	
STP 427 Mathematical Statistics (3)	
STP 429 Experimental Statistics CS (3)	

Additional Course Work in Mathematics and Statistics

Three courses in mathematics and statistics. 9

Related Fields Course Work

Ten hours of course work in mathematics, statistics, or related fields is required. 10

Students who contemplate graduate work in mathematics should choose additional courses listed under the depth requirement to satisfy the advanced courses requirement.

Acceptable mathematics courses are MAT 274 and upper division MAT courses, with the exception of MAT 310, 362, 485, and ASU West MAT 411. Acceptable statistics courses are 40 level STP courses.

See "Related Field Course List," page 402.

Computational Mathematical Sciences Concentration Requirements.

The B.S. degree in Mathematics with the computational mathematical sciences concentration requires a minimum of 36 semester hours of course work in mathematics and statistics, plus a minimum of 21 semester hours in physics, computer science, and other sciences for a minimum of 57 semester hours of course work related to the major. A grade of "C" or higher is required in all courses taken for the major. MAT 370 and 371 may not be used to satisfy these degree requirements. The required course work has the following components:

Core Courses

MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 274 Elementary Differential Equations MA	3
MAT 300 Mathematical Structures L	3
MAT 342 Linear Algebra	3
Total	21

Computer Science Requirement

CSE 200 Concepts of Computer Science CS	3
CSE 210 Object Oriented Design and Data Structures CS	3
CSE 310 Data Structures and Algorithms	3
MAT 420 Scientific Computing	3
Total	12

NOTE: For the General Studies requirement, courses and codes such as L, SQ, C, and H, see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

Physics Requirement

Two semesters of introductory physics as shown6 or 8
 PHY 121 University Physics I Mechanics SQ (3)*
 or PHY 151 Physics II SQ (4)
 PHY 131 University Physics II Electricity and
 Magnetism SQ (3)*
 or PHY 150 Physics I SQ (4)

* It is highly recommended that students taking PHY 121 and 131
 also take the associated laboratory courses PHY 122 and 132

Advanced Courses in Mathematics and Statistics

Choose one course from each of the following four groups 12

Group One

MAT 371 Advanced Calculus I (3)
 MAT 460 Applied Real Analysis (3)

Group Two

MAE 471 Computational Fluid Dynamics (3)
 or other course as approved by an advisor
 MAT 419 Introduction to Linear Programming CS (3)
 MAT 421 Applied Computational Methods CS (3)
 MAT 423 Numerical Analysis I CS (3)
 MAT 425 Numerical Analysis II CS (3)
 STP 429 Experimental Statistics CS (3)

Group Three

MAT 372 Advanced Calculus II (3)
 MAT 427 Computer Arithmetic CS (3)
 MAT 451 Mathematical Modeling CS (3)
 MAT 452 Introduction to Chaos and Nonlinear Dynamics (3)
 MAT 461 Applied Complex Analysis (3)
 MAT 462 Applied Partial Differential Equations (3)
 MAT 475 Differential Equations (3)
 STP 420 Introductory Applied Statistics CS (3)
 STP 421 Probability (3)

One course not already chosen from *Group One* or *Two* (3)

Group Four

One course from either *Group One*, *Two* or *Three* or any other 400
 level MAT or STP course except for MAT 485, and ASU West
 MAT 411 (3)

Second Science

Choose among the course combinations below for a one year
 sequence in some other science, chosen from astronomy,
 biology, geology, or chemistry 6-9

AST 321 Introduction to Planetary and Stellar
 Astrophysics SQ (3)
 AST 322 Introduction to Galactic and Extragalactic
 Astrophysics SQ (3)

BIO 181 General Biology SQ (4)
 BIO 182 General Biology SG (4)

GLG 101 Introduction to Geology I (Physical) SQ (3)
 GLG 102 Introduction to Geology II (Historical) SQ (3)

Any two of CHM 113, 114, 115, 116, 117, and 118 as permitted by
 the Department of Chemistry and Biochemistry

Other course combinations may be used upon approval of a
 departmental advisor

² See the individual course listings for restrictions

Advanced Science Course or Internship

One advanced course in a science for which a one year course
 sequence in the same science is required or an internship,
 subject to advisor approval 3
 MAT 484 Internship (3)
 any upper division course in plant biology (PLB chemistry
 CHM), or microbiology (MIC (3)
 any upper division science or engineering course from the
 related field course list² (3)

Other courses may be used to satisfy this requirement on
 approval of a Department of Mathematics advisor

² Note that courses with prefixes ECN, FIN, MAT, PHI, and STP
 do not count toward this requirement. See "Related Field Course
 List" page 402

Statistics. Students interested in concentrating their mathe-
 matical studies on statistics should satisfy the requirements
 for a B.S. degree in Mathematics with the following
 courses. A grade of "C" or higher is required in all courses
 taken for the major. MAT 370 and 371 may not be used to
 satisfy these degree requirements.

Core Courses

MAT 270 Calculus with Analytic Geometry I MA	4
MAT 271 Calculus with Analytic Geometry II MA	4
MAT 272 Calculus with Analytic Geometry III MA	4
MAT 300 Mathematical Structures L	3
MAT 342 Linear Algebra	3
MAT 371 Advanced Calculus I	3
STP 420 Introductory Applied Statistics CS	3
STP 421 Probability	3
STP 427 Mathematical Statistics	3
STP 429 Experimental Statistics CS	3
Total	33

Computer Science Requirement

CSE 200 Concepts of Computer Science CS	3
Total	3

Additional Advanced Courses in Mathematics and Statistics

Three courses from the following list	9
MAT 274 Elementary Differential Equations MA	3
MAT 372 Advanced Calculus II (3)	
MAT 423 Numerical Analysis I CS (3)	
MAT 442 Advanced Linear Algebra (3)	
STP 425 Stochastic Processes (3)	

Required Related Field Course Work

Statistics probability, mathematics, or related fields* 10

* See "Related Field Course List," page 402

Actuarial Science. The faculty in the Department of Math-
 ematics offer courses that cover the content of the mathe-
 matical examinations of the Society of Actuaries. The
 option in statistics and probability is particularly suited to
 students who wish to pursue actuarial careers. See the
 department's actuarial advisor for more information

MINOR IN MATHEMATICS

The minor in Mathematics consists of a minimum of 24 semester hours. Required courses are as follows:

MAT 270	Calculus with Analytic Geometry I MA	4
MAT 271	Calculus with Analytic Geometry II MA	4
MAT 272	Calculus with Analytic Geometry III MA	4
MAT 342	Linear Algebra	3
Total		15

Electives are chosen in consultation with a mathematics advisor and must include three upper-division MAT or STP courses. In addition, CSE 200 Concepts of Computer Science and CSE 210 Object-Oriented Design and Data Structures are recommended. An approved Minor Verification Form must be submitted to the Office for Academic Programs, SS 111.

SECONDARY EDUCATION—B.A.E.

Mathematics. Students pursuing the major teaching field may choose from two options.

Option One. With this option, the academic specialization consists of the following required courses:

CSE 100	Principles of Programming with C++ CS	3
	or CSE 183 Applied Problem Solving with FORTRAN CS (3)	
	or CSE 200 Concepts of Computer Science CS (3)	
MAT 270	Calculus with Analytic Geometry I MA	4
MAT 271	Calculus with Analytic Geometry II MA	4
MAT 272	Calculus with Analytic Geometry III MA	4
MAT 300	Mathematical Structures L	3
MAT 310	Introduction to Geometry	3
MAT 342	Linear Algebra	3
MAT 370	Intermediate Calculus	3
	or MAT 371 Advanced Calculus I (3)	
MAT 443	Introduction to Abstract Algebra	3
	or MAT 445 Theory of Numbers (3)	
MTE 483	Mathematics in the Secondary School	3
STP 420	Introductory Applied Statistics CS	3
Total		36

The methods in academic specialization courses for mathematics are MTE 482 Methods of Teaching Mathematics in Secondary School and MTE 494 Special Topics: Advanced Methods of Teaching Secondary Mathematics. They are required as part of the Professional Teacher Preparation Program (PTPP) but cannot be counted as part of the 36-hour major requirement.

Option Two. This option may be exercised only in combination with option two under "Chemistry," page 357, or "Physics," page 419. The program consists of 30 semester hours in mathematics. Required courses are as follows:

MAT 270	Calculus with Analytic Geometry I MA	4
MAT 271	Calculus with Analytic Geometry II MA	4
MAT 272	Calculus with Analytic Geometry III MA	4
MAT 300	Mathematical Structures L	3
MAT 310	Introduction to Geometry	3
MAT 342	Linear Algebra	3

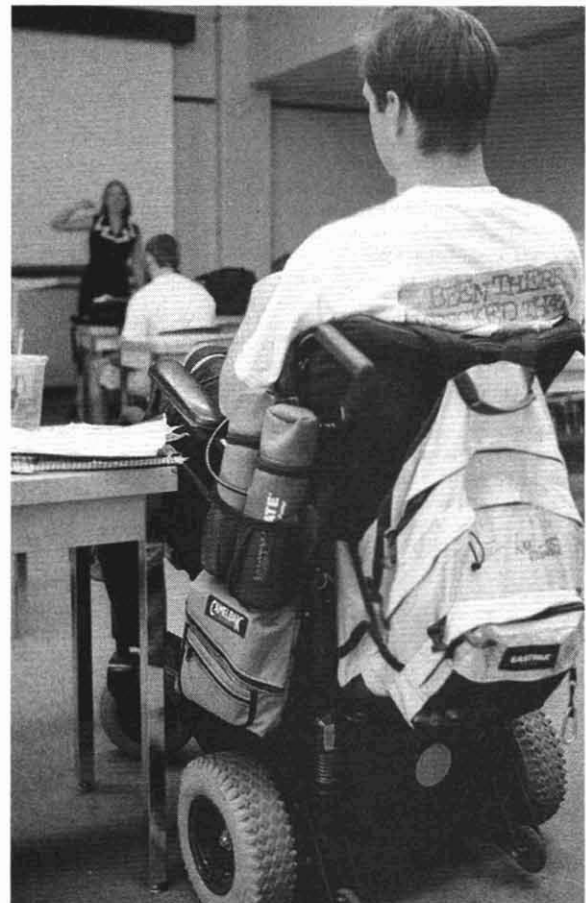
MAT 370	Intermediate Calculus MA	3
	or MAT 371 Advanced Calculus I (3)	
	or MAT 460 Applied Real Analysis (3)	
MAT 443	Introduction to Abstract Algebra	3
Total		27

Recommended

CSE 100	Principles of Programming with C++ CS	3
	or CSE 200 Concepts of Computer Science CS (3)	

Minor Teaching Field. The minor teaching field consists of the following required courses:

MAT 270	Calculus with Analytic Geometry I MA	4
MAT 271	Calculus with Analytic Geometry II MA	4
MAT 272	Calculus with Analytic Geometry III MA	4
MAT 274	Elementary Differential Equations MA	3
	or MAT 371 Advanced Calculus I (3)	
	or MAT 460 Applied Real Analysis (3)	
MAT 300	Mathematical Structures L	3
MAT 310	Introduction to Geometry	3
MAT 342	Linear Algebra	3
Total		24



Resources for students with special needs are provided by Disability Resources for Students.

Tim Trumble photo

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

GRADUATE PROGRAMS

The faculty in the Department of Mathematics offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

MATHEMATICS (MAT)

MAT 106 Intermediate Algebra. (3) F S SS

Topics from basic algebra such as linear equations, polynomials, factoring, exponents, roots and radicals. Prerequisite: 1 year of high school algebra.

MAT 114 College Mathematics. (3) F, S SS

Applications of basic college-level mathematics to real-life problems. Appropriate for students whose major does not require MAT 117 or 170. Prerequisite: MAT 106 or 2 years of high school algebra. *General Studies: MA*

MAT 117 College Algebra. (3) F, S, SS

Linear and quadratic functions, systems of linear equations, logarithmic and exponential functions, sequences, series, and combinatorics. Prerequisite: MAT 106 or 2 years of high school algebra. *General Studies: MA*.

MAT 119 Finite Mathematics. (3) F, S, SS

Topics from linear algebra, linear programming, combinatorics, probability, and mathematical finance. Prerequisite: MAT 117 or equivalent. *General Studies: MA*

MAT 122 University Mathematics. (3) F, S, SS

Overview of contemporary and applicable mathematics. Graphical analysis, science and proportions, exponential and introductory probability applications. Prerequisite: four years of high school mathematics including a course in analytic geometry or precalculus (or MAT 117 or equivalent). *General Studies: MA*

MAT 170 Precalculus. (3) F, S, SS

Intensive preparation for calculus (MAT 260, 270 and 290). Topics include functions, including trigonometric matrices, polar coordinates, vectors, complex numbers, and mathematical induction. Prerequisite with a grade of "B" or higher: MAT 106. Prerequisite with a grade of "C" or higher: MAT 117 or two years of high school algebra. *General Studies: MA*

MAT 210 Brief Calculus. (3) F, S, SS

Differential and integral calculus of elementary functions with applications. Not open to students with credit in MAT 260, 270 or 290. Prerequisite: MAT 117 or equivalent. *General Studies: MA*

MAT 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: 1 semester of calculus or instructor approval.

MAT 243 Discrete Mathematical Structures. (3) F, S, SS

Introduction to lattices, graphs, Boolean algebra, and groups, with emphasis on topics relevant to computer science. Prerequisite: 1 semester of calculus.

MAT 251 Calculus for Life Sciences. (3) F, S

Differential and integral calculus of elementary functions. Introduction to differential and difference equations. Emphasis on applications to the life sciences. Not open to students with credit in MAT 210, 260, or 270. Prerequisite: MAT 170 or equivalent. *General Studies: MA*.

MAT 260 Technical Calculus I. (3) F, S, SS

Analytic geometry, differentiation, and integral calculus of elementary functions, emphasizing physical interpretation and problem solving. Not open to students with credit in MAT 210, 270 or 290. Prerequisite: MAT 170 or equivalent. *General Studies: MA*.

MAT 261 Technical Calculus II. (3) F, S, SS

Continuation of MAT 260. Prerequisite: MAT 260 or instructor approval. *General Studies: MA*

MAT 262 Technical Calculus III. (3) F, S

Infinite series, an introduction to differential equations and elementary linear algebra. Prerequisite: MAT 261 or equivalent. *General Studies: MA*

MAT 270 Calculus with Analytic Geometry I. (4) F, S, SS

Real numbers, limits and continuity, and differential and integral calculus of functions of 1 variable. Not open to students with credit in MAT 290. The sequence MAT 270 and 271 may be substituted for MAT 290 to satisfy requirements of any curriculum. Prerequisite with a grade of "C" or higher: MAT 170 or satisfactory score on placement examination. *General Studies: MA*

MAT 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 and 291. Prerequisite with a grade of "C" or higher: MAT 270 or equivalent. *General Studies: MA*.

MAT 272 Calculus with Analytic Geometry III. (4) F, S, SS

Vector-valued functions of several variables, multiple integration, and introduction to vector analysis. The sequence MAT 270, 271, 272 may be substituted to satisfy requirements for MAT 290 and 291. Prerequisite with a grade of "C" or higher: MAT 271 or equivalent. *General Studies: MA*

MAT 274 Elementary Differential Equations. (3) F, S, SS

Introduction to ordinary differential equations, adapted to the needs of students in engineering and the sciences. MAT 272 or equivalent is recommended. Prerequisite: MAT 271 or equivalent. *General Studies: MA*

MAT 290 Calculus I. (5) N

Differential and integral calculus of elementary functions, topics from analytic geometry essential to the study of calculus. Prerequisite: MAT 170 or equivalent. *General Studies: MA*

MAT 291 Calculus II. (5) N

Further applications of calculus, partial differentiation, multiple integrals, and infinite series. Prerequisite: MAT 290 or equivalent.

MAT 294 Special Topics. (1-4) N

a) Calculus for the Life Sciences (3)

MAT 300 Mathematical Structures. (3) F, S

Logic and set theory, induction, functions, order and equivalence relations, cardinality. Emphasis on writing proofs. Prerequisite: 1 semester of calculus or instructor approval. *General Studies: L*

MAT 310 Introduction to Geometry. (3) S

Congruence, area, perimeter, similarity and volume, and Euclidean and non-Euclidean geometry. Prerequisite: MAT 272 or equivalent.

MAT 342 Linear Algebra. (3) F, S, SS

Linear equations, matrices, determinants, vector spaces, bases, linear transformations and similarity, inner product spaces, orthonormal bases, diagonalization, and principal axes. Pre- or corequisite: MAT 272 or equivalent.

MAT 351 Mathematical Methods for Genetic Analysis. (3) F, S

Discrete mathematics, probability, statistics, and associated computer packages. Applications to genomics, bioinformatics, forensics, and DNA/protein sequence patterns. Prerequisites: MAT 251 and 270 or instructor approval.

MAT 362 Advanced Mathematics for Engineers and Scientists I. (3) F, S, SS

Vector analysis. Fourier analysis, and partial differential equations. Prerequisites: MAT 272 and 274 or equivalents.

MAT 370 Intermediate Calculus. (3) F, S

Theory behind basic 1-variable calculus: continuity, derivative, Riemann integral, sequences, and series. Not open to students who have received a "C" or better in MAT 371. Students may not count both MAT 370 and 371 toward mathematics degree. Prerequisites: MAT 272, 300

MAT 371 Advanced Calculus I. (3) F, S

Real numbers, completeness, sequences, series, continuity, uniform theorems, derivative, Riemann integral, pointwise uniform convergence, Taylor's theorem. Students may not count both MAT 370 and 371 toward mathematics degree. Prerequisite: MAT 272 or 300 or instructor approval.

MAT 372 Advanced Calculus II. (3) F, S

Open, closed, compact sets in \mathbb{R}^n , continuity, differentiation, partial differentiation, integration in \mathbb{R}^n , inverse implicit function theorems. Not open to students with credit in MAT 460. Prerequisite: MAT 371. Pre- or corequisite: MAT 342.

MAT 410 Introduction to General Topology. (3) A

Topology: compact spaces, metric spaces, compactness, connectedness, and product spaces. Prerequisite: MAT 300 or 371 or instructor approval.

MAT 415 Introduction to Combinatorics. (3) S

Topics include proof techniques: permutations, combinations; counting techniques including recurrence relations, generating functions, inclusion-exclusion; Ramsey theory and combinatorial designs. Prerequisites: MAT 300 (or 243) and 342 (or 242) or instructor approval.

MAT 416 Introduction to Graph Theory. (3) S

Topics include trees, cycles, matchings, planarity, connectivity, Hamiltonicity, colorings, graph algorithms, and other advanced topics. Prerequisites: MAT 300 (or 243) and 342 (or 242) or instructor approval.

MAT 419 Introduction to Linear Programming. (3) S

Simplex method, duality, and network flows. Applications to game theory, geometry, combinatorics, graph theory, and posets. Prerequisites: CSE 100 (or 200 or 210); MAT 300 (or 243) 342 (or 242) or instructor approval. *General Studies: CS*

MAT 420 Scientific Computing. (3) F

Survey and application of programming languages, libraries, and scientific visualization tools. Programming assignments emphasize software development skills. Lecture/lab. Prerequisites: CSE 200 and MAT 274 and 342 or equivalents or instructor approval.

MAT 421 Applied Computational Methods. (3) F, S

Numerical methods for quadrature, differential equations, roots of nonlinear equations, interpolation, approximation, linear equations, floating-point arithmetic, and roundoff error. Prerequisites: MAT 271 (or equivalent) and fluency in computer programming (preferably FORTRAN) or instructor approval. *General Studies: CS*

MAT 423 Numerical Analysis I. (3) F, S

Analysis and algorithms for numerical solutions: near-linear equations, direct solvers, iterative procedures, optimization. Determination of eigenvalues. Elementary computer arithmetic. Prerequisites: MAT 342 and 371 and fluency in computer programming or instructor approval. *General Studies: CS*

MAT 425 Numerical Analysis II. (3) F, S

Analysis of and algorithms for numerical interpolation, integration, and differentiation. Numerical solution of ordinary differential equations and methods of solution. Those seeking a methods survey course should take MAT 421. Prerequisites: MAT 342 and 371 and fluency in computer programming or instructor approval. *General Studies: CS*

MAT 427 Computer Arithmetic. (3) S

Number systems, hardware/software arithmetic overflow, significance, rounding, multiple precision, and automatic error control. Impact on languages, architectures, robust programming, and software development. Prerequisite: CSE 100 (or 200) or MAT 421 and 423 (or MAT 425) or instructor approval. *General Studies: CS*

MAT 442 Advanced Linear Algebra. (3) F

Fundamentals of linear algebra: dual spaces, invariant subspaces, canonical forms, bilinear and quadratic forms, and multilinear algebra. Prerequisites: MAT 300 and 342 or instructor approval.

MAT 443 Introduction to Abstract Algebra. (3) F

Introduction to concepts of abstract algebra. Not open to students with credit in MAT 444. Prerequisites: MAT 300 and 342 or instructor approval.

MAT 444 Intermediate Abstract Algebra. (3) S

Basic theory of groups, rings, and fields. Includes an introduction to Galois theory. Appropriate as preparation for MAT 543. Prerequisite: MAT 443 or graduate standing or instructor approval.

MAT 445 Theory of Numbers. (3) S

Prime numbers, unique factorization theorem, congruences, Diophantine equations, primitive roots, and quadratic reciprocity theorem. Prerequisites: MAT 300 and 342 or instructor approval.

MAT 451 Mathematical Modeling. (3) S

A detailed study of one or more mathematical models that occur in the physical or biological sciences. May be repeated for credit with instructor approval. Prerequisites: MAT 242 (or 342) and 274 or instructor approval. *General Studies: CS.*

MAT 452 Introduction to Chaos and Nonlinear Dynamics. (3) F

Properties of nonlinear dynamical systems: dependence on initial conditions; strange attractors; period doubling bifurcations; symbolic dynamics; Smale-Birkhoff theorem, and applications. MAT 371 is recommended. Prerequisites: MAT 274 342 (or 242)

MAT 455 Introduction to Fractals and Applications. (3) S

Fractals; self-similar structures, fractals with iterated function systems of maps; computing fractals; fractal dimensions, chaotic dynamics on fractals; applications. MAT 371 is recommended. Prerequisites: MAT 274, 342 (or 242)

MAT 460 Applied Real Analysis. (3) S

Vectors, curvilinear 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 242 (or 342), 272 274.

MAT 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.

MAT 462 Applied Partial Differential Equations. (3) S

Second order partial differential equations: emphasizing Laplace, wave, and diffusion equations. Solutions by the methods of characteristics, separation of variables, and integral transforms. Prerequisites: MAT 242 (or 342), 274.

MAT 472 Intermediate Real Analysis. (3) F

Introduction to analysis in metric spaces with emphasis on the real line. Appropriate as preparation for MAT 570. Prerequisites: MAT 300 342.

MAT 475 Differential Equations. (3) F

Asymptotic behavior of solutions of linear and nonlinear ordinary differential equations; stability; Sturm-Liouville problems; boundary value problems, and singular point behavior of autonomous systems. Prerequisites: MAT 242 (or 342) 274

MAT 476 Partial Differential Equations. (3) S

First order quasilinear, second order linear (wave, Laplace, heat) characteristics, harmonic functions, maximum principles, Fourier series, separation of variables. Prerequisites: MAT 274 (or 475), 372 (or 472).

MAT 484 Internship. (1-12) N**MAT 485 History of Mathematics.** (3) N

Topics from the history of the origin and development of mathematical ideas. Prerequisite: MAT 272 or equivalent.

MAT 505 Perturbation Methods. (3) N

Nonlinear oscillations, strained coordinates, renormalization, multiple scales, boundary layers, matched asymptotic expansions, turning point problems, and WKBJ method. Cross-listed as MAE 505. Credit is allowed for only MAE 505 or MAT 505.

MAT 514 Enumerative Combinatorics I. (3) F

First semester of a systematic development of enumerative combinatorics including: elementary counting techniques, sieve methods, and partially ordered sets. Prerequisite: graduate standing or instructor approval.

MAT 515 Enumerative Combinatorics II. (3) S

Second semester of a systematic development of enumerative combinatorics including: lattices, exponential structures, symmetric functions, and selected special topics. Prerequisite: MAT 514 or instructor approval.

MAT 516 Graph Theory I. (3) F

First semester of a systematic development of graph theory including: matchings, connectivity, arboricity, planarity, coloring, network flows. Prerequisite: graduate standing or instructor approval.

MAT 517 Graph Theory II. (3) S

Second semester of a systematic development of graph theory including: dense and sparse graphs, Ramsey theory, Hamiltonicity, random graphs, minors. Prerequisite: MAT 516 or instructor approval.

MAT 518 Combinatorial Optimization I. (3) F

First semester of a systematic development of combinatorial optimization including: linear programming, duality, primal-dual algorithms, network flow algorithms, weighted matchings. Prerequisite: graduate standing or instructor approval.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

MAT 519 Combinatorial Optimization II. (3) S

Second semester of a systematic development of combinatorial optimization including matroid algorithms, theory of NP-completeness, polynomial-time approximation, dynamic programming. Prerequisite: MAT 518 or instructor approval.

MAT 520 Numerical Linear Algebra. (3) F

Direct solution of linear systems, iterative methods, eigenvalues and eigenvectors, singular value decomposition, the QR algorithm, error propagation, arithmetic, and stability. Prerequisites: MAT 342 and 423 (or 421) or instructor approval.

MAT 521 Iterative Methods. (3) S

Numerical methods for solving linear nonlinear systems of equations, symmetric nonsymmetric iterative methods for linear systems, conjugate gradients, multigrid methods, preconditioning, Krylov methods. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 523 Numerical Optimization. (3) N

Linear programming, unconstrained nonlinear minimization, line search algorithms, conjugate gradients, quasi-Newton methods, constrained nonlinear optimization, gradient projection, and penalty methods. Prerequisites: MAT 342 or 371 or 460 or 520 or equivalent or instructor approval.

MAT 524 Parallel Numerical Algorithms. (3) N

Algorithms for massively parallel hypercube architectures, "parallel" FORTRAN, solution of linear, nonlinear systems, partial differential equations; iterative methods, multigrid, domain decomposition. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 530 Numerical Solution of Ordinary Differential Equations. (3) F

One-step, near multistep methods, consistency, order, stability, convergence, discretization, roundoff errors, error estimation, adaptive strategy, implementation, software for nonlinear equations. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 531 Numerical Solution of Stiff Differential Systems. (3) S

Runge-Kutta methods, order conditions, construction of highly stable methods, order stars, error estimation, stepsize selection, contractivity properties, near multistep methods. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 533 Computational Elliptic and Parabolic Partial Differential Equations. (3) F

Parabolic and elliptic equations, finite difference, finite element methods, stability, consistency, convergence, practical aspects, applications, software. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 534 Computational Hyperbolic Partial Differential Equations. (3) S

Numerical solutions of hyperbolic PDEs, finite difference methods, well-posedness, stability, consistency, convergence, adaptive grids, Maxwell equations, elastowave propagation, Navier-Stokes. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 535 Spectral Methods for Partial Differential Equations. (3) N

Spectral, pseudo-spectral theory, Galerkin, collocation methods; Tau methods, global approximation properties, stability, convergence, solutions for linear nonlinear systems. Prerequisites: MAT 371 and 423 (or 421) or instructor approval.

MAT 543 Abstract Algebra. (3) F

Groups, modules, rings and fields, Galois theory, homomorphisms, algebra and the representation theory. Prerequisite: MAT 444 or instructor approval.

MAT 544 Abstract Algebra. (3) S

Continuation of MAT 543. Prerequisite: MAT 543 or instructor approval.

MAT 551 Linear Operators and Integral Equations. (3) S

Bounded linear and compact operators on Hilbert spaces, linear integral equations, Fredholm and Hilbert-Schmidt theory, and approximation methods, Dirichlet problems. Prerequisites: MAT 242 and 462 or equivalents.

MAT 555 Fractal Geometry. (3) N

Geometry and analysis of fractal sets, definitions of dimensions, calculation of dimensions, projections, products of fractals, random fractals, multifractal measures and applications. Prerequisites: MAT 371, 455, MAT 472, or recommended.

MAT 570 Real Analysis. (3) S

Lebesgue integration, selected functions on spaces, differentiation, abstract measure theory and elements of functional analysis. Prerequisite: MAT 372 or instructor approval.

MAT 571 Real Analysis. (3) F

Continuation of MAT 570. Prerequisite: MAT 570 or instructor approval.

MAT 572 Complex Analysis. (3) F

Analytic functions, series and product representations, entire and meromorphic functions, normal families, Riemann mapping theorem, harmonic functions, and Riemann surfaces. Prerequisite: MAT 371 or instructor approval.

MAT 573 Complex Analysis. (3) S

Continuation of MAT 572. Prerequisite: MAT 572 or instructor approval.

MAT 574 Theory of Ordinary Differential Equations. (3) N

Systems, existence proofs, singularities, asymptotic behavior of solutions, boundedness of solutions, eigenvalues and eigenfunctions, and perturbation theory. Prerequisite: MAT 372 or instructor approval.

MAT 575 Theory of Ordinary Differential Equations and Dynamical Systems. (3) N

Geometric approach to ODEs and dynamical systems, (un)stability, center manifolds, structural stability, normal forms, averaging, chaos, persistence. May be repeated for credit with instructor approval. Prerequisites: MAT 452 and 475 or MAT 574 or instructor approval.

MAT 576 Theory of Partial Differential Equations. (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 instructor approval.

MAT 577 Theory of Partial Differential Equations. (3) N

Continuation of MAT 576. Prerequisite: MAT 576 or instructor approval.

MAT 578 Functional Analysis. (3) N

Locally convex normed and Hilbert spaces, linear operators, spectral theory, and application to classical analysis. Prerequisite: MAT 472 or 571 or instructor approval.

MAT 579 Functional Analysis. (3) N

Continuation of MAT 578. Prerequisite: MAT 578 or instructor approval.

MAT 591 Seminar. (1-3) N

Topics may be selected from the following:

- Algebra
- Analysis
- Applied Mathematics
- Combinatorial Mathematics
- Mathematical Logic
- Numerical Analysis
- Topology

MATHEMATICS EDUCATION (MTE)**MTE 180 Theory of Elementary Mathematics. (3) F, S, SS**

Number systems, intuitive geometry, elementary algebra, and measurement intended for prospective elementary school teachers. Prerequisite: MAT 117 or equivalent.

MTE 181 Theory of Elementary Mathematics. (3) A

Continuation of MTE 180. Prerequisite: MTE 180 or instructor approval.

MTE 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 instructor approval.

MTE 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, and motion geometry. Prerequisite: MTE 380 or instructor approval.

MTE 482 Methods of Teaching Mathematics in Secondary School. (3) F, SS

Examination of secondary school curriculum material and analysis of instructional devices, teaching strategies, evaluative techniques, diagnosis, and remediation and problem solving. Prerequisite: instructor approval.

MTE 483 Mathematics in the Secondary School. (3) S, SS

Topics in geometry, number theory, algebra, and analysis. Emphasis on underlying principles. Prerequisite: MAT 310 or instructor approval.

MTE 484 Theory of Elementary Mathematics Internship. (3) F S
Employ hands on activities and manipulate to advance mathematical understanding in second- to fourth-grade students

MTE 494 Special Topics. (3) F S

- a) Advanced Methods of Teaching Secondary Mathematics
Continuation of MTE 482 Prerequisite: MTE 482

MTE 585 Modern Geometry for Teachers. 3 A

Euclean projective, and non-Euclean geometries Prerequisite: instructor approval

MTE 587 Analysis for Teachers. 3 N

Subject matter in mathematics appropriate for accelerated programs in secondary schools, including analytical geometry and calculus. Prerequisite: instructor approval.

STATISTICS AND PROBABILITY (STP)

STP 220 Conceptual Statistics. (3) F S

Treats the concepts and vocabulary needed to evaluate statistical reports on health technology and society. Aggressively emphasizes understanding over computation. Lecture, teamwork Prerequisite: MAT 114 or 117 or 122 or equivalent *General Studies CS*

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: MAT 114 or 117 or equivalent *General Studies CS*

STP 326 Intermediate Probability. (3) F S

Probability models and computations: joint and conditional distributions, moments, and families of distributions. Topics in stochastic processes, simulation, and statistics Prerequisite: MAT 210 or equivalent *General Studies CS*

STP 420 Introductory Applied Statistics. 3 F S, SS

Introductory probability, descriptive statistics, sampling distributions, parameter estimation, tests of hypotheses, chi-square tests, regression analysis, analysis of variance, and nonparametric tests Prerequisite: MAT 117 or equivalent *General Studies CS*.

STP 421 Probability. 3 F

Laws of probability, combinatorial analysis, random variables, probability distributions, expectations, moment-generating functions, transformations of random variables, and central limit theorem Prerequisites: MAT 272 and 300 and STP 420 or equivalents

STP 425 Stochastic Processes. (3) S

Markov chains, stationary distributions, pure jump processes, 2D order processes, and other topics in stochastic processes Prerequisite sites: MAT 342 STP 421

STP 427 Mathematical Statistics. 3 S

Limits, distributions, interval estimation, point estimation, sufficient statistics, and tests of hypotheses Prerequisite sites: STP 420, 421

STP 429 Experimental Statistics. (3) S

Statistical inference for controlled experimentation. Multiple regressions, correlation, analysis of variance, multiple comparisons, and nonparametric procedures. Prerequisite: STP 420 or equivalent *General Studies CS*.

STP 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: MAT 571 and STP 421 or instructor approval

STP 526 Theory of Statistical Linear Models. (3) F

Multinomial distribution, distribution of quadratic forms, full and nonfull rank models, generalized inverses, unbalanced data, variance components, and the large sample theory Prerequisites: STP 427, knowledge of matrix algebra

STP 530 Applied Regression Analysis. (3) F

Method of least squares, simple and multiple regression, polynomial regression, analysis of residuals, dummy variables, and modeling Prerequisite: STP 420 or equivalent.

STP 531 Applied Analysis of Variance. (3) S

Factorial designs, balanced and unbalanced data, fixed and random effects, randomized blocks, Latin squares, analysis of covariance, and multiple comparisons Prerequisite: STP 420 or equivalent

STP 532 Applied Nonparametric Statistics. (3) F

One sample tests, tests of 2 or more related or independent samples, measures of correlation, and tests of trend and dependence Prerequisite: STP 420 or equivalent

STP 533 Applied Multivariate Analysis. (3) S

Mode for discriminant analysis, principal components, factor analysis, cluster analysis, and canonical correlation Prerequisite: STP 420 or equivalent

STP 534 Applied Discrete Data Analysis. (3) N

Models for discrete and count data, measures of association, and log-linear and regression models for contingency tables Prerequisite: STP 420 or equivalent

STP 535 Applied Sampling Methodology. (3) S

Simple random, stratified, cluster sampling; variance estimation in complex surveys; nonparametric superpopulation approaches; nonresponse models; computational methods Prerequisite: STP 420 or equivalent

STP 591 Seminar. (1-3) N

Topics may be selected from the following.

- (a) Probability
- b) Statistics

STP 593 Applied Project. (1-12) N

STP 599 Thesis. (1-12) N

Department of Microbiology

Edward A. Birge

Chair

(LSE 210) 480/965-1457

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PROFESSORS

BURKE, HARRINGTON, JACOBS, MOSSMAN, SCHMIDT

ASSOCIATE PROFESSORS

BIRGE, HOFFMAN, MISRA, STOUT

ASSISTANT PROFESSORS

CHANG, GARCIA, PACHEL

CLINICAL FACULTY

DOWNS, LEFEVRE, MASS, ROBERTS

MICROBIOLOGY—B.S.

The B.S. degree in Microbiology consists of a minimum of 41 semester hours in microbiology and approved related fields. Students majoring in Microbiology are required to take the following courses:

BIO 181 General Biology SQ	.4
BIO 182 General Biology SG	.4
BIO 340 General Genetics	.4
Choose between the course combinations below	.8
BCH 361 Principles of Biochemistry	3
BCH 367 Elementary Biochemistry Laboratory	1
CHM 231 Elementary Organic Chemistry SQ	3
CHM 235 Elementary Organic Chemistry Laboratory SQ	(1)

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

<i>or</i>	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory (1)	
CHM 336 General Organic Chemistry Laboratory (1)	
MIC 206 Microbiology Laboratory SG ²	1
MIC 220 Biology of Microorganisms	3
MIC 302 Advanced Bacteriology Laboratory L ³	2
MIC 360 Bacterial Physiology	3
MIC 401 Research Paper L ³	1
Total	30

Both CHM 231 and 235 must be taken to secure SQ credit.

Both MIC 205 and 206 must be taken to secure SG credit

Both MIC 302 and 401 must be taken to secure L credit.

A minimum of 11 semester hours of upper division electives in microbiology or approved related fields must be taken

These elective hours must include two courses chosen from the following

MIC 421 Experimental Immunology	2
MIC 446 Techniques in Molecular Biology/Genetics Laboratory	2
MIC 470 Bacterial Diversity and Systematics	4
MIC 494 ST Clinical Bacteriology Laboratory	3
MIC 495 Undergraduate Research	2

In addition, students are required to fulfill the university numeracy requirements with MAT 210 (or 270, 290, or 294) as their MA course and BIO 420 (or any CSE course that meets the CS requirement). The required supplemental courses are as follows:

CHM 113 General Chemistry SQ	4
CHM 115 General Chemistry with Qualitative Analysis SQ	5
PHY 111 General Physics SQ*	3
PHY 112 General Physics SQ*	3
PHY 113 General Physics Laboratory SQ*	1
PHY 114 General Physics Laboratory SQ*	1
Total	17

* Both PHY 111 and 113 or PHY 112 and 114 must be taken to secure SQ credit.

CLINICAL LABORATORY SCIENCES—B.S.

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

A student majoring in Clinical Laboratory Sciences is required to take 40 hours of clinical laboratory sciences courses. Also required are the following courses:

BCH 361 Principles of Biochemistry	3
BIO 360 Basic Physiology	4
CHM 113 General Chemistry SQ	4
CHM 231 Elementary Organic Chemistry SQ ¹	3

MIC 205 Microbiology SG ²	3
or MIC 220 Biology of Microorganisms (3)	
MIC 206 Microbiology Laboratory SG ²	1
Total	18

Both CHM 231 and 235 must be taken to secure SQ credit

Both MIC 205 and 206 must be taken to secure SG credit.

Equivalent courses may be substituted upon approval of an advisor. Students must consult with the clinical laboratory sciences advisor 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 40 hours of clinical laboratory sciences courses. The university does not guarantee all students to be accepted into the professional study program due to space limitations at the clinical affiliates and restrictions of program accreditation. For more information on 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.

MINOR IN MICROBIOLOGY

The minor in Microbiology consists of a minimum of 24 semester hours. Required courses are as follows:

BIO 181 General Biology SQ	4
BIO 182 General Biology SG	4
BIO 340 General Genetics	4
MIC 206 Microbiology Laboratory SG ¹	1
MIC 220 Biology of Microorganisms	3
MIC 302 Advanced Bacteriology Laboratory L ³	2
MIC 360 Bacterial Physiology	3
Total	21

Both MIC 205 and 206 must be taken to secure SG credit

Both MIC 302 and 401 must be taken to secure L credit.

The remaining upper division microbiology courses are chosen in consultation with an advisor. Students majoring in Biology may not minor in Microbiology.

GRADUATE PROGRAMS

The faculty in the Department of Microbiology offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. See the *Graduate Catalog* for courses, faculty, and program information, or call 480/965 0743 for more information.

CLINICAL LABORATORY SCIENCES/ MEDICAL TECHNOLOGY (CLS)

CLS 100 Introduction to Clinical Laboratory Sciences. (1) F
Introduction to the field of clinical laboratory sciences. Required for Clinical Laboratory Sciences majors.

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

CLS 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 and assessment of procedure. 3 hours lecture, 9 hours lab

- CLS 320 Principles of Clinical Microbiology I.** (6) S
Theory and application of principles of clinical microbiology with emphasis on isolation and identification of medical yeast, fungi and bacteria. 3 hours lecture, 9 hours lab
- CLS 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. 2 hours lecture, 3 hours lab
- CLS 410 Principles of Clinical Chemistry II.** (2) SS
Continuation of CLS 310 with emphasis on principles of advanced clinical chemistry. 1 hour lecture, 3 hours lab
- CLS 411 Advanced Applications of Clinical Chemistry.** (4) F
Clinical application of theory techniques from CLS 310 and 410. Emphasis on operation of common laboratory instrumentation and clinical correlation. Minimum 180 hours practicum
- CLS 420 Principles of Microbiology II.** (2) SS
Disease mechanisms and identification of medically significant parasites, Mycobacteria, Actinomycetes, Chlamydia, Rickettsia, Mycoplasma, and viruses. 1 hour lecture, 3 hours lab
- CLS 421 Advanced Applications of Clinical Microbiology.** (4) S
Practical laboratory application of the principles of specimen collection, processing, detection, identification, and antimicrobial testing of medical yeast, fungi, and parasites. Minimum 180 hours practicum
- CLS 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. 2 hours lecture, 3 hours lab
- CLS 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 in body fluid analysis. Minimum 180 hours practicum
- CLS 440 Principles of Clinical Immunology/Immunohematology.** (4) F
Theoretical and practical application of clinical immunology and immunohematology. Emphasis on serological techniques that aid disease diagnosis and blood donor selection. 3 hours lecture, 3 hours lab
- CLS 441 Advanced Applications of Clinical Immunology Immunohematology.** (3) S
Practical laboratory application of the principles of serological methods used in diagnosing disease and selecting blood components for transfusion therapy. Minimum 135 hours practicum
- CLS 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 location of resources. *General Studies L (if credit also earned in CLS 460)*
- CLS 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. *General Studies L (if credit also earned in CLS 450)*

MICROBIOLOGY (MIC)

- MIC 205 Microbiology.** (3) F, S, SS
Basic course for persons without credit in BIO 181. Emphasis on general principles, role of microorganisms in health, ecology, and applied fields. May not be used for Microbiology major credit unless a diagnostic test is passed. Prerequisites: BIO 100 (or PLB 108) and CHM 101 or instructor approval. *General Studies SG (if credit also earned in MIC 206)*
- MIC 206 Microbiology Laboratory.** (1) F, S, SS
Principles and laboratory techniques used in identifying and handling microorganisms. 3 hours lab. Pre- or corequisite: MIC 205 or 220. *General Studies SG (if credit also earned in MIC 205)*
- MIC 220 Biology of Microorganisms.** (3) F, S
Basic course for persons with credit in BIO 181. Detailed study of microbial cells, their structure, genetics, physiology, and taxonomy. Corequisites: BIO 182, CHM 115
- MIC 302 Advanced Bacteriology Laboratory.** (2) F, S
Advanced laboratory techniques in bacterial growth, physiology, genetics, and microscopy. Required of Microbiology majors. 4 hours lab. Prerequisites: completion of L requirement and either A or B. A) MIC 206 and 220 or B) MIC 205 and 206 and instructor approval. *General Studies L (if credit also earned in MIC 401)*
- MIC 360 Bacterial Physiology.** (3) F, S
Mechanisms and control of cellular metabolism, structures and functions. Prerequisite: MIC 220. Pre- or corequisite: BCH 361 or instructor approval.
- MIC 380 Medical Parasitology.** (3) F
Parasitic diseases of humans including febrile events and clinical manifestations. Prerequisite: MIC 205 or 220
- MIC 381 Pathogenic Microbes.** (3) S
Host-microbe interactions in infectious disease with emphasis on pathogens, host defenses, and molecular mechanisms of microbial virulence. Prerequisite: MIC 360 or 6 hours of microbiology with instructor approval
- MIC 401 Research Paper.** (1) F, S, SS
A paper of 15 or more pages based on primary laboratory research in collaboration with a faculty member. Required of a Microbiology majors. Prerequisites: MIC 320, completion of L requirement. *General Studies L (if credit also earned in MIC 302)*
- MIC 420 Immunology: Molecular and Cellular Foundations.** (3) F
Molecular and cellular foundations of immunology. Antigen-antigen interactions, cellular response, cytokines, immunogenetics, immunoregulation, autoimmunity, psychoneuroimmunology research/medical perspectives. Prerequisites: CHM 231 (or 331 and MIC 205 or 220) or instructor approval
- MIC 421 Experimental Immunology.** (2) F, S
An introduction to the basic techniques, methods, and assays used in immunology. 6 hours lab. Prerequisites: CHM 231 and 331 and MIC 302 or instructor approval
- MIC 425 Advanced Immunology.** (3) S 2001
A survey of recent advances in immunology including lymphocyte membrane lymphokines/biochemistry, molecular genetics, theoretical immunology, immunoregulation, neuroimmunology and immunogenic diseases. Prerequisite: MIC 420 or instructor approval
- MIC 441 Bacterial Genetics.** (3) S
Survey of genetic exchange and regulatory processes in bacteria and the viruses. Bacteria and viruses as tools in genetic engineering. Prerequisites: BIO 340 and MIC 205 (or 222) or instructor approval
- MIC 442 Bacterial Genetics Laboratory.** (1) N
Techniques of mutagenesis, mapping and strand and genetic library construction. 4 hours lab. Prerequisites: MIC 206, 320. Pre- or corequisite: MIC 441
- MIC 445 Techniques in Molecular Biology Genetics.** (2) F, S
Molecular genetic principles, plasmid construction, purification and characterization, PCR, mutagenesis, hybridization and sequence analysis, protein quantitation, immunogenic detection and electrophoresis. Cross-listed as MBB 445. Credit is awarded for only MBB 445 or MIC 445. Prerequisites: BIO 340 and MIC 302 or instructor approval
- MIC 446 Techniques in Molecular Biology Genetics Lab.** (2) F, S
Molecular genetic techniques, plasmid construction, purification and characterization, PCR, mutagenesis, hybridization and sequence analysis, protein quantitation, immunogenic detection and electrophoresis. Cross-listed as MBB 446. Credit is awarded for only MBB 446 or MIC 446. Pre- or corequisite: MBB 445 or MIC 445
- MIC 470 Bacterial Diversity and Systematics.** (4) F
Biological classification and enrichment culture of the nonpathogenic bacteria. 2 hours lecture, 6 hours lab. Prerequisite: MIC 302
- MIC 485 General Virology.** (3) F
Fundamental nature of viruses, their replication, pathogenesis and ecology. Prerequisites: BIO 340 and CHM 331 or instructor approval
- MIC 486 General Virology Laboratory.** (2) N
Fundamentals of virus detection, isolation and assay, propagation of virus in mammalian cell culture; recombinant virus and vector construction. 6 hours lab. Prerequisite: MIC 302. Pre- or corequisite: MIC 485.

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements" page 83. For an explanation of additional mathematics courses offered but not listed in this catalog see "Classification of Courses," page 60.

MIC 494 Special Topics. 3 N(a) *Concise Bacteriology Laboratory***MIC 495 Undergraduate Research.** 1-6) F S SS

Supervised research in microbiology. May be repeated for credit. Lab Prerequisites: MIC 206, 220, 302; instructor approval

MIC 527 Neuroimmunology. 3 S 2003

Studying mind's influence on immunity and the immune system's influence on the mind; neuroimmunologic diseases and the neuroimmunologic circuitry involved. Seminar Prerequisite: MIC 420 or instructor approval

MIC 581 Molecular Mechanism of Pathogenesis. (3) N

Pathogenic mechanisms and host responses in viral and/or bacterial diseases Prerequisites: MIC 381 and 420 or instructor approval.

MIC 585 Molecular Virology. (3) N

Selected topics concerning molecular aspects of eukaryotic virus replication and pathogenesis Prerequisite: instructor approval

MIC 591 Seminar. 1 3 F S

Topics may be selected from the following

(a) Bacterial Ecology

(b) Current Research in Microbiology

(c) Enzymology

(d) Genetic Engineering

(e) Genetics

(f) Immunology

(g) Molecular Virology

(h) Neuroimmunology

Pathogenic Bacteriology

Department of Military Science

Army ROTC

Lt. Col. Samuel Hawes

Chair

(TCB 104) 480/965-3318

www.asu.edu/clas/military

PROFESSORS

DALGLEISH, HAWES, WALLER

ASSISTANT PROFESSORS

MASSEY, ROMESBURG, RUDOLPH

INSTRUCTORS

GRIFFIN, RINGENOLDUS

CLINICAL ASSOCIATE PROFESSOR

COX

PURPOSE

The Department of Military Science curriculum consists of the basic course (MIS 101, 102, 201, and 202) and the advanced course (MIS 301, 302, 401, and 402). The goal of this professional education curriculum is to prepare students with leadership potential to be commissioned as U.S. Army officers. Objectives include developing the following characteristics in students: leadership and managerial skills, the ability to think creatively, the ability to speak and write effectively, appreciation of the requirements for national security, and an understanding of the nature and functions of the U.S. Army. Upon successful completion of the advanced course and graduation, qualified students receive commissions in the Active Army (on a competitive basis), U.S. Army Reserve, or Army National Guard.

In addition to the military science curriculum, core courses in the field of national defense studies are both an

integral and parallel source of the department's program. Integrally, they provide MIS courses at all levels with topical intensity and highlight such professionally related areas as military technology; weapons procurement; national intelligence, secrecy, and counterintelligence; civil-military relations; security coalitions and regional defense communities; national, regional, and global levels of strategy; generalship skill in action; deterrence dynamics and structure; military doctrine; service branch livelihood; appropriations rivalry; and interservice cooperation, personnel recruitment, morale, training, advancement, and bureaucratic organization; military reform; threat and threat perception; military historical experience and analogy; media and biographical insights; the rationale and matrices of security analysis and research; and independently selectable topics.

The department also fields an independent but parallel set of 400-level courses in the areas of geostrategic, politico-strategic, and national defense policy and analysis available to students irrespective of Reserve Officers' Training Corps (ROTC) status, departmental major, or college affiliation for assigned credit toward General Studies, social science, and global awareness requirements for graduation. (See "Classification of Courses," page 60, for a description of course 499 Individualized Instruction.)

GENERAL QUALIFICATIONS

Basic Course. Any student who is enrolled in ASU (or approved by the professor of military science) can enter into military science basic classes. It is strongly recommended that the student be in good physical shape because some of the curriculum requires physical exertion.

Advanced Course. Any student who is enrolled in ASU (or approved by the professor of military science) may participate in military science advanced classes. However, to be fully enrolled in the advanced course and compete for and obtain a commission in the U.S. Army, students must meet the following requirements:

1. be a citizen of the United States (noncitizens may enroll but must obtain citizenship before commissioning);
2. be of sound physical condition and pass the U.S. Army physical fitness test;
3. meet the required professional military education requirements; and
4. be at least 17 years of age for entrance into the advanced course and be able to complete all commissioning requirements before age 27.

Only those students in the basic and advanced courses who meet the required standards according to military regulations are eligible to receive financial assistance through the U.S. Army Faculty of the Department of Military Science are available during normal office hours to answer questions or provide counseling.

The following are various options open to students who wish to obtain a commission in the U.S. Army. Contact the Department of Military Science personnel for more information.

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 12 semester hours

of credit for four semesters of study. Upon satisfying the requirements, they enter the advanced course, where they earn 12 additional semester hours for four semesters of study. Students are also required to attend a five week advanced summer camp at Fort Lewis, Washington, between their junior and senior years. All commissioned officers must meet certain Professional Military Education requirements by completing courses in English, math, and computer literacy. Selected majors such as nursing, engineering, and architecture, among others, may require an additional semester or two, or summer school, to complete all requirements for a degree and commission without excessive course overloads. Upon successful completion of the advanced course and requirements for a degree, students are commissioned as second lieutenants in the Active Duty Army, U.S. 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 reached academic junior status. This program is open to all students with the exception of three- and four-year Army ROTC scholarship winners (see "Scholarship Programs" on this page). Students seeking enrollment in the two-year program should make application during the spring semester of the calendar year in which they desire to enter the program. They must provide SAT/ACT scores and pass the Army physical fitness test. After successfully completing a paid five-week basic camp, students may enroll in the advanced course. (The camp is conducted during June and July at Fort Knox, Kentucky. Students who have previous military experience or who are currently members of the National Guard or Reserves may be admitted directly into the two-year program, provided they are academic juniors. 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. The following qualifications are required for admittance to the advanced course:

1. successful completion of the basic course for the students in the four-year ROTC program; for the students in the two-year program, selection for and completion of the six-week basic summer camp or prior military service,
2. score at least 850 on SAT or 19 on ACT;
3. passing the Army physical examination,
4. achieving and maintaining the minimum cumulative GPA required for graduation in the student's selected major, but no less than 2.00;
5. attainment of at least junior class standing, and
6. maintenance of full-time student status.

Pay and Allowances. Each advanced course student receives one-half the pay of a second lieutenant during 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. All students in the advanced course, regardless of scholarship status, are paid about \$1,500 tax free for each of these two years.

Simultaneous Membership Program. Under this program, ROTC students may simultaneously be members of the Army Reserves or the National Guard. The combination of advanced course allowance and pay for Army Reserve or National Guard participation provides more than \$1,250 for each semester's involvement.

Scholarship Programs. The Army ROTC offers scholarship programs for outstanding young men and women who are motivated toward a career as professional officers in the U.S. Army. These scholarships are awarded in varying amounts for tuition. In addition, the scholarship pays \$150.00 per month subsistence allowance and \$225.00 each semester for textbooks and supplies. A scholarship for four years is available to freshmen who enter the four-year program. Applications must be submitted in accordance with a schedule furnished by high school counselors. Selection is made on a nationwide basis. Scholarships are also 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 a review board on campus. 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 Active Army, Army National Guard, or Army Reserves. 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 students who desire to earn graduate or professional degrees. Special programs for graduate and professional studies are available to both active Army appointees and Reserve component appointees in the following areas: medicine, osteopathy, and clinical psychology.

MILITARY SCIENCE (MIS)

MIS 101 Introduction to the Military. (3) F

Overview of mission, organization, and structure of the Army and its role in national defense; discussion of current military issues. 3 hours lecture/conference, 2 hours lab.

MIS 102 Land Navigation, First Aid, and Survival. (3) S

Introduction to military maps and land navigation; first aid, and first-aid techniques; basic outdoor survival skills. 3 hours lecture/conference, 2 hours lab.

MIS 201 American Military History. (3) F

A study of the role of the military in American life during war and peace from colonial times to the present day. 3 hours lecture/conference, 2 hours lab.

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

MIS 202 Introduction to Leadership Dynamics. (3) S
Introduction to interpersonal dynamics involved in military team operations: theory and application of military leadership principles. 3 hours lecture-conference, 2 hours lab

MIS 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, 201, 202. Conducted at Fort Knox, Kentucky

MIS 301 Advanced Military Science I. (3) F
Theory and dynamics of the individual soldier and military units in offensive combat operations. 2 hours lecture-conferences, 1.5 hours of Leadership Practical Application. 1 2-day field exercise. 3 1-day field exercises. Prerequisites: MIS 101 and 102 and 201 and 202 or equivalents. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness)

MIS 302 Advanced Military Science II. (3) S
Theory and dynamics of military units in defensive combat operations. 2 hours lecture-conferences, 1.5 hours Leadership Practical Application. 1 3-day field exercise. 2 1-day field exercises. Prerequisites: MIS 101 and 102 and 201 and 202 or equivalents. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness)

MIS 303 ROTC Advanced Camp. (4) SS
Six-week training program emphasizing leadership development and advanced military skills, including tactics, land navigation, and physical training. Conducted at Fort Lewis, Washington. Prerequisites: MIS 301, 302

MIS 401 Advanced Military Science III. (3) F
The military legal system: preparation and conduct of military training; leadership development; ethics and professionalism of the military officer. 3 hours lecture-conferences, 2 hours Leadership Practical Application, 1 2-day field exercise, 3 1-day field exercises. Prerequisites: MIS 301, 302. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness).

MIS 402 Advanced Military Science IV. (3) S
Military correspondence, career planning and personal affairs in service; conduct of training; leadership development; ethics and professionalism of the military officer. 3 hours lecture, 2 hours Leadership Practical Application, 1 3-day field exercise, 2 1-day field exercises. Prerequisites: MIS 301, 302. Corequisite: EPE 105 Physical Education Activity (Army Master Fitness)

MIS 410 American Defense Policy I. (3) F
Evolution, organization, and execution of U.S. national security policy. *General Studies, SB.*

MIS 412 American Defense Policy II. (3) S
Contemporary problems and analytical issues in the formation and implementation of U.S. national security. Prerequisite: MIS 410. *General Studies, SB.*

MIS 414 Comparative Defense Policy Analysis. (3) F
Historical problems and analytical issues in the evolution, organization, application, and control of effective military establishments in various political systems. *General Studies, SB.*

MIS 416 Soviet/C.I.S. Foreign and Defense Policies. (3) S
Analysis of foreign and security policies of the Soviet Union/C.I.S. and of the successor states to the Warsaw Pact. *General Studies, SB.*

MIS 499 Individualized Instruction: National Defense Analysis. (1-3) N

Molecular and Cellular Biology

Bertram L. Jacobs
Director, Executive Committee
480/965-0743
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GRADUATE PROGRAMS

The interdisciplinary M.S. and Ph.D. degrees with a major in Molecular and Cellular Biology are administered by the Interdisciplinary Committee on Molecular and

Cellular Biology. The participating faculty are drawn primarily from four core departments (the Departments of Biology, Chemistry and Biochemistry, Microbiology, and Plant Biology), with additional faculty from the Departments of Anthropology and Physics and Astronomy.

For more information, contact the director or see the *Graduate Catalog*.

MOLECULAR AND CELLULAR BIOLOGY (MCB)

See the *Graduate Catalog* for the MCB courses.

Molecular Biosciences/Biotechnology

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Chair

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MOLECULAR BIOSCIENCES/ BIOTECHNOLOGY—B.S.

The interdepartmental B.S. degree in Molecular Biosciences/Biotechnology is designed to prepare students for productive careers in rapidly expanding areas within the life sciences, such as biotechnology, medicine, and biomedical research or any area of biology at the molecular and cellular level. Courses and faculty are drawn primarily from the Departments of Plant Biology and Microbiology, with additional participation by the Departments of Biology and Chemistry and Biochemistry.

General Program

The B.S. degree program consists of approximately 62 semester hours of course work in required courses plus two courses in mathematics specifically designed for this program. The required major courses (21 total semester hours) are as follows:

MBB 245 Cellular and Molecular Biology	3
MBB 343 Genetic Engineering and Society	4
MBB 484 Internship or MBB 499 Individualized Instruction (6)	6
MBB 490 Capstone: Issues in Biotechnology	4
MIC 206 Microbiology Laboratory SG	1
MIC 220 Biology of Microorganisms	3
Total	21

Choose two or more of the following courses (or combinations) for a total of eight to 16 semester hours:

BIO 340 General Genetics	4
BIO 494 ST. Cell Biotechnology	4
MBB 350 Applied Genetics	4
MBB 445 Techniques in Biotechnology	2
MBB 446 Techniques in Molecular Biology Genetics Lab ¹	2
MIC 420 Immunology: Molecular and Cellular Foundations	3

MIC 421 Experimental Immunology ²	2
Total	16

- ¹ MBB 446 is taken with 445.
- ² MIC 421 is taken with 420

Required supplemental courses in biology, chemistry, and physics (33 total semester hours) are as follows:

BCH 361 Principles of Biochemistry.....	3
BCH 367 Elementary Biochemistry Laboratory	1
BIO 181 General Biology SQ	4
BIO 182 General Biology SG	4
CHM 113 General Chemistry SQ	4
CHM 115 General Chemistry with Qualitative Analysis SQ	5
CHM 231 Elementary Organic Chemistry SQ ¹	3
CHM 235 Elementary Organic Chemistry Laboratory SQ ¹	1
PHY 111 General Physics SQ ²	3
PHY 112 General Physics SQ ³	3
PHY 113 General Physics Laboratory I SQ ²	1
PHY 114 General Physics Laboratory II SQ ²	1
Total	33

- ¹ Both CHM 231 and 235 must be taken to secure SQ credit
- ² Both PHY 111 and 113 must be taken to secure SQ credit
- ³ Both PHY 112 and 114 must be taken to secure SQ credit

Courses that satisfy university numeracy requirements are as follows (six total semester hours):

MAT 251 Calculus for Life Sciences MA.	3
MAT 351 Mathematical Methods for Genetic Analysis CS	3
Total	6

Additional courses are available in the life or physical sciences for elective credit.

MOLECULAR BIOSCIENCES BIOTECHNOLOGY (MBB)

MBB 245 Cellular and Molecular Biology. (3) F
Concepts that underlie relationships between cellular and subcellular structure and function and integration of major metabolic and genetic processes. Prerequisite BIO 181

MBB 343 Genetic Engineering and Society. (4) F
Introduction to genetic engineering with emphasis on applications (gene therapy, DNA fingerprinting, bioremediation, transgenic animals and plants) 3 hours lecture, 3 hours lab. Cross-listed as BIO 343. Credit is allowed for only BIO 343 or MBB 343 Prerequisite: BIO 181 or equivalent

MBB 350 Applied Genetics. (4) S
Introduction to molecular genetics with emphasis on application of genetics in solving biological questions and engineering organisms in biotechnology 2 hours lecture, 6 hours lab. Cross-listed as PLB 350 Credit is allowed for only MBB 350 or PLB 350. Prerequisite BIO 181 or equivalent

MBB 445 Techniques in Molecular Biology Genetics. (2) F, S
Molecular genetic processes: plasmid construction, purification, and characterization; PCR; mutagenesis, hybridization and sequence analysis; protein quantitation, immunologic detection, and electrophoresis. Cross-listed as MIC 445. Credit is allowed for only MBB 445 or MIC 445. Prerequisites: BIO 340 and M C 302 or instructor approval.

MBB 446 Techniques in Molecular Biology Genetics Lab. (2) F, S
Molecular genetic techniques: plasmid construction, purification and characterization; PCR; mutagenesis; hybridization and sequence analysis; protein quantitation; immunologic detection and electrophoresis. Cross-listed as M C 446. Credit is allowed for only MBB 446 or MIC 446. Pre- or corequisite: MBB 445 or M C 445

MBB 484 Internship. (3) N

MBB 490 Capstone: Issues in Biotechnology. (2) F, S
Integration of science and humanities within problem-solving exercises dealing with intellectual property ethics regulatory issues, business practices, and commercialization. Prerequisite: MBB major or instructor approval

MBB 499 Individualized Instruction. (3) N

Department of Philosophy

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REGENTS' PROFESSOR
MURPHY

PROFESSORS
COHEN, CREATH, FITCH, HUMPHREY,
MAIENSCHIN, WHITE

ASSOCIATE PROFESSORS
ARMENDT, BLACKSON, de MARNEFFE, GULESERIAN,
KOBES, MCGREGOR, REYNOLDS

ASSISTANT PROFESSORS
DEVLIN, MASON

PHILOSOPHY—B.A.

The major in Philosophy consists of 45 semester hours, 33 of which must be upper-division hours. In addition to the 45 semester hours, the mathematics proficiency requirement must be met by completing MAT 117 or higher. In exceptional cases, up to nine units may be in related fields as approved by the undergraduate advisor. Required courses are as follows:

PHI 300 Philosophical Argument and Exposition L	3
PHI 301 History of Ancient Philosophy HU, H	3
PHI 302 History of Modern Philosophy HU, H	3
PHI 305 Ethical Theory HU	3
or PHI 335 History of Ethics HU (3)	
PHI 312 Theory of Knowledge HU	3
or PHI 314 Philosophy of Science HU (3)	
PHI 316 Metaphysics HU	3
or PHI 317 Philosophy of Mind HU (3)	
PHI 333 Introduction to Symbolic Logic	3
Choose two courses below	6
PHI 401 Rationalism (3)	
PHI 402 Empiricism HU (3)	
PHI 403 Contemporary Analytic Philosophy HU (3)	
PHI 413 Advanced Symbolic Logic (3)	
PHI 420 Topics in Philosophy (3)	

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C and H) see "General Studies" page 87 For graduation requirements, see "University Graduation Requirements" page 83 For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60

PHI 494 Special Topics (3)

Total 27

Exceptions by special permission of the chair only PHI 420 may be taken more than once.

Students planning to do graduate work in philosophy should consult an advisor to develop an appropriate selection of courses at the 300 and 400 levels. A minimum grade of "C" is necessary for each course used to fulfill the major requirements. See "College Degree Requirements," page 332.

History and Philosophy of Science. The faculty in the Department of Philosophy offer courses bearing the HPS prefix. With the consent of the director of undergraduate studies, these courses may be taken to satisfy the requirements of the Philosophy major.

MINOR IN PHILOSOPHY

A minor in Philosophy consists of 18 semester hours, of which at least 12 must be in the upper division and approved by an advisor in the department. All courses must be passed with a minimum grade of "C."

CERTIFICATE IN HISTORY AND PHILOSOPHY OF SCIENCE

A certificate in history and philosophy of science consists of 18 semester hours, of which at least 12 must be in the upper division and approved by an advisor in the department. At least nine semester hours must be HPS, and three semester hours must be PHI 314 Philosophy of Science. All courses must be passed with a minimum grade of "C."

GRADUATE PROGRAM

The faculty in the Department of Philosophy offer a graduate program leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

HISTORY AND PHILOSOPHY OF SCIENCE (HPS)

HPS 311 Origins, Evolution, and Creation. (3 F) Examines scientific, mythic, and religious ideas relating to origins (particulary human). Place of antevolutionism and "scientific creationism" in American culture. Lecture/discussion. Cross-listed as B O 344 HUM 371 REL 383. Credit satisfied for only B O 344 or HPS 311 or HUM 371 or REL 383.

HPS 322 History of Science. (3 A) Development and application of scientific thinking from ancient times through the 17th century. *General Studies HU H*

HPS 323 History of Science. (3 N) Development and application of scientific thinking from the 18th century to the present. *General Studies HU H*.

HPS 325 History of Chinese Science. (3 N) Explores development of traditional Chinese science in the context of Chinese thought and society and in comparison with developments elsewhere. Lecture/discussion. Cross-listed as HS 309. Credit satisfied for only HIS 309 or HPS 325.

HPS 330 History of Biology: Conflicts and Controversies. (3 A) Focuses on the 19th and 20th centuries, considering biology as a discipline, evolution and problems fostered by development and celebration. Cross-listed as B O 316. Credit satisfied for only B O 316 or HPS 330. *General Studies H*.

HPS 331 History of Medicine. (3 A) Scientific study of the human body, changing theories of disease, evolution of practical operations on treatment, and the emerging institution of medical practice. Cross-listed as B O 318. Credit satisfied for only B O 318 or HPS 331. *General Studies H*.

HPS 332 The Darwinian Revolution. (3 S) Intellectual and cultural history of Darwinism and modern evolutionary theory and the impact on 19th and 20th century thought. Lecture/discussion. Cross-listed as BIO 346 HUM 372. Credit satisfied for only B O 346 or HPS 332 or HUM 372.

HPS 402 Technology, Society, and Human Values. (3 A) Values that motivate humankind to create technology. Areas of conflict and resolution of conflict between values and technology. Readings and discussions with visiting lecturers. Prerequisite: junior standing.

HPS 410 Professional Values in Science. (2 3) A Considers issues related to values in science such as collaboration, finances, legal issues, media, mentoring, ownership of ideas, scientific integrity. Discusses student projects. Cross-listed as BIO 416. Credit satisfied for only B O 416 or HPS 410. *General Studies L*.

PHILOSOPHY (PHI)

PHI 101 Introduction to Philosophy. (3) F S SS Explorations of issues that philosophers have traditionally considered, including morality, reality and knowledge. *General Studies HU*

PHI 103 Principles of Sound Reasoning. (3) F, S SS Facilitates validity and soundness of arguments. May include symbolic and elementary symbolic inductive logic and scientific method. Prerequisite: ENG 101. *General Studies L/HU*.

PHI 105 Introduction to Ethics. (3) A Philosophical examination of such questions as, How should we live? Is morality a social invention? Does anything matter? *General Studies HU*

PHI 300 Philosophical Argument and Exposition. (3 S) The development of techniques of philosophical argument and exposition. Frequent written exercises. Course content may vary with instructor. Prerequisites: major instructor approval. *General Studies L*

PHI 301 History of Ancient Philosophy. (3) F History of western philosophy from its beginnings through the Hellenistic period. *General Studies HU H*

PHI 302 History of Modern Philosophy. (3) S History of western philosophy from the Renaissance through Kant. *General Studies HU H*

PHI 304 Existentialism. (3) N Covers such topics as absurdity, authenticity, the meaning of life and death, responsibility, and subjectivity. May include readings in phenomenology. *General Studies HU*

PHI 305 Ethical Theory. (3) A Current theories about the nature of morality, metaethics, and about what is right and wrong, normative ethics. Prerequisite: PH 306 or 307 or instructor approval. *General Studies HU*

PHI 306 Applied Ethics. (3) F S SS Philosophical discussion of contemporary moral and political issues such as abortion, euthanasia, animal rights, affirmative action, and sexual rights. *General Studies HU*

PHI 307 Philosophy of Law. (3) A Nature and source of law and its relation to morality. Legal rights, legal enforcement of moral standards, liability and responsibility, punishment, judicial reasoning, justice, property and differences between theories of natural and positive law. *General Studies HU*

PHI 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, and objectivity and reactivity in art criticism. *General Studies HU*

PHI 309 Social and Political Philosophy. (3) A Alternative principles and methods relevant to problems of human association and conflict; justice and power, freedom and equality, and autonomy and order are discussed. Prerequisite: PH 305 or instructor approval. *General Studies HU*

PHI 310 Environmental Ethics. (3) A Examination of a full range of philosophical positions pertaining to our moral relationship to the natural world; anthropocentrism and dualism, biocentrism. *General Studies HU*

PHI 311 Philosophy in Literature. (3) A Selected works of literature introduce philosophical problems such as the nature of moral goodness and people's relationship to the world and other people. *General Studies HU*

PHI 312 Theory of Knowledge. (3) A

Nature sources and limits of human knowledge. Topics may include truth, a priori knowledge, empirical knowledge, perception, induction and skepticism. Prerequisite: 1 course from among PH 101, 103, 300, 301, 302, 333. *General Studies: HU.*

PHI 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. *General Studies: HU.*

PHI 315 Philosophy of Language. (3) A

Problems pertaining to the nature of language, including meaning, reference, truth, definition, analyticity, translatable synonymy, and contributions of contemporary linguistics. Prerequisite: PHI 103 or 300 or 333. *General Studies: HU.*

PHI 316 Metaphysics. (3) A

Problems pertaining to the nature of reality. Topics may include nature of person, minds, substance, universals, space, time, causation, and modality. Prerequisite: 1 course from among PH 101, 103, 300, 301, 333. *General Studies: HU.*

PHI 317 Philosophy of Mind. (3) A

Nature of consciousness. The common sense view of mind, behaviorism, materialism, dualism, functionalism, self-knowledge and knowledge of other minds. Prerequisite: 1 course from among PHI 101, 103, 300, 301, 302, 333. *General Studies: HU.*

PHI 318 Philosophy of Religion. (3) A

Classical arguments for the existence of God. The argument from evil. *Against the existence of God. Justification of religious belief. General Studies: HU.*

PHI 319 Philosophy of Computing. (3) N

Philosophical problems surrounding the theory of computation, Turing machines, mind and AI, neural network computing, ethics and epistemology of computing. Lecture, lab, discussion. *General Studies: CS/HU.*

PHI 325 Philosophy of Social Science. (3) N

Philosophical problems surrounding the social structure and methods of the social sciences. *General Studies: HU/SB.*

PHI 332 19th-Century Philosophy. (3) N

The history of 19th century philosophical thought, emphasizing either the German or the British traditions. Prerequisite: PHI 302. *General Studies: HU.*

PHI 333 Introduction to Symbolic Logic. (3) A

Symbolic techniques, emphasizing deduction and proofs in the propositional and first order predicate calculus.

PHI 335 History of Ethics. (3) A

Major works of moral philosophy, both ancient and modern, such as those by Plato, Aristotle, Hobbes, Hume, Kant, and Mill. Prerequisite: PH 101 or 306 or 307 or instructor approval. *General Studies: HU.*

PHI 401 Rationalism. (3) N

Examination of classical philosophical rationalism, as in Descartes, Spinoza, Malebranche, or Leibniz. Contemporary rationalist thought may also be examined. Prerequisites: PHI 302, 1 course from among PHI 305, 309, 312, 316, 317.

PHI 402 Empiricism. (3) N

Examination of representative of either classical or contemporary philosophical empiricism, e.g., Bacon, Hobbes, Locke, Butler, Berkeley, Reid, Hume, Mill, Carnap, and Ayer. Prerequisites: PH 302 and 305 (or 309 or 312 or 316 or 317). *General Studies: HU.*

PHI 403 Contemporary Analytic Philosophy. (3) A

Aims and methods of such 20th century philosophers as Frege, Moore, Russell, Wittgenstein, Carnap, Ayer, Wisdom, Frege, Austin, Strawson, Quine, and Sellars, with application to metaphysics and epistemology. Prerequisites: PH 302, 1 course from among PHI 312, 314, 315, 316, 317, 401, 402. *General Studies: HU.*

PHI 413 Advanced Symbolic Logic. (3) N

Properties of formal systems axiomatizing propositional and first order predicate logic. May also include modal logic, number theory, and limits of logicism. Prerequisite: PHI 333.

PHI 420 Topics in Philosophy. (3) A

Course descriptions on file in department. Topics may be selected from the following:

- (a) History of Philosophy
- (b) Metaphysics/Epistemology
- (c) Philosophy of Language/Logic
- (d) Philosophy of Science
- (e) Value Theory

Courses may be repeated for credit. Prerequisite: one relevant upper division PHI course or instructor approval.

PHI 494 Special Topics. (3) N**PHI 591 Seminar.** (1-3) A

Topics may be selected from the following:

- (a) Aesthetics
- (b) Epistemology
- (c) Ethics
- (d) History of Philosophy
- (e) Logic
- (f) Metaphysics
- (g) Philosophy of Language
- (h) Philosophy of Law
- (i) Philosophy of Science
- (j) Social and Political Philosophy

PHI 599 Thesis. (1-12) N

Department of Physics and Astronomy

Howard G. Voss
Chair

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REGENTS' PROFESSORS

SMITH, SPENCE

PROFESSORS

BAUER BENNETT, BURSTEIN COMFORT COWLEY,
DOAK, DOW, HESTENES, JACOB KAUFMANN,
LINDSAY MENENDEZ NIGAM, PAGE PONCE
REZ, RITCHIE SANKEY, SCHEINFELD SCHMIDT
STARRFIELD TILLERY TSEN, TSONG VENABLES VOSS,
WINDHORST, WYCKOFF

ASSOCIATE PROFESSORS

AANNESTAD ACHARYA, ALARCON BEN N,
CHAMBERLIN CULBERTSON, HERBOTS,
HESTER MARZKE

PHYSICS—B.S.

Students majoring in Physics may pursue one of two options.

Option I. Designed for students who wish to pursue physics at the bachelor or graduate degree levels, option I consists of the following required courses:

Choose between the course combinations below

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (3)

PHY 122 University Physics Laboratory I SQ (1)

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see University Graduation Requirements' page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 201 Mathematical Methods in Physics I 3

PHY 252 Physics III SQ 4

PHY 302 Mathematical Methods in Physics II 2

PHY 310 Classical Particles, Fields, and Matter I 3

PHY 311 Classical Particles, Fields, and Matter II 3

PHY 314 Quantum Physics I 3

PHY 315 Quantum Physics II 3

PHY 333 Electronic Circuits and Measurements 3

PHY 334 Advanced Laboratory I 2

PHY 412 Classical Particles, Fields, and Matter III 3

PHY 466 Quantum Physics III 3

PHY 441 Statistical and Thermal Physics I 3

PHY 465 Advanced Laboratory II 2

Total 45

Both PHY 121 and 122 must be taken to secure SQ credit.

Both PHY 131 and 132 must be taken to secure SQ credit

Supporting mathematics courses are as follows:

Choose between the course combinations below 12 or 10

MAT 270 Calculus with Analytic Geometry I MA (4)

MAT 271 Calculus with Analytic Geometry II MA (4)

MAT 272 Calculus with Analytic Geometry III MA (4)

or

MAT 290 Calculus I MA (5)

MAT 291 Calculus II (5)

Additional courses in physics and related fields are selected with the approval of the advisor. French, German, or Russian is strongly recommended to fulfill the foreign language requirement.

Option II. The interdisciplinary option II is designed for students who wish to obtain an undergraduate physics preparation for entry into other professions or graduate programs. A total of 53 hours are required, including the following courses

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (4)

PHY 122 University Physics Laboratory I SQ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 201 Mathematical Methods in Physics I 3

PHY 252 Physics III SQ 4

PHY 302 Mathematical Methods in Physics II 2

PHY 310 Classical Particles, Fields, and Matter I 3

PHY 311 Classical Particles, Fields, and Matter II 3

PHY 314 Quantum Physics I 3

PHY 315 Quantum Physics II 3

PHY 333 Electronic Circuits and Measurements 3

PHY 334 Advanced Laboratory I 2

PHY 412 Classical Particles, Fields, and Matter III 3

PHY 441 Statistical and Thermal Physics I 3

Total 40

Both PHY 121 and 122 must be taken to secure SQ credit

Both PHY 131 and 132 must be taken to secure SQ credit

The remaining courses are selected from physics and an area of concentration as approved by the student's advisor. Examples of possible areas of concentration are astronomy, astrophysics, materials science, physical chemistry, applied mathematics, geophysics, biological physics, philosophy of science, scientific journalism, and premedical and prelaw programs. French, German, or Russian is strongly recommended to fulfill the foreign language requirement.

Supporting mathematics courses are as follows:

Choose between the course combinations below 2 or 1)

MAT 270 Calculus with Analytic Geometry I MA (4)

MAT 271 Calculus with Analytic Geometry II MA (4)

MAT 272 Calculus with Analytic Geometry III MA (4)

or

MAT 290 Calculus I MA (5)

MAT 291 Calculus II (5)

Emphasis in Astronomy

The astronomy faculty offer 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 Introduction to Planetary and Stellar Astrophysics SQ 3

AST 322 Introduction to Galactic and Extragalactic Astrophysics SQ 3

AST 421 Astrophysics I 3

AST 422 Astrophysics II 3

AST 499 Individualized Instruction 3

Total 15

Both AST 113 and 321 must be taken to secure SQ credit

Both AST 114 and 322 must be taken to secure SQ credit

MINOR IN ASTRONOMY

The minor in Astronomy consists of a minimum of 24 semester hours. Required courses are as follows

AST 113 Astronomy Laboratory I SQ 1

AST 114 Astronomy Laboratory II SQ 1

AST 321 Introduction to Planetary and Stellar Astrophysics SQ 3

AST 322 Introduction to Galactic and Extragalactic Astrophysics SQ 3

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (4)

PHY 122 University Physics Laboratory I SQ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 252 Physics III SQ 4

Approved upper division electives 4

Total 24

Both AST 113 and 321 must be taken to secure SQ credit

Both AST 114 and 322 must be taken to secure SQ credit

Both PHY 121 and 122 must be taken to secure SQ credit

⁴ Both PHY 131 and 132 must be taken to secure SQ credit.

Electives are chosen with the approval of an astronomy advisor from upper division courses in physics and astronomy.

MINOR IN PHYSICS

The minor in Physics consists of a minimum of 29 semester hours. Required courses are as follows:

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (3)

PHY 122 University Physics Laboratory I SQ¹ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ² (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 201 Mathematical Methods in Physics I 3

PHY 252 Physics III SQ 4

PHY 302 Mathematical Methods in Physics II 2

PHY 310 Classical Particles, Fields, and Matter I 3

PHY 311 Classical Particles, Fields, and Matter II 3

PHY 314 Quantum Physics I 3

Approved electives 3

Total 29

Both PHY 121 and 122 must be taken to secure SQ credit

Both PHY 131 and 132 must be taken to secure SQ credit

Electives are chosen with the approval of the physics advisor from upper division courses in physics and astronomy.

SECONDARY EDUCATION—B.A.E.

Physics. Two options are available for physics as the major teaching field.

Option One The major teaching field consists of 42 semester hours. Required courses are as follows:

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (3)

PHY 122 University Physics Laboratory I SQ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ³ (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 201 Mathematical Methods in Physics I 3

PHY 252 Physics III SQ¹ 4

PHY 302 Mathematical Methods in Physics II 2

PHY 310 Classical Particles, Fields, and Matter I 3

PHY 311 Classical Particles, Fields, and Matter II 3

PHY 333 Electronic Circuits and Measurements 3

PHY 361 Introductory Modern Physics 3
or PHY 314 Quantum Physics I (3)

PHY 480 Methods of Teaching Physics 3
or PHY 484 Internship: Physics Teaching (1-4)

Approved electives 10

Total 42

PHY 111, 112, 113, and 114 or equivalents may be substituted for PHY 150, 151, and 252 on approval of the advisor.

Both PHY 121 and 122 must be taken to secure SQ credit

³ Both PHY 131 and 132 must be taken to secure SQ credit.

Electives are chosen in physics or other closely related fields, subject to the approval of the advisor

Option Two. Option two consists of 32 semester hours in physics and an additional 30 semester hours in chemistry (see "Minor in Chemistry," page 357) or mathematics (see "Minor in Mathematics," page 405). The physics portion of this program requires the following courses:

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ² (3)

PHY 122 University Physics Laboratory I SQ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

or

PHY 131 University Physics II: Electricity and Magnetism SQ³ (3)

PHY 132 University Physics Laboratory II SQ (1)

PHY 201 Mathematical Methods in Physics I 3

PHY 252 Physics III SQ 4

PHY 302 Mathematical Methods in Physics II 2

PHY 310 Classical Particles, Fields, and Matter I 3

PHY 311 Classical Particles, Fields, and Matter II 3

PHY 333 Electronic Circuits and Measurements 3

PHY 361 Introductory Modern Physics 3
or PHY 314 Quantum Physics I (3)

PHY 480 Methods of Teaching Physics⁵ 3
or PHY 484 Internship: Physics Teaching (1-4)

Total 32

PHY 111, 112, 113, and 114 or equivalents may be substituted for PHY 150, 151, and 252 on approval of the advisor.

Both PHY 121 and 122 must be taken to secure SQ credit

³ Both PHY 131 and 132 must be taken to secure SQ credit

⁴ Physics/Math option: MAT 274 plus MAT 342 may be substituted for PHY 201

Physics Chemistry: CHM 480 may be substituted for PHY 480

Minor Teaching Field. The minor teaching field consists of 24 semester hours. Required courses are as follows:

Choose between the course combinations below 4

PHY 150 Physics I SQ (4)

or

PHY 121 University Physics I: Mechanics SQ (3)

PHY 122 University Physics Laboratory I SQ¹ (1)

Choose between the course combinations below 4

PHY 151 Physics II SQ (4)

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see University Graduation Requirements, page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

AST 499 Individualized Instruction. (3) N
AST 598 Special Topics. 1-4 N
 a. Astronomy Data Taking and Data Reduction
 b. Cosmology and High Energy Astrophysics
 c. Extragalactic Astronomy
 d. Galactic Structure
 e. Interstellar Medium and Gaseous Astrophysics
 f. Stars and Planets and Stellar Evolution

PHYSICAL SCIENCES (PHS)
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. 3 hours lecture, 2 hours lab. *General Studies SQ*

PHS 208 Patterns in Nature. 4 F, S
 Ptolemy or related science course with computer training to develop critical thinking and technical skills for student-oriented science courses. PHS 208 or STE 208 Prerequisite: college level science course or instructor approval. *General Studies SQ*

PHS 484 Physical Science Internship. 3 F, S
 Teach middle school students scientific concepts discussed and demonstrated in PHS 208. Hands-on experience is the focus of the teaching.

PHYSICS (PHY)
PHY 101 Introduction to Physics. 4 F, S
 Emphasizes applications of physics to life in the modern world. Under standing of elementary algebra is presumed. 3 hours lecture, 1 hour lab. *General Studies SQ*

PHY 105 Basic Physics. 3 F
 One semester survey of the principles of physics. Prerequisite for students who intend to take PHY 121, 131 but have not taken high school physics course. 3 hours lecture, 1 hour lab. Prerequisites: algebra and trigonometry.

PHY 111 General Physics. 3 F, S, SS
 Noncalculus treatment of the principles of physics for nonphysics majors. Students who enroll in a required laboratory course must also register for PHY 113. 3 hours lecture, 1 hour lab. Prerequisite: *General Studies SQ* (if credit also earned in PHY 114)

PHY 113 General Physics Laboratory. 1 F, S, SS
 Elementary experiments in physics. 2 hours lab. Outcomes of preparation for experiments and report writing are required. May be taken concurrently with or subsequent to PHY 111. *General Studies SQ* (if credit also earned in PHY 111)

PHY 114 General Physics Laboratory. 1 F, S, SS
 See PHY 113. May be taken concurrently with or subsequent to PHY 112. *General Studies SQ* (if credit also earned in PHY 112)

PHY 121 University Physics: Mechanics. 3 F, S, SS
 Kinematics, Newton's laws, work, energy, momentum, conservation laws, dynamics of particles, sound, fluids. 3 hours lecture, 1 hour lab. Prerequisite: MAT 270 or 290 or instructor approval. *General Studies SQ* (if credit also earned in PHY 122)

PHY 122 University Physics Laboratory I. (1) F, S, SS
 Lab accompanying PHY 121. Prerequisite: PHY 121. *General Studies SQ* (if credit also earned in PHY 121)

PHY 131 University Physics II: Electricity and Magnetism. (3) F, S, SS
 Electrostatics and current electricity and magnetism in vacuum and materials and induction. AC circuits, displacement current, and electromagnetic waves. 3 hours lecture, 1 hour lab. Prerequisite: MAT 271 or 291 or instructor approval. PHY 121 Corequisite: MAT 272 or instructor approval. *General Studies SQ* (if credit also earned in PHY 131)

PHY 132 University Physics Laboratory II. 1 S, SS
 Lab accompanying PHY 131. Prerequisite: PHY 131. *General Studies SQ* (if credit also earned in PHY 131)

PHY 31 University Physics II: Electricity and Magnetism. (3) F, S
 History, properties of light; instruments study of solar system and nearby stars. For nonscience majors. Optimal for AST 113. *General Studies SQ* (if credit also earned in AST 113)

AST 112 Introduction to Stars, Galaxies, and Cosmology. 3 S
 Structure and evolution of stars, star clusters, galaxies, cosmology. For nonscience majors. Optimal for AST 114. *General Studies SQ* (if credit also earned in AST 114)

AST 113 Astronomy Laboratory I. 1 F
 Astronomical observations and experiments designed to help the student become familiar with the sky, telescopes, and astronomical measurements. 2.5 hours lab. Prerequisite: AST 111 or 321. Working knowledge of high school algebra and geometry. *General Studies SQ* (if credit also earned in AST 111 or 321)

AST 114 Astronomy Laboratory II. 1 S
 Similar to AST 113 but material chosen to supplement AST 112 and knowledge of high school algebra and geometry. *General Studies SQ* (if credit also earned in AST 112 or 322)

AST 321 Introduction to Planetary and Stellar Astrophysics. 3 F
 Physics, celestial mechanics, properties of planets, the sun and other stars, formation and evolution of stars and planetary systems. Prerequisite: MAT 270 or 290, PHY 150. *General Studies SQ* (if credit also earned in AST 113)

AST 322 Introduction to Galactic and Extragalactic Astrophysics. (3) S
 Evolution of stars, introduction to relativistic galaxies and interstellar structure and dynamics of galaxies, cosmology. Prerequisite: AST 321 or instructor approval. *General Studies SQ* (if credit also earned in AST 114)

AST 421 Astrophysics I. 3 F
 Selected astrophysics topics including stellar formation and high energy astrophysics, and cosmology. Prerequisite: AST 321. 322 PHY 311, 314

AST 422 Astrophysics II. 3 S
 Same range of astrophysics topics as AST 421 but different special topics are emphasized in a given year. Prerequisite: AST 321. 322 PHY 311, 314

GRADUATE PROGRAMS

The faculty in the Department of Physics and Astronomy offer programs leading to the degrees of Master of Natural Science, M.S., and Ph.D. See the *Graduate Catalog* for requirements.

ASTRONOMY (AST)

AST 111 Introduction to Solar Systems Astronomy. 3 F
 History, properties of light; instruments study of solar system and nearby stars. For nonscience majors. Optimal for AST 113. *General Studies SQ* (if credit also earned in AST 113)

AST 112 Introduction to Stars, Galaxies, and Cosmology. 3 S
 Structure and evolution of stars, star clusters, galaxies, cosmology. For nonscience majors. Optimal for AST 114. *General Studies SQ* (if credit also earned in AST 114)

AST 113 Astronomy Laboratory I. 1 F
 Astronomical observations and experiments designed to help the student become familiar with the sky, telescopes, and astronomical measurements. 2.5 hours lab. Prerequisite: AST 111 or 321. Working knowledge of high school algebra and geometry. *General Studies SQ* (if credit also earned in AST 111 or 321)

AST 114 Astronomy Laboratory II. 1 S
 Similar to AST 113 but material chosen to supplement AST 112 and knowledge of high school algebra and geometry. *General Studies SQ* (if credit also earned in AST 112 or 322)

AST 321 Introduction to Planetary and Stellar Astrophysics. 3 F
 Physics, celestial mechanics, properties of planets, the sun and other stars, formation and evolution of stars and planetary systems. Prerequisite: MAT 270 or 290, PHY 150. *General Studies SQ* (if credit also earned in AST 113)

AST 322 Introduction to Galactic and Extragalactic Astrophysics. (3) S
 Evolution of stars, introduction to relativistic galaxies and interstellar structure and dynamics of galaxies, cosmology. Prerequisite: AST 321 or instructor approval. *General Studies SQ* (if credit also earned in AST 114)

AST 421 Astrophysics I. 3 F
 Selected astrophysics topics including stellar formation and high energy astrophysics, and cosmology. Prerequisite: AST 321. 322 PHY 311, 314

AST 422 Astrophysics II. 3 S
 Same range of astrophysics topics as AST 421 but different special topics are emphasized in a given year. Prerequisite: AST 321. 322 PHY 311, 314

PHY 150 Physics I. 4 S

Introductory physics for majors. Kinematics, Newton's Laws, basic forces, energy, momentum, special relativity. 3 hours lecture, 3 hours lab. Prerequisite: MAT 270 or 290 or equivalent. *General Studies*: SQ.

PHY 151 Physics II. (4 F

Continuation of PHY 150. Electromagnetic fields, Ampere's and Faraday's Laws; Maxwell's equations; basic circuit elements. 3 hours lecture, 3 hours lab. Prerequisites: MAT 271 or 291 or equivalent. PHY 121, 122 (or PHY 150). *General Studies*: SQ.

PHY 190 Seminar: Physics as a Curriculum and a Profession. 1 F S

Seminar for new Physics majors. Instruction and information on curriculum, departmental functions, and professional preparation. Weekly meetings and excursions. Pass/fail grading.

PHY 201 Mathematical Methods in Physics I. 3 S

Differential equations, linear equations, vectors, matrices, Fourier series, and numerical methods. 2 hours lecture, 2 hours lab. Prerequisite: MAT 272 or equivalent. Corequisite: PHY 252.

PHY 241 University Physics III. 3 F, S

Thermodynamics, kinetic theory, physics of light and wave optics, relativity, photons, matter waves, atomic physics. 3 hours lecture, 1 hour recitation. Prerequisites: PHY 131, nonmajor.

PHY 252 Physics III. (4) S

Continuation of PHY 151. Wave physics, oscillations, harmonic systems, physics of optics, thermodynamics, kinetic theory. 3 hours lecture, 3 hours lab. Prerequisites: MAT 272 or equivalent, PHY 131 and 132 (or PHY 151 or equivalent). Corequisite: PHY 201. *General Studies*: SQ.

PHY 302 Mathematical Methods in Physics II. 2 F

Continuation of PHY 201. Vector calculus, complex variables, partial differential equations, special functions, numerical methods. 1 hour lecture, 3 hours lab. Prerequisite: PHY 201 or equivalent.

PHY 310 Classical Particles, Fields, and Matter I. 3 F

Particulate mechanics, conservation laws, particle motion in force fields, dynamics of two-body systems, reference frames, rigid body motion, relativity. Corequisites: PHY 302 and 314 or instructor approval.

PHY 311 Classical Particles, Fields, and Matter II. (3) S

Electrostatic and gravitational fields, Poisson and Laplace equations, dielectric materials, magnetostatics and materials, magnetostatics, Faraday's Law. Prerequisites: PHY 302, 310. Corequisite: PHY 315 or instructor approval.

PHY 314 Quantum Physics I. 3 F

Photons, models of the atom, wave properties of matter, introduction to wave mechanics, 1-dimensional systems in quantum mechanics. Prerequisites: PHY 201 and 252 or equivalents. Corequisites: PHY 302 and 310 or instructor approval.

PHY 315 Quantum Physics II. (3) S

General principles of quantum mechanics, 3-dimensional problems, approximation methods, spin, introduction to many-particle systems. Prerequisites: PHY 302, 310, 314. Corequisite: PHY 311 or instructor approval.

PHY 333 Electronic Circuits and Measurements. 3 F S

Basic principles of electronic circuit analysis and measurement techniques using modern instrumentation and computer-aided analysis of data. 1 hour lecture, 3 hours lab. Equivalent effort outside of the lab is required. Corequisite: PHY 201 or instructor approval.

PHY 334 Advanced Laboratory I. 2 S

Selected experiments from contemporary physics. Emphasis on modern instrumentation, computer-assisted acquisition and analysis of data, and report writing. Lecture/lab. Prerequisites: PHY 310, 314, 333.

PHY 361 Introductory Modern Physics. (3) F S

Special relativity and introductory quantum theory with applications drawn from atomic, nuclear, and solid-state physics. 3 hours lecture, 1 hour recitation. Prerequisite: PHY 131.

PHY 412 Classical Particles, Fields, and Matter III. (3) F

Electromagnetic fields of moving charges, Maxwell's equations, harmonic phenomena, oscillations, waves, electromagnetic radiation, covariant electromagnetism, introduction to general relativity. Prerequisites: PHY 311, 333. Corequisite: PHY 416 or instructor approval.

PHY 416 Quantum Physics III. 3 F

Introduction to the quantum theory of atoms, molecules, solids, and nuclei. Dirac's equation. Prerequisites: PHY 311, 315. Corequisite: PHY 412 or instructor approval.

PHY 420 Research Paper. (1) F S

Scientific report writing. Composes a paper based on library or laboratory research or both. Taken in conjunction with other courses as approved. Conference. Prerequisite: instructor approval. *General Studies*: L.

PHY 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. Prerequisite: PHY 311, 315.

PHY 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, reversible processes and fluctuations. Prerequisite: PHY 441.

PHY 452 Physical Optics. (3) F

Principles of reflection, refraction, diffraction. Additional topics from contemporary optics may include Fourier transform spectroscopy, nonlinear systems theory, holography. 2 hours lecture, 2 hours lab. Prerequisites: PHY 302, 311, 315. Corequisite: PHY 412.

PHY 462 Nuclear and Particle Physics. (3) S

Static properties of nuclei, natural and induced radioactivity, nuclear reactions, nuclear models and energy levels, mesons and hyperons and interaction of photons and electrons with matter. Prerequisites: PHY 311, 315.

PHY 465 Advanced Laboratory II. (2) F S

Continuation of PHY 334. Students are encouraged to substitute laboratory research project in consultation with faculty sponsor. Prerequisite: PHY 334.

PHY 466 Advanced Laboratory III. 1 3 F S

Continuation of PHY 465. Prerequisite: PHY 465.

PHY 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: instructor approval.

PHY 481 Solid State Physics. (3) S

Structure, elastic properties, and dynamics of crystals, electron motions, crystals under applied fields. Prerequisites: PHY 311, 315.

PHY 484 Internship: Physics Teaching. 1-4) F S, SS

Preparation for high school physics teaching. Student works closely with a faculty member in the elementary physics program. May be repeated for a total of 6 semester hours. Prerequisite: instructor approval.

PHY 495 Project Research. 1 3 F S

Supervised project in physics or astrophysics. May be repeated for credit. Prerequisite: instructor approval.

PHY 498 Pro-Seminar. (1 7) N**PHY 501 Methods of Theoretical Physics.** (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.

PHY 502 Methods of Theoretical Physics. (3) F S

Continuation of PHY 501. Prerequisite: PHY 501.

PHY 521 Classical Mechanics. (3) F

Variaion principles, Lagrange's and Hamilton's equations, rigid body motion, canonical transformations, Hamilton-Jacobi theory.

PHY 523 Relativity. 3 N

Special and general theories of relativity. Prerequisite: PHY 532 or instructor approval.

PHY 531 Advanced Electricity and Magnetism. (3) F

Electrostatics and magnetostatics; potential theory and theory of conduction, dielectrics, Maxwell's equations, the wave equation, plane electromagnetic waves, cavities, and waveguides.

NOTE: For the *General Studies* requirement, courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses," page 60.

PHY 532 Electrodynamics. (3) S

Special theory of relativity covariant formulation of electromagnetism interactions inhomogeneous wave equations, Lienard-Wiechert potentials, and radiation fields; interactions of charged particles and electromagnetic waves, scattering, dispersions. Prerequisites: PHY 412 and 531 or instructor approval

PHY 541 Statistical Physics. (3) F

Probability theory and principles of statistical inference; evaluation of experimental data foundations of statistical mechanics; general laws of thermodynamics from microscopic theories; calculation of specific properties of bulk matter

PHY 551 X-ray and Electron Diffraction. (3) S

Fresnel and Fraunhofer diffraction integrals formulation of 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 noncrystalline specimens. Prerequisite: PHY 481 or instructor approval

PHY 561 Nuclear Physics. (3) F, S

Two nucleon interaction Cabosh Gordon coefficients, internuclear forces, meson theory and high energy scattering nuclear binding energy nuclear modes transition probabilities nuclear reactions, and beta decay. Prerequisite: PHY 576 or instructor approval

PHY 562 Nuclear Physics. (3) F, S

Continuation of PHY 561. Prerequisite: PHY 561 or instructor approval

PHY 568 Elementary Particle Physics. (3) N

Classification of particles, phenomenology of strong electromagnetic and weak interactions cross sections, and decay rates, isotopic spin and higher symmetries; structure of reaction amplitudes Prerequisite: PHY 577

PHY 569 Elementary Particle Theory. (3) N

Continuation of PHY 568 Prerequisite: PHY 568

PHY 576 Quantum Theory. (3) F, S

Abstract approach to quantum mechanics in Hilbert space; observables and the 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 Prerequisite: PHY 521

PHY 577 Quantum Theory. (3) F, S

Continuation of PHY 576 Prerequisite: PHY 576

PHY 578 Relativistic Quantum Theory. (3) F, S

Relativistic 1-particle equations Klein Gordon equation Dirac equation, 2d quantization theory of scattering, S matrix Feynman diagrams quantum electrodynamics and renormalization procedures Prerequisite: PHY 577.

PHY 579 Relativistic Quantum Theory. (3) F, S

Continuation of PHY 578 Prerequisite: PHY 578

PHY 581 Solid-State Physics. (3) F

Quantum theory of solids, including phonons, lattice specific heats band structure modes, Fermi surfaces thermal expansion plasmons electron-phonon interactions and scattering by lattice defects Prerequisite: PHY 576

PHY 582 Solid-State Physics. (3) S

Elements of transport theory, thermal conduction electron conduction in metals mobility in semiconductors, Hall effect magnetoresistance and selected topics of current research. Prerequisite: PHY 581.

PHY 587 Quantum Optics. (3) F, S

Quantization of the electromagnetic field. Quantum theory of coherence, photon counting, photon states lasers, density operators, and atomic Raman scattering Prerequisite: PHY 576

PHY 588 Quantum Optics. (3) F, S

Continuation of PHY 587 Prerequisite: PHY 587.

PHY 592 Research. (1-12) N**PHY 598 Special Topics.** (1-4) F, S

(a) Quantum Mechanics (3) S

(b) Quantum Physics (3) S

PHY 599 Thesis. (1-12) N

Department of Plant Biology

J. Kenneth Hooper

Chair

(LS E218) 480/965-3414

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PROFESSORS

BACKHAUS, HOOBER, KLOPATEK, NASH, PINKAVA,
SOMMERFELD, TRELEASE, VERMAAS

ASSOCIATE PROFESSORS

BRIGGS CLARK, DAY, FRASCH MARTIN, PIGG
RAMAKRISHNA, ROBERSON STROMBERG, STUTZ,
SZAREK, TOWILL, WEBBER

ASSISTANT PROFESSOR

RHOADS

ACADEMIC PROFESSIONALS

BINGHAM, LANDRUM, LoBRUTTO, SHARP

RESEARCH PROFESSOR

WINICOV

PLANT BIOLOGY—B.S.

The Department of Plant Biology provides four curricular options to meet the needs of students whose interests are in rapidly expanding areas within the life sciences. Students may choose the general program option which allows the opportunity to develop strength in one area or discipline. Others may choose to design a more specific, but interdisciplinary program in one of the following three optional concentrations: environmental science and ecology, plant biochemistry and molecular biology, and urban horticulture

Each concentration promotes interaction between diverse groups and captures the growing interdisciplinary nature of scientific investigations. When one of these options is chosen, the title will appear on transcripts and other university documents.

The four curricular options prepare students for careers in technical, industrial, and educational fields as well as professional degree programs in medicine or research and post graduate education in the life sciences.

The Department of Plant Biology, in cooperation with the Department of Microbiology, also administers the newly developed B.S. degree program in Molecular Biosciences/Biotechnology. This major is for students interested in molecular and cellular biology and its application to biotechnology. For more information about this area of study, see "Molecular Biosciences/Biotechnology," page 414

General Program

The B.S. degree in Plant Biology consists of a minimum of 38 semester hours in plant biology and approved related fields.

BIO 181	General Biology SQ	4
BIO 182	General Biology SG	4
BIO 320	Fundamentals of Ecology	3
	or BIO 340 General Genetics (4)	

BIO 353 Cell Biology ..	3
PLB 306 Plant Anatomy ..	4
PLB 308 Plant Physiology ..	4
PLB 484 Internship ..	3
or PLB 499 Individualized Instruction	3
Total ..	25 26

Additional life or physical science elective courses, totaling from 11 to 16 semester hours, are also required.

Required supplemental courses in chemistry are as follows:

CHM 113 General Chemistry SQ ..	4
CHM 115 General Chemistry with Qualitative Analysis SQ ..	5
Choose between the organic chemistry course combinations below ..	4 or 8
CHM 231 Elementary Organic Chemistry SQ* (3)	
CHM 235 Elementary Organic Chemistry Laboratory SQ* 1	
<i>or</i>	
CHM 331 General Organic Chemistry (3)	
CHM 332 General Organic Chemistry (3)	
CHM 335 General Organic Chemistry Laboratory 1	
CHM 336 General Organic Chemistry Laboratory (1)	
Total ..	13 or 17

* Both CHM 231 and 235 must be taken to secure SQ credit. Additional life or physical science elective courses, totaling from 11 to 16 semester hours, are also required.

Courses meeting the university numeracy requirement are as follows:

BIO 415 Biometry CS ..	4
or PLB 430 Statistical Analyses in Environmental Science (3)	
or PLB 432 Computer Applications in Biology CS (3)	
MAT 210 Brief Calculus MA ..	3

Special Concentration Programs

Three special concentration programs are optional. Students who wish to pursue the general program in Plant Biology are not obligated to choose one of these specific programs. Each special concentration program is expected to be interdisciplinary and contain course work outside both the department and the College of Liberal Arts and Sciences. Each concentration includes hands on technical training.

Environmental Science and Ecology. The B.S. degree in Plant Biology concentrating in environmental science and ecology consists of a minimum of 44 semester hours in plant biology and approved related fields.

The required major courses are as follows:

BIO 320 Fundamentals of Ecology ..	3
Choose between the geology course combinations below ..	4
GLG 101 Introduction to Geology Physical SQ, G ¹ (3)	
GLG 103 Introduction to Geology I Laboratory SQ 1	
<i>or</i>	
GLG 110 Environmental Geology SG, G ⁻ (3)	
GLG 111 Environmental Geology Laboratory SG 1	
GLG 362 Geomorphology ..	3
or GLG 470 Hydrogeology (3)	
PLB 310 The Flora of Arizona ..	4

PLB 322 Environmental Science Major ..	3
PLB 420 Plant Ecology Organisms and Populations ..	3
or PLB 421 Plant Ecology: Communities and Ecosystems (3)	
PLB 484 Internship ..	3
or PLB 499 Individualized Instruction (3)	
Total ..	23

¹ Both GLG 101 and 103 must be taken to secure SQ credit.

² Both GLG 110 and 111 must be taken to secure SG credit.

Required supplemental courses in biology and chemistry are as follows.

BIO 181 General Biology SQ ..	4
BIO 182 General Biology SG ..	4
CHM 113 General Chemistry SQ ..	4
CHM 115 General Chemistry with Qualitative Analysis SQ ..	5
CHM 231 Elementary Organic Chemistry SQ* ..	3
CHM 235 Elementary Organic Chemistry Laboratory SQ* ..	1
Total ..	21

* Both CHM 231 and 235 must be taken to secure SQ credit. Additional life or physical science elective courses, totaling 16 semester hours, are also required.

Courses meeting the university numeracy requirement are as follows:

MAT 210 Brief Calculus MA ..	3
PLB 430 Statistical Analyses in Environmental Science ..	3
or PLB 432 Computer Applications in Biology CS (3)	

Plant Biochemistry and Molecular Biology. The B.S.

degree in Plant Biology concentrating in biochemistry and molecular biology consists of 60 semester hours.

The required major courses are as follows:

BIO 353 Cell Biology ..	3
PLB 340 Plant Cell Physiology ..	4
PLB 350 Applied Genetics ..	4
PLB 444 Plant Growth and Development ..	3
PLB 484 Internship ..	3
or PLB 499 Individualized Instruction (3)	
Total ..	17

Additional life or physical science elective courses, totaling from 11 to 14 hours, are also required.

Required supplemental courses in biology, chemistry, and physics are as follows:

BIO 181 General Biology SQ ..	4
BIO 182 General Biology SG ..	4
CHM 113 General Chemistry SQ ..	4
CHM 115 General Chemistry with Qualitative Analysis SQ ..	5
CHM 231 Elementary Organic Chemistry SQ* ..	3
CHM 235 Elementary Organic Chemistry Laboratory SQ* ..	1
Choose between the course combinations below ..	4 or 8
BCH 361 Principles of Biochemistry (3)	
BCH 367 Elementary Biochemistry Laboratory (1)	
<i>or</i>	
BCH 461 General Biochemistry (3)	
BCH 462 General Biochemistry (3)	
BCH 467 General Biochemistry Laboratory L 3	
PHY 121 University Physics I: Mechanics SQ ..	3

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses," page 60.

PHY 122 University Physics Laboratory I <i>SQ</i>	1
Total	29 or 33

* Both CHM 231 and 235 must be taken to secure *SQ* credit

Courses meeting the university numeracy requirement are as follows:

BIO 406 Computer Applications in Biology <i>CS</i>	3
or BIO 415 Biometry <i>CS</i> (4)	
MAT 251 Calculus for Life Sciences <i>MA</i>	3

Urban Horticulture. The B.S. degree in Plant Biology concentrating in urban horticulture consists of a minimum of 46 semester hours in plant biology and approved related fields

BIO 320 Fundamentals of Ecology	3
or PLB 306 Plant Anatomy (4)	
or PLB 308 Plant Physiology (4)	
PLB 260 Plants in Cities Introduction to Urban Horticulture <i>SG</i>	4
PLB 362 Landscape Plants I	3
PLB 364 Urban Forestry	3
PLB 366 Intiorscape	3
or PLB 372 Turf Management (3)	
or PLB 472 Greenhouse/Nursery Management (3)	
PLB 370 Environmental Landscape Management	3
PLB 414 Plant Pathology <i>L</i>	3
PLB 484 Internship	3
PLB 498 PS Urban Horticulture	1
Total	26–27

Required supplemental courses in biology, chemistry, and soils are as follows:

BIO 181 General Biology <i>SQ</i>	4
BIO 182 General Biology <i>SG</i>	4
CHM 101 Introductory Chemistry <i>SQ</i>	4
CHM 231 Elementary Organic Chemistry <i>SQ</i> *	3
CHM 235 Elementary Organic Chemistry Laboratory <i>SQ</i> *	1
Choose between the course combinations below	4
ERS 130 Introduction to Environmental Science <i>SQ</i> (4)	
or	
ERS 225 Soils (3)	
ERS 226 Soils Laboratory (1)	
Total	20

* Both CHM 231 and 235 must be taken to secure *SQ* credit. Additional elective courses from other disciplines, totaling seven to eight semester hours are also required. A total of 54 semester hours are required for this curricular option

Courses meeting the university numeracy requirement are as follows:

BIO 415 Biometry <i>CS</i>	4
or PLB 430 Statistical Analyses in Environmental Science (3)	
or PLB 432 Computer Applications in Biology <i>CS</i> (3)	
MAT 210 Brief Calculus <i>MA</i>	3
Total	6–7

PLANT BIOLOGY MINOR

The minor consists of a minimum of 24 semester hours. Required courses are as follows:

BIO 181 General Biology <i>SQ</i>	4
BIO 182 General Biology <i>SG</i>	4
PLB 306 Plant Anatomy	4
or PLB 308 Plant Physiology (4)	
or PLB 310 The Flora of Arizona (4)	
Total	12

The remaining 12 hours are selected by the student through consultation with an academic advisor. Eight of these 12 hours must be in upper division courses in the life sciences or other advisor approved areas.

The minor can be designed after one of the four curricular options offered by the department. Courses not available for credit for majors in the life sciences cannot be used for the minor. This minor is not available to students in the life sciences.

GRADUATE PROGRAMS

The faculty in the Department of Plant Biology offer programs leading to the degrees of M.S. and Ph.D. The faculty also participate in programs leading to the Master of Natural Science degree when one of the concentrations is plant biology. The department participates in the interdisciplinary program for the M.S. and Ph.D. degrees in Molecular and Cellular Biology. Other select faculty collaborate in the interdisciplinary concentration in ecology

PLANT BIOLOGY (PLB)

PLB 108 Concepts in Plant Biology. (4) F, S, SS
Introduction to concepts of plant biology that are of human relevance using commercially important edible and medicinal plants as examples. Not for majors in the biological sciences. 3 hours lecture, 3 hours lab. *General Studies: SQ*.

PLB 300 Comparative Plant Diversity. (4) F
Survey of major plant groups and other photosynthetic organisms. Emphasis on comparative data analysis, evolutionary inference, and phylogenetic methods. 3 hours lecture, 3 hours lab. Prerequisite: BIO 182 or equivalent. *General Studies: L/SG*

PLB 302 Plants and Civilization. (3) F
Plants and plant products used by people throughout the world. Cultivation, processing, and uses in modern life (beverages, fibers, foods, medicinals, and perfumes). Prerequisite: BIO 182 or equivalent.

PLB 304 Biology of Algae and Fungi. (3) S
Ecology, economics, and evolutionary diversity of the algae and fungi. Traditional and modern biotechnology uses. 2 hours lecture, 3 hours lab. Prerequisite: BIO 182 or equivalent.

PLB 305 Desert Annuals and Cacti. (3) F
Adaptive biology of select plants. Analysis of diverse traits permitting survival in deserts: reproduction, structure, and physiology. Prerequisite: BIO 182 or equivalent.

PLB 306 Plant Anatomy. (4) F
Development and mature structure of tissues of vascular plants: patterns and modifications of the leaf, stem, root, and the flower. 3 hours lecture, 3 hours lab. Prerequisite: BIO 182 or equivalent.

PLB 308 Plant Physiology. (4) S
Concepts of plant function: carbon metabolism, energy acquisition, regulation of growth and development, stress responses, and water and nutrient uptake. Prerequisites: BIO 182 (or equivalent), CHM 101 (or 115 or 231).



A sample of the flora that graces the ASU campus.

Tim Trumble photo

PLB 310 The Flora of Arizona. (4) S

Principles of taxonomy; identification of Arizona plants. 2 hours lecture, 6 hours lab. Prerequisite: BIO 182 or equivalent or instructor approval.

PLB 400 Lichenology. (3) S 2001

Chemistry, ecology, physiology, and taxonomy of lichens. 2 hours lecture, 3 hours lab. Prerequisite: BIO 182 or equivalent.

PLB 402 Mycology. (3) S

Fungal morphology and systematics with an introduction to fungal cell biology, ecology, economic significance, and growth and development. 2 hours lecture, 3 hours lab. Prerequisite: BIO 182 or MIC 206 or equivalent.

PLB 404 Phycology. (4) S

The algae (both fresh water and marine forms), emphasizing field collection and identification of local representatives. Morphological, ecological, and economic aspects of the algae. 3 hours lecture, 3 hours lab. Prerequisite: BIO 182 or instructor approval.

PLB 407 Plant Fossils and Evolution. (4) S 2001

A broad survey of plant life of the past, including the structure of plant fossils, their geologic ranges, geographic distribution, and paleo-environment. 3 hours lecture, 3 hours lab or field trip. Prerequisite: BIO 182 or equivalent.

PLB 410 Angiosperm Taxonomy. (3) S

Principles underlying angiosperm phylogeny. 2 hours lecture, 3 hours lab. Prerequisite: PLB 310 or instructor approval.

PLB 411 Trees and Shrubs of Arizona. (3) F

Identification of woody plants from desert, chaparral, and forest habitats in Arizona. 1 hour lecture, 3 hours lab, field trips. Prerequisite: BIO 182 or equivalent or instructor approval.

PLB 412 Cytogenetics. (3) F

Chromosomal basis of inheritance. Cross-listed as BIO 441. Credit is allowed for only BIO 441 or PLB 412. Prerequisite: BIO 340.

PLB 413 Cytogenetics Laboratory. (2) F

Microscopic analysis of meiosis, mitosis, and aberrant cell division. 6 hours lab. Cross-listed as BIO 442. Credit is allowed for only BIO 442 or PLB 413. Pre- or corequisite: BIO 441 or PLB 412.

PLB 414 Plant Pathology. (3) S

Identification and control of biotic and abiotic factors that cause common disease problems to plants. Prerequisite: BIO 182. *General Studies:* L.

PLB 416 Medical Botany. (4) SS

Exploration of plants affecting human health: modern- and folk-usage medicinal plants. Quality control, clinical evidence, plant chemistry, and ethnopharmacology. 3 hours lecture, 3 hours lab. Prerequisite: BIO 182 or equivalent or instructor approval.

PLB 484 Internship. (3) N

PLB 498 Pro-Seminar. (3) F, S

(a) Plant Biology Internship

Teach fifth-grade children a simplified version of PLB 108 by planting gardens and conducting indoor plant experiments.

PLB 499 Individualized Instruction. (3) N

PLB 502 Perspectives in Plant Biology. (3) F

Introduce major areas of research within the department with the goal of broadening knowledge to enabling multidisciplinary research and communication. Prerequisite: instructor approval.

PLB 591 Seminar. (1) F, S

ENVIRONMENTAL SCIENCE AND ECOLOGY

PLB 320 Environmental Science (Nonmajor). (3) F

Environmental and biological concepts used to understand ecological systems with specific references to problems caused by humans. Cannot be used for major credit in the biological sciences. Cross-listed as BIO 319. Credit is allowed for only BIO 319 or PLB 320. *General Studies:* G.

PLB 322 Environmental Science (Major). (3) F

The nature of environmental and biological interaction: historical and modern examples. Field and laboratory techniques for quantification; supporting principles. 2 hours lecture, 3 hours lab. Prerequisites: BIO 182 or GLG 101 and 103 or GLG 110 and 111.

PLB 420 Plant Ecology: Organisms and Populations. (3) S 2001

Factors and controls on the physiological ecology and organization of plants and plant populations using empirical and theoretical approaches. 2 hours lecture, 3 hours lab. Prerequisite: BIO 320 or PLB 322 or equivalent.

PLB 421 Plant Ecology: Communities and Ecosystems. (3) S

2002

Plant community organization, field sampling techniques and the structure and function of terrestrial ecosystems emphasizing the role of vegetation. 2 hours lecture, 3 hours lab. Prerequisite: BIO 320 or PLB 322 or equivalent.

PLB 422 Plant Geography. (3) N

Plant communities of the world and their interpretation, emphasizing North American plant associations. Cross-listed as GPH 422. Credit is allowed for only GPH 422 or PLB 422. Prerequisite: BIO 182 or GPH 111.

PLB 430 Statistical Analyses in Environmental Science. (3) S

2002

ANOVAS, 1-way classification of factorial and partially hierarchic designs; introductory multivariate statistics. Prerequisite: MAT 210 or equivalent.

PLB 432 Computer Applications in Biology. (3) F

Computer analysis techniques in biology emphasizing data entry, management and analysis, and graphic portrayal. Employs mainframe and microcomputers. 2 hours lecture, 3 hours lab. Cross-listed as BIO 406. Credit is allowed for only BIO 406 or PLB 432. Prerequisites: BIO 182 and MAT 117 (or 210) or instructor approval. *General Studies:* CS.

PLB 434 Landscape Ecological Analysis and Modeling. (3) S 2001

Technical methods of landscape ecological analyses. Includes mathematical and statistical examination and modeling of landscape ecological patterns and processes. Prerequisites: BIO 320 and 406 or PLB 432 (or equivalent).

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

PLB 520 Plant Structural Adaptation. (2-3) N

Adaptive traits of leaf size unique growth form on energy transfer efficiency, stomata architecture and water use efficiency; applications of stable isotopes Prerequisite: BIO 320 or PLB 306 (or 308) or equivalent

PLB 522 Plant Photosynthetic Adaptation. (3) N

Evolution and ecology of C4 and CAM adaptive traits improving competitive ability in natural environments; comparative physiology of desert plants Prerequisite: PLB 308 or instructor approval.

PLB 524 Methods in Environmental Plant Physiology. (3) S 2001
Techniques to measure and quantify in croclimate and mass transfer. Supporting principles. 2 hours lecture, 3 hours lab. Prerequisite: BIO 320 or PLB 308

PLANT BIOCHEMISTRY AND MOLECULAR BIOLOGY**PLB 340 Plant Cell Physiology.** (4) S 2001

Survey of structural and biochemical aspects of plant cell function and the relationships of cell function to whole plant processes. 3 hours lecture 3 hours lab Prerequisites: BIO 182 (or equivalent) CHM 101 (or 115 or 231).

PLB 350 Applied Genetics. (4) S

Introduction to molecular genetics with emphasis on application of genetics in solving biological questions and engineering organisms in biotechnology. 2 hours lecture 6 hours lab. Cross listed as MBB 350. Credit is allowed for only MBB 350 or PLB 350. Prerequisite: BIO 181 or equivalent

PLB 440 Photobiology. (3) F

Principles underlying the effects of light on growth, development, and behavior of plants, animals, and microorganisms. Cross listed as BIO 464. Credit is allowed for only BIO 464 or PLB 440 Prerequisites: CHM 231 (or 331) 12 hours of courses in life sciences

PLB 444 Plant Growth and Development. (3) S 2001

Molecular basis of development, role of signal transduction pathways/gene regulation in control of organ formation, polination, germination and growth. Prerequisite: BIO 353 (PLB 340 recommended)

PLB 540 Plant Metabolism. (3) N

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 Prerequisite: PLB 340 or CHM 231 or instructor approval

PLB 550 Plant Molecular Biology. (2) S 2001

Biochemistry and molecular biology of plant organelles including protein targeting, plant viruses and molecular designs for plant improvements. Prerequisite: instructor approval

PLB 552 Plant Genetic Engineering. (3) S

Plant transformation utilization of transgenic plants, transient gene expression on assays and applications of plant genetic engineering. Prerequisite: instructor approval

PLB 553 Plant Genetic Engineering Laboratory. (2) S

Plant transformation utilization of transgenic plants, transient gene expression on assays and applications of plant genetic engineering 6 hours lab Prerequisite: instructor approval

PLB 554 Plant Biotechnology. (3) N

Aseptic culture propagation of plants and in vitro culture of cells, organs, and tissues 2 hours lecture 3 hours lab Prerequisite: PLB 308 or 340 or 370.

PLB 558 Molecular Mechanisms of Photosynthesis. (3) S

Structure and function of photosynthetic complexes: mechanism of energy conversion in plants, bacteria, and model systems. Cross-listed as BCH 568 Credit is allowed for only BCH 568 or PLB 558 Prerequisite: instructor approval

URBAN HORTICULTURE

PLB 260 Plants in Cities: Introduction to Urban Horticulture. (4) S
Principles and practices of horticulture, emphasizing development, growth and propagation of horticultural plants and environmental factors that affect these processes 3 hours lecture 3 hours lab Prerequisite: BIO 182 or PLB 108. *General Studies SG.*

PLB 360 Southwest Home Horticulture. (2) F S

Multimedial course for nonmajors surveying contemporary topics in southwest home horticulture including landscaping, flower and vegetable gardening, construction, interiorscaping, and others

PLB 362 Landscape Plants I. (3) F

Identification, culture and use of amenity plants in urban landscapes Prerequisite: PLB 260 or equivalent

PLB 363 Landscape Plants II. (3) S

Identification, culture and use of amenity plants in urban gardens. Prerequisite: PLB 260 or equivalent

PLB 364 Urban Forestry. (3) F

The establishment, care, and maintenance of ornamental trees, shrubs and vines. Prerequisite: PLB 260 or equivalent.

PLB 366 Interiorscape. (3) F 2000

Identification, culture and use of container-grown plants for interior environments. Prerequisite: PLB 260 or instructor approval.

PLB 370 Environmental Landscape Management. (3) F

Installation, irrigation, and maintenance of amenity plants in urban landscapes with an emphasis on integrated environmental landscape technologies. 2 hours lecture 3 hours lab Prerequisite: PLB 260 or equivalent

PLB 372 Turf Management. (3) N

Selection, establishment and maintenance of turf grasses for lawn and sports areas 2 hours lecture, 3 hours lab Prerequisite: PLB 260 or equivalent

PLB 472 Greenhouse Nursery Management. (3) S 2002

Greenhouse structures, environment, and nursery operation. Includes irrigation, nutrition, and other principles relative to container-grown species Prerequisites: ERS 130 (or 225 or 226); PLB 260

PLB 498 Pro-Seminar. (1) N

(a) Pro Seminar in Urban Horticulture

Department of Political Science

Robert L. Youngblood

Chair

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PROFESSORS

BALL, BERMAN, CHAUDHUR, DAGGER, JONES,
MCDONOUGH, MCGOWAN, SMON,
WALKER, YOUNGBLOOD

ASSOCIATE PROFESSORS

ASHLEY, CRITTENDEN, DANTICO, DOTY, HERRERA,
KAHN, KENNEY, MITCHELL, SMHONY, SPRUYT

ASSISTANT PROFESSORS

C. ELMAN, M. ELMAN, GOLDSTEIN, KRUTZ, NEVITT,
REDDICK, WARNER

ASSOCIATE INSTRUCTIONAL PROFESSIONAL

KEATING

POLITICAL SCIENCE—B.A.

The B.A. degree in Political Science consists of 42 semester hours, of which 30 must be in political science and 12 in related fields consisting of courses selected from the Departments of Anthropology, Chicana and Chicano Studies, Economics, Geography, History, Psychology, and Sociology, and the African American Studies and the Women's Studies programs. At least 15 hours in political science must be in upper division courses.

The following courses are required

POS 101	Political Ideologies <i>SB</i>	.....	3
POS 110	Government and Politics <i>SB</i>	.....	3
	or POS 310 American National Government <i>SB</i>		(3)

POS 150 Comparative Government <i>SB G</i>	3
or POS 160 Global Politics <i>SB G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
Total	12

Students who major in Political Science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper-division courses that count toward the major must have a grade of "C" or higher; no more than one "D" grade in a lower division course may be counted in the major. See "College Degree Requirements," page 332. No more than six hours of POS 484 Internship may be applied to the major.

POLITICAL SCIENCE—B.S.

The B.S. degree in Political Science consists of 48 semester hours, of which 36 must be in political science and 12 in related fields consisting of courses selected from the Departments of Anthropology, Chicana and Chicano Studies, Economics, Geography, History, Psychology, and Sociology, and the African American Studies and the Women's Studies programs. At least 21 hours in political science must be in upper division courses.

The following courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB G</i>	3
or POS 160 Global Politics <i>SB, G</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 401 Political Statistics <i>CS</i>	3
Total	15

Students who major in Political Science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper-division courses that count toward the major must have a grade of "C" or higher; no more than one "D" grade in a lower division course may be counted in the major. See "College Degree Requirements," page 332. No more than six hours of POS 484 Internship may be applied to the major.

B.S. in Political Science with a Concentration in Public Policy Analysis

This degree and concentration combination is intended for students with a strong interest in public policy. It is designed to help students develop perspectives and skills applicable to public policy analysis and program evaluation. This concentration consists of a minimum of 36 semester hours in political science and 12 hours in related fields.

Required Courses

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB G</i> 3	
POS 220 Political Issues and Public Policy <i>SB</i>	3
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 325 Public Policy Development <i>SB</i>	3
POS 401 Political Statistics <i>CS</i>	3

POS 426 Elements of Public Policy <i>SB</i>	3
POS 484 Internship ¹	12
POS electives ²	6-9
Electives ³	12

- ¹ As approved by the political science internship coordinator
- ² Additional POS elective courses are required.
- ³ In closely related fields, approved by a departmental academic advisor

B.S. in Political Science with a Concentration in Public Policy Advocacy and Lobbying

This degree and concentration combination is intended for students interested in affecting public policy. It is designed to help students develop perspectives and skills useful to those engaged as activists in shaping public policy. This concentration consists of a minimum of 36 semester hours in political science and 12 hours in related fields.

Required Courses

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	
POS 150 Comparative Government <i>SB, G</i>	3
or POS 160 Global Politics <i>SB G</i> (3)	
POS 220 Political Issues and Public Policy <i>SB</i>	3
or POS 325 Public Policy Development <i>SB</i> (3)	
or POS 426 Elements of Public Policy <i>SB</i> (3)	
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 313 The Congress <i>SB</i>	3
POS 333 Interest Groups <i>SB</i>	3
POS 401 Political Statistics <i>CS</i>	3
POS 484 Internship ¹	12
POS electives ²	6-9
Electives	12

- ¹ As approved by the political science internship coordinator
- ² Additional POS elective courses are required
- ³ In closely related fields, approved by a departmental academic advisor

Asian Studies Certificate or Emphasis. Students majoring in Political Science may elect to pursue an Asian Studies certificate combining courses from the major with selected outside courses of wholly Asian content. See "Asian Studies," page 340, for more information.

Latin American Studies Certificate or Emphasis. Students majoring in Political Science may elect to pursue a Latin American Studies certificate combining courses from the major with selected outside courses of wholly Latin American content. See "Latin American Studies," page 340, for more information.

MINOR IN POLITICAL SCIENCE

The minor in Political Science consists of 18 semester hours in political science courses, 12 hours of which must be upper division courses. Students who minor in Political Science must have two courses from among the following:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i>	3
or POS 310 American National Government <i>SB</i> (3)	

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C and H see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.

POS 150 Comparative Government <i>SB, G</i>	3
POS 160 Global Politics <i>SB, G</i>	3

Students who minor in Political Science must have a minimum GPA of 2.00 for all courses that count toward the minor. Upper division courses that count toward the minor must have a grade of "C" or higher; no more than one "D" in a lower division course may be counted toward the minor. No more than three hours of POS 484 Internship and three hours of POS 499 Individualized Instruction may be applied to the minor.

SECONDARY EDUCATION—B.A.E.

Political Science. The major teaching field consists of 45 semester hours, 30 of which must be in political science and 15 in closely related fields.

The following courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i> or POS 310 American National Government <i>SB</i> (3)	3
POS 150 Comparative Government <i>SB, G</i> or POS 160 Global Politics <i>SB, G</i> (3)	3
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 417 The Arizona Political System <i>SB</i>	3
POS 480 Methods of Teaching Government	3
Total	18

Courses may be substituted for POS 417 and 480 with departmental approval.

Students who pursue this academic specialization in political science must have a minimum GPA of 2.00 for all courses that count toward the major. Upper division courses that count toward the major must have a grade of "C" or higher; no more than one "D" grade in a lower division course may be counted in the academic specialization. No more than six hours of POS 484 Internship may be applied to the major.

The minor teaching field consists of 24 semester hours in political science courses.

The following six courses are required:

POS 101 Political Ideologies <i>SB</i>	3
POS 110 Government and Politics <i>SB</i> or POS 310 American National Government <i>SB</i> (3)	3
POS 150 Comparative Government <i>SB, G</i> or POS 160 Global Politics <i>SB, G</i> (3)	3
POS 301 Empirical Political Inquiry <i>SB</i>	3
POS 417 The Arizona Political System <i>SB</i>	3
POS 480 Methods of Teaching Government	3
Total	18

Courses may be substituted for POS 417 and 480 with departmental approval.

Students who pursue this academic specialization in political science must have a minimum GPA of 2.00 for all courses that count toward the academic specialization. Upper division courses that count toward the academic specialization must have a grade of "C" or higher; no more than one "D" grade in a lower division course may be counted in the minor.

Social Studies. See "Social Studies," page 438.

GRADUATE PROGRAMS

The faculty in the Department of Political Science offer programs leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements.

POLITICAL SCIENCE (POS)

POS 101 Political Ideologies. (3) F S
Political ideas and belief systems e.g. Marxism, liberalism, conservatism, theories of democracy and alternative futures. *General Studies: SB*

POS 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 POS 310. *General Studies: SB*

POS 150 Comparative Government. (3) F S
Political institutions and processes in selected foreign countries including regional strengths and weaknesses of contemporary political systems and political development. *General Studies: SB, G*

POS 160 Global Politics. (3) F S
The nature of contemporary world politics through the study of both general theoretical concepts and specific geographical areas. *General Studies: SB, G*

POS 220 Political Issues and Public Policy. (3) A
Contemporary social problems and political issues particularly development of public policy. *General Studies: SB*

POS 230 Current Issues in National Politics. (3) F S
Major issues facing national governments in the domestic field. *General Studies: L/SB*

POS 240 Introduction to Southeast Asia. (3) F S
An interdisciplinary introduction to the cultures, religions, political systems, geography and history of Southeast Asia. Cross-listed as ASB 240, GCU 240, HIS 240, REL 240. Credit is allowed for only ASB 240 or GCU 240 or HIS 240 or POS 240 or REL 240. *General Studies: G*

POS 260 Current Issues in International Politics. (3) F, S
An analysis of major current problems in world politics. *General Studies: L/SB, G*

POS 270 American Legal System. (3) F, S
Concepts, institutions, classifications and functions of law. The role of the courts and the impact of judicial decision making on social change. *General Studies: SB*

POS 300 Contemporary Controversies in Global Politics. (3) F, S
Exploration of key controversies in global politics including security, economic stability, poverty, gender, race, and the environment.

POS 301 Empirical Political Inquiry. (3) F, S
Logic of political inquiry including research problems, concepts, hypotheses, theories, measurement, data collection and analysis. *General Studies: SB*

POS 310 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. *General Studies: SB*

POS 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 or 417. Meets the Arizona constitution requirement for teacher certification. May not be counted for the major or a teaching major or minor in Political Science.

POS 313 The Congress. (3) A
Lawmaking process in the U.S. Congress. *General Studies: SB*

POS 314 The American Presidency. (3) A
Office, role and power of the American presidency in the American political system. *General Studies: SB*

POS 315 The Supreme Court. (3) A
Role of the Supreme Court in American society and politics; examination of decisions making process and impact of decisions, restraint versus activism. *General Studies: SB*

POS 316 State and Local Government. (3) A
Survey of the operations, problems, and policies of state and local governments in the United States. *General Studies: SB*

POS 320 Public Administration. (3) A
Role of the administrator in the political process with an examination of the basic concepts of bureaucracy. *General Studies: SB*

POS 325 Public Policy Development. (3) A

Examination of one or more aspects of public policy development including agenda setting, policy formulation, policy implementation, and policy analysis. *General Studies: SB*

POS 330 Contemporary Controversies in Domestic Politics. (3) F, S

Explanation of key controversies in domestic politics including the environment, the economy, poverty, gender, race, and security.

POS 331 Public Opinion. (3) A

Format on, expression, and influence of individual and organized opinion on political institutions. *General Studies: SB*

POS 332 American Political Parties. (3) A

Development of the American party system. Party organization and functions. *General Studies: SB*

POS 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. *General Studies: SB*

POS 336 Electoral Behavior. (3) A

Voting behavior and the attitudes, perceptions, and activities of the citizenry in the political process. *General Studies: SB*

POS 340 History of Political Philosophy I. (3) A

Western political philosophers and their theories to the 17th century. *General Studies: HU, H*

POS 341 History of Political Philosophy II. (3) A

Western political philosophers and their theories from the 17th to the 20th century. *General Studies: HU, H*

POS 346 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. *General Studies: SB*

POS 350 Comparative Politics. (3) A

Theoretical approaches and political institutions such as parties, pressure groups, egos, attitudes, and executives from a cross-national perspective. *General Studies: SB, G*

POS 351 Democratization. (3) F

Examines the consolidation of democracies in postauthoritarian and postcommunist settings (e.g., Latin America, Eastern Europe, Asia).

POS 355 Russia and Successor States. (3) A

Description and analysis of political institutions and practices in Russia and successor states. *General Studies: SB, G*

POS 356 Western Europe. (3) A

Structures and behavior of governmental institutions and political processes in selected countries of Western Europe. *General Studies: SB, G*

POS 357 South Asia Politics. (3) A

Analysis of the political culture, politics, and political systems of South Asia. Lecture, discussion. *General Studies: SB, G*

POS 358 Southeast Asia. (3) A

Political background, governmental institutions, political dynamics, and developmental problems of Southeast Asian nations. *General Studies: SB, G*

POS 359 African Politics and Society. (3) N

Comparative analysis of socioeconomic forces, political processes, and governmental institutions in Africa south of the Sahara. *General Studies: SB, G*

POS 360 World Politics. (3) A

Theory and practice of statecraft as applied to selected issues, regions, or eras. *General Studies: SB, G*

POS 361 American Foreign Policy. (3) A

United States in world affairs, foreign policy since World War I. Technical questions forming American foreign policies. *General Studies: SB, G*

POS 364 U.S. National Security Analyses. (3) A

A theoretical and empirical assessment of U.S. national security policy in the post-Cold War era. *General Studies: SB*

POS 370 Law and Society. (3) A

Analysis of debates among social scientists and legal theorists concerning the relationship between "law" and "society." *General Studies: SB*

POS 401 Political Statistics. (3) F, S

Basic concepts in statistics as they facilitate the description, explanation, and prediction of social and political phenomena. *General Studies: CS*

POS 410 Urban Government and Politics. (3) A

Governmental organizations, decision-making structures, and problems of urban political systems. *General Studies: SB*

POS 417 The Arizona Political System. (3) N

Contemporary political problems within the context of Arizona's constitutional, political, and social frameworks. Meets the Arizona Constitution requirement for teacher certification. Not open to students having credit for POS 311. *General Studies: SB*

POS 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. *General Studies: SB*

POS 423 Politics of Budgeting. (3) N

The policy process in budgeting; strategies used to influence this process and recent reforms in public budgeting. *General Studies: SB*

POS 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. *General Studies: SB*

POS 431 Campaigns and Elections. (3) A

Examines campaigns from a multitude of perspectives including the politician, reporter, campaign strategist, and voter. Lecture, discussion. *General Studies: SB*

POS 433 Money and Politics. (3) A

The role of money and special interests in elections, campaign politics, and public policy making in American politics. Lecture, discussion. *General Studies: SB*

POS 434 Media and Politics. (3) A

The study of mass media and politics in the United States, e.g. media and elections, media and government. Lecture, discussion. *General Studies: SB*

POS 435 Women and Politics. (3) N

Women's roles in various political contexts. Focus varies with instructor. *General Studies: SB, C*

POS 439 Minority Group Politics in America. (3) N

Role of minority groups in American politics. *General Studies: SB, C*

POS 442 American Political Thought. (3) A

Political theories and movements from the colonial period to the present. *General Studies: HU*

POS 443 Topics in Contemporary Political Theory. (3) A

Major problems and theories in contemporary political thought. *General Studies: HU*

POS 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. *General Studies: SB, G*

POS 451 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. *General Studies: SB, G*

POS 452 China. (3) A

Background of the Communist revolution, political processes, and developmental problems in China from a comparative perspective. *General Studies: SB, G*

POS 453 South America. (3) A

Governmental institutions, political processes and developmental problems of the South American states. *General Studies: SB, G*

POS 454 Mexico. (3) A

Mexican federal, state and local governmental institutions. *General Studies: SB, G*

POS 455 Central America and the Caribbean. (3) A

Governmental institutions, political processes and developmental problems of the national states and dependent areas of Central America and the Caribbean. *General Studies: SB, G*

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses," page 60.

POS 459 South and Southern Africa. 3 A

Post-apartheid South African government and politics. South Africa and the southern African regional security and development. *General Studies SB G*

POS 463 Inter-American Relations. 3) A

Diplomatic relations among the Latin American states. Development of U.S. foreign policy toward Latin America. *General Studies SB, G.*

POS 465 International Organization and Law. 3 A

History, practical aspects and future of international institutions, transnational regimes and international law. *General Studies SB G*

POS 467 International Security. 3 A

Examination of issues affecting the international security of states and peoples, e.g., military, economic, technological, environmental, and demographic. *General Studies SB, G*

POS 468 Comparative Asian Foreign Policies. 3 A

Foreign policies of the Asian states, emphasizing their security relations and movements toward regionalism. *General Studies SB, G*

POS 471 Constitutional Law I. 3 A

Development of the U.S. 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 tax, and spending power, state police power. *General Studies SB*

POS 472 Constitutional Law II. 3 A

Development of the U.S. Constitution as reflected in decisions of the Supreme Court. Due process, equal protection of laws, individual rights. *General Studies SB*

POS 480 Methods of Teaching Government. 3 N

Methods of instruction, organization, and presentation of subject matter in political science. Prerequisite: 15 hours in political science or instructor approval.

POS 484 Internship. 1 12 N**POS 485 Political Economy.** 3 A

Problems, policies, and positions of various political economic systems and the interrelationship of capitalism, socialism, and democracy. *General Studies SB*

POS 486 International Political Economy. 3 A

Contending approaches to history and contemporary issues of international political economy, including global welfare, equity, ecology, and peace. *General Studies SB, G*

POS 498 Pro-Seminar. 3 A

Small group study and research for advanced students within the major or area. Prerequisite: major in the department. Instructor approval. *General Studies L*

POS 499 Individualized Instruction. 3 N**POS 501 Methods of Political Science.** 3 N

Problems of method and knowledge in political science: strategies of political inquiry and issues in philosophy of social science.

POS 502 Philosophy of Political Inquiry. 3 A

Problems of knowledge and method in political science, with attention to both empirical and evaluative analysis.

POS 503 Empirical Political Inquiry. 3 A

Research methods and techniques of the social sciences, emphasizing empirical foundations and analytic methods employed in subfields. Prerequisites: POS 401 or equivalent. Instructor approval.

POS 530 American Politics. 3 A

Examines major debates in the study of American political processes and institutions. Covers party media elections, public opinion, interest groups, and the three branches of government. Seminar.

POS 545 Themes in Political Thought. 3 N

Examination of a particular theme or problem in political thought from both a historical and contemporary perspective. Seminar. Course may be repeated with approval of the director of graduate studies. Prerequisite: instructor approval.

POS 550 Comparative Politics. 3 A

Surveys major approaches across topical areas such as revolutions, authoritarianism, political processes, interest groups, and electoral politics. Focus varies with instructor. Seminar.

POS 560 International Relations. 3 A

Surveys major theoretical approaches and debates in international relations. Seminar.

POS 563 Comparative Asian Security Policies. 3 N

Analyzes domestic and international constraints, belief systems, and economic components in security decisions by major powers and Asian nations. Seminar. Prerequisite: instructor approval.

POS 590 Reading and Conference. 1 12 N**POS 591 Seminar.** (3) A

- a American Politics
- b Comparative Politics
- c Global Politics
- d Political Theory

POS 592 Research. (1 12 N)**POS 598 Special Topics.** (3) A

- a American Politics
- b Comparative Politics
- c Global Politics
- d Political Theory

POS 599 Thesis. 1 12 N**POS 601 Advanced Experimental Research.** 3 N

Introduces experimental and quasi-experimental research designs in political research, including laboratory techniques and topics in the analysis of variance. Prerequisite: POS 503 or equivalent.

POS 602 Advanced Survey Research. (3) N

Presents design and conduct of political surveys, including sampling, instrument design, scaling, and statistical and graphical analysis of survey data. Prerequisite: POS 503 or equivalent.

POS 603 Polimetrics I. 3 A

Introduces theory and practice of linear regression analysis. Provides skills to read, understand, and evaluate professional literature using regression analysis. Prerequisites: POS 401 and 503 or instructor approval.

POS 604 Polimetrics II. (3) A

Apply quantitative techniques to research topics producing publishable papers through exposure to time series, logit and probit, and simultaneous equations. Prerequisites: POS 401 and 503 and 603 or instructor approval.

POS 606 Qualitative and Textual Analysis. (3) S 2001

Method and theory for the analysis of qualitative materials: systematic approaches for case studies, content analysis, critical analysis of texts. Discussion seminar.

POS 635 State Politics and Public Policy. (3) N

Introduction to comparative state politics, emphasizing performance differences among the states and the reasons for these differences. Seminar. Prerequisites: POS 530 and 603 or instructor approval.

POS 636 Electoral Behavior. (3) N

Introduces fundamental concepts of electoral behavior. Emphasizes presidential elections and examines why people vote and how their votes are determined. Seminar. Prerequisites: POS 530 and 603 or instructor approval.

POS 638 Law and Politics. (3) N

Emphasizes research into such topics as constitutional law, women and the law, American legal system, judicial process, and judicial selection. Seminar. Prerequisite: instructor approval.

POS 651 Politics of Change and Development. (3) N

Examines contending approaches to national social and political change. Seminar. Prerequisite: instructor approval.

POS 660 The Modern World System. (3) N

Theoretically driven historical analysis of the organization and operation of the international political economy since the 16th century. Seminar. Prerequisite: instructor approval.

POS 661 The State. (3) N

Examines theories of state-state-society relations, and interstate politics, emphasizing questions of sovereignty, territoriality, violence, representation, democracy, and change. Seminar. Prerequisite: instructor approval.

POS 662 International Organization. 3 N

History, practical political significance, and future of international institutions, transnational regimes, and other approaches to international organization. Seminar. Prerequisite: instructor approval.

POS 664 War, Peace, and Conflict Processes. (3) N

The systematic analysis of the causes of war, the preconditions for peace, and approaches to the resolution of conflict. Seminar. Prerequisite: instructor approval.

POS 665 Foreign Policy Theory. (3) N
Examines foreign policy theory and methods. Development and critique of research designs analyzing foreign policy processes within and among nations. Seminar. Prerequisite: instructor approval.

POS 691 Seminar. (1-12) N

POS 790 Reading and Conference. (1-12) N

POS 792 Research. (3) F S
Projects in various areas of political science. Prerequisite: doctorate student.

Department of Psychology

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REGENTS' PROFESSORS
CIALDINI, EISENBERG, RUSSO

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ASSISTANT PROFESSORS
E. AMAZEEN, P. AMAZEEN, CONRAD, DAVIS, GEST, KHOO, McBEATH

SENIOR LECTURERS
BARTON, WEGAND, WOSINSKI

LECTURER
PALMER

The Department of Psychology maintains an Undergraduate Advisement Office staffed by trained personnel. All Psychology majors are encouraged to meet with an undergraduate advisor once each semester to ask questions regarding the choice of courses. Failure to do so may prevent graduation at the expected time. It is the responsibility of the student to consult with an undergraduate advisor.

PSYCHOLOGY—B.A.

The B.A. degree in Psychology consists of 31 semester hours in psychology, including at least 15 upper-division semester hours. Required courses, which must be passed with a minimum grade of "C," are as follows:

PGS 101 Introduction to Psychology SB	.....	3
PGS 315 Personality Theory and Research SB	.....	3
or PGS 341 Developmental Psychology SB (3)		
or PGS 350 Social Psychology SB (3)		
PSY 230 Introduction to Statistics CS	.....	3

PSY 290 Research Methods L/SG	.....	4
PSY 323 Sensation and Perception	.....	3
or PSY 320 Learning and Motivation (3)		
or PSY 324 Memory and Cognition (3)		
or PSY 325 Physiological Psychology (3)		
Total	.....	16

Also required are one additional upper division PSY course (excluding PSY 484 and 499); two additional upper-division PGS or PSY courses, and two additional psychology courses, excluding PGS 194, 270, 484, or PSY 484. A maximum of three hours in Supervised Research or Individualized Instruction may be used to complete the 31 hours of psychology requirements. Students may take a maximum of six hours of PGS 399 and six hours of PGS 499 and PSY 499 combined. Eighteen hours in courses related to psychology must be passed with a minimum grade of "C." They must be approved by an undergraduate advisor and include MAT 119 (or higher) in addition to one course from among the following:

CSE 180 Computer Literacy CS	.....	3
CSE 185 Internet and the World Wide Web	.....	3

See "College Degree Requirements," page 332.

PSYCHOLOGY—B.S.

The B.S. degree in Psychology consists of 31 semester hours in psychology, including at least 15 upper division hours. Required courses, which must be passed with a minimum grade of "C," are as follows:

PGS 101 Introduction to Psychology SB	.....	3
PGS 315 Personality Theory and Research SB	.....	3
or PGS 341 Developmental Psychology SB (3)		
or PGS 350 Social Psychology SB (3)		
PSY 230 Introduction to Statistics CS	.....	3
PSY 290 Research Methods L/SG	.....	4
PSY 323 Sensation and Perception	.....	3
or PSY 320 Learning and Motivation (3)		
or PSY 324 Memory and Cognition (3)		
or PSY 325 Physiological Psychology (3)		
Total	.....	16

Also required are one additional upper division PSY course (excluding PSY 484 or 499); two additional upper division PGS or PSY courses; and two additional psychology courses excluding PGS 194, 270, 484, and PSY 484. A maximum total of three hours in Supervised Research or Individualized Instruction may be used to complete the 31 hours of Psychology requirements. Students may take a maximum of six hours of PGS 399 and six hours of PGS 499 and PSY 499 combined. Eighteen hours in courses related to psychology must be passed with a minimum grade of "C." They must be approved by an undergraduate advisor and include MAT 210 Brief Calculus (or higher); one life science lab course (BIO or MIC); one physical science lab course (AST, CHM, GLG, or PHY); and one course from among the following:

CSE 180 Computer Literacy CS	.....	3
CSE 185 Internet and the World Wide Web	.....	3

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses," page 60.

Further, the science courses taken to satisfy the B.S. degree requirements cannot be used to meet the College of Liberal Arts and Sciences natural science distribution requirements. See "College Degree Requirements," page 332.

MINOR IN PSYCHOLOGY

The minor in Psychology consists of 22 hours in psychology, including the following

PGS 101 Introduction to Psychology <i>SB</i>	3
PGS 315 Personality Theory and Research <i>SB</i>	3
or PGS 341 Developmental Psychology <i>SB</i> 3	
or PGS 350 Social Psychology <i>SB</i> (3)	
PSY 230 Introduction to Statistics <i>CS</i>	3
PSY 290 Research Methods <i>L/SG</i>	4
PSY 323 Sensation and Perception	3
or PSY 320 Learning and Motivation (3)	
or PSY 324 Memory and Cognition (3)	
or PSY 325 Physiological Psychology (3)	
Total	16

Two additional upper division PGS or PSY courses are required.

A maximum of three hours of research (PGS 399 or 499 or PSY 499) may be used to meet the minor requirements. Students with an appropriate equivalent course may exclude PSY 230 from the requirements. All courses must be passed with a minimum grade of "C."

SECONDARY EDUCATION—B.A.E.

Psychology. The minor teaching field consists of 24 semester hours. See a departmental advisor.

Social Studies. See "Social Studies," page 438.

GRADUATE PROGRAMS

The faculty in the Department of Psychology offer a program leading to the Ph.D. degree. See the *Graduate Catalog* for requirements.

PSYCHOLOGY (PGS)

PGS 101 Introduction to Psychology. 3 F, S, SS
Major areas of theory and research in psychology. Participation in department sponsored research or an educational equivalent activity is required. *General Studies SB*

PGS 194 Special Topics. (1–4) N

PGS 222 Human Sexual Behavior. (3) F, S
Patterns of sexual behavior, including variations and developmental theories of sexual attraction, sex differences, and sexual dysfunction and treatment. Prerequisite: PGS 101. *General Studies SB*

PGS 270 Psychology of Adjustment. (3) F, S, SS
Principles of mental health, adjustment, conflict, stress, and coping processes derived from clinical and experimental research. Intended for nonmajors; cannot be used for major credit. Prerequisite: PGS 101. *General Studies SB*

PGS 304 Effective Thinking. (3) A
Understanding and improving your intellectual and behavioral skills in information analysis, inference, logic, problem solving, and decision making. Prerequisite: MAT 119 or PSY 230 or equivalent. *General Studies L*

PGS 306 Environmental Psychology. 3 F, S, SS
Concepts and research strategies in the study of behavior in interaction with physical environment. Prerequisite: PGS 101. *General Studies SB*

PGS 315 Personality Theory and Research. 3 F, S, SS
Definition and description of personality in terms of theoretical and methodological approaches. Prerequisites: PGS 101, PSY 290. *General Studies SB*

PGS 341 Developmental Psychology. (3) F, S
Behavior development analyzed in terms of psychological principles. Current research in human development. Prerequisite: PGS 101, PSY 290. *General Studies SB*

PGS 344 Directed Child Study. (3–4) F, S, SS
Theories and methods of intervention with preschool children and supervised practicum in the Child Study Laboratory. 1-hour lecture, 6–8 hours practicum. Prerequisites: CDE 232 or PGS 341, instructor approval. *General Studies L*

PGS 350 Social Psychology. 3 F, S, SS
Human social behavior including such concepts as aggression, attraction, attribution, conformity, groups, helping, person perception and persuasion. Prerequisite: PGS 101. *General Studies SB*

PGS 351 Honors Social Psychology. 3 N
A critical analysis of human social behavior for honors students. Topics include stereotyping, social influence, attraction, aggression, helping, groups, and attitudes. Lecture-discussion. Open only to students without previous credit for PGS 350. Prerequisites: PGS 101, honors standing, instructor approval. *General Studies L SB*

PGS 365 Community Psychology. (3) F, S
Mental health and psychological well-being in the community. Emphasis on current issues and related research. Prerequisite: PGS 315 or 350. *General Studies SB*

PGS 394 Special Topics. 1–4) N

PGS 399 Supervised Research. 1–3 F, S, SS
Experience within the context of current faculty research projects. Student assigned responsibility depending on qualifications. Y-grade only. May be repeated for a total of 6 hours. Prerequisite: approval of faculty member before registration, B average in major. Prerequisite: PSY 230 or equivalent.

PGS 414 History of Psychology. 3 F, S
Historical development of psychology from its philosophical beginnings to the present. Prerequisites: PGS 101, PSY 230, 290. *General Studies L/SB*

PGS 427 Psychology of Aging. 3 N
Analysis of loss, maintenance, and gain associated with cognitive and affective aging. Individual differences in coping with normative life transitions. Prerequisites: PGS 101, 341. *General Studies L/SB*

PGS 430 Industrial Psychology. 3 F, S, SS
Organizations and management systems, motivation and work performance, human factors in systems design and evaluation, personnel selection and testing. Prerequisite: MGT 301 or PGS 101.

PGS 441 Cognitive Development. (3) F, S
Experimental and theoretical literature in child development and behavior. Prerequisite: PGS 341 or instructor approval. *General Studies L/SB*

PGS 443 Abnormal Child Psychology. (3) F, S
The major disorders of childhood and adolescence, e.g., autism, hyperactivity, phobias, and delinquency are covered, including cause, diagnosis, treatment, and prevention. Prerequisites: PGS 101 and 1 course from among PGS 315 and 341 and 350 or instructor approval. *General Studies L/SB*

PGS 444 Adolescent Psychology and Psychopathology. 3 N
An advanced level survey of normal adolescent psychology, development and psychological disorders of this age period. Lecture-discussion. Prerequisites: PGS 101, 341, PSY 290. *General Studies L*

PGS 445 Child Language and Drawing. 3 F
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. *General Studies SB*

PGS 446 Social Development. 3 N
Theory, research, and issues regarding social development are discussed. Example topics: formation of attachments, prosocial development, and gender role development. Lecture-seminar. Prerequisite: PGS 341. *General Studies L*

PGS 450 Social Perception and Cognition. 3 N
A critical analysis of human social perception and social cognition. Topics include attribution, inference, memory, attention, impression formation, stereotype change. Lecture-discussion. Prerequisites: PGS 101, 350. *General Studies L*

- PGS 451 Stereotyping, Prejudice, and Discrimination.** 3 N
A critical investigation of the processes underlying and the factors contributing to stereotyping, prejudice, and discrimination. Lecture/discussion. Prerequisites: PGS 101 350 *General Studies L*.
- PGS 452 Applied Social Psychology.** 3 F
The study of applications of social psychology: a theoretical and conceptual nature setting, research design and data analysis. Lecture/lab type activities. Prerequisites: PGS 101 350 PSY 230 *General Studies L*.
- PGS 453 Organizational Behavior.** 3 N
A survey of psychological theory and research as applied to the behavior of individuals in organizational settings. Lecture/discussion. Prerequisites: PGS 101 350
- PGS 458 Group Dynamics.** 3 F
Theories and methods of group leadership, group effectiveness, communication within groups, and relations between groups and individuals. Prerequisite: PGS 101 350
- PGS 461 Interpersonal Influence.** 3 N
Principles and procedures that affect the process of social influence, consideration of attitude, compliance, induction, and perceptual influences. Prerequisite: PGS 350 *General Studies SB*
- PGS 462 Health Psychology.** 3 F S
Contributions of psychology to health promotion and disease prevention, adaptation to acute and chronic stress, and to the health care system. Prerequisites: PSY 230 290
- PGS 463 Advanced Psychology of Adjustment.** 3 F
Critical analysis and effective expression of psychological theory and research of the topic of adjustment. Lecture/discussion/writing. Prerequisites: PSY 230 290 completion of 1st year English requirements. *General Studies L* course.
- PGS 464 Minority Issues in Psychology.** 3 S
Psychological issues relating to the diversity of human cultural experiences and among ethnic minorities in the U.S. Prerequisite: PSY 290
- PGS 465 Psychology of Stress and Coping.** 3 F
Readings in theory and research in the area of stress and coping. Lecture/discussion, class presentations. Prerequisites: PGS 315 or 350 PSY 290 *General Studies L*
- PGS 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 101 PSY 290. *General Studies SB*
- PGS 467 Psychology of Magical Beliefs.** 3 N
The psychological nature and bases of magical beliefs and their impact on health behaviors, eating practices, and interpersonal relations. Lecture, seminar. Prerequisites: PGS 315 and 466 and PSY 434 or instructor approval. *General Studies*
- PGS 468 Psychology and Law.** 3 F S
Theories, research, and practice in psychology as related to law including criminal law, domestic relations, and professional issues. Lecture/discussion. Prerequisite: PSY 290.
- PGS 471 Psychological Testing.** 3 S
Methods and theory of psychological testing; various types of psychological tests; consideration of ethical, social, and legal aspects of testing. Prerequisite: PSY 290.
- PGS 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
- PGS 484 Internship.** (1-12) N
- PGS 494 Special Topics.** 1-4 N
- PGS 499 Individualized Instruction.** 1-3) N

PSYCHOLOGY (PSY)

PSY 230 Introduction to Statistics. 3 F S SS
Basic concepts in descriptive and inferential statistics, emphasizing applications to psychology. The course has both self-paced (PSI) and lecture sections. Prerequisites: MAT 117 PGS 101 *General Studies CS*.

- PSY 290 Research Methods.** (4) F S
Planning, execution, analysis, and reporting of experiments. Literature procedures and instruments in representative areas of psychology research. 3 hours lecture, 3 hours lab. Prerequisite: PSY 230 *General Studies L/SG*
- PSY 320 Learning and Motivation.** 3 F S SS
Principles of conditioning and motivation: approaches to learning including acquisition of verbal materials, concepts, and motor skills, memory and transfer. Prerequisite: PSY 290.
- PSY 323 Sensation and Perception.** (3) F, S
Underlying processes of vision, audition, and the other senses. Application of current research and theory in a laboratory environment. Prerequisite: PSY 290 or instructor approval.
- PSY 324 Memory and Cognition.** (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
- PSY 325 Physiological Psychology.** (3) F, S, SS
Relationships of physiological processes to behavior. Emphasis on nervous system functioning. Prerequisites: PSY 290 (or 2 courses in biology/science) instructor approval
- PSY 330 Statistical Methods.** 3) S
Advanced application of statistics to psychology. Highly recommended for students interested in attending graduate school. 3 hours lecture, 1 hour lab. Prerequisite: PSY 230 *General Studies CS*
- PSY 390 Experimental Psychology.** 3 S
Continuation of concepts in PSY 290, with emphasis on multifactorial designs and programmatic sequence of experiments. Lecture/lab. Prerequisite: PSY 290 *General Studies L*
- PSY 420 Analysis of Behavior.** 3 N
Research, applications, and philosophy of the analysis and control of human behavior. Prerequisite: PSY 290. *General Studies L*
- PSY 424 Genetic Psychology.** 3 S
Introduction to the concepts, methodologies, and findings of behavioral genetics for Psychology majors. Prerequisites: PGS 101 PSY 230 290 *General Studies L*
- PSY 425 Biological Bases of Behavior.** (3) N
Critical study of biological psychology; brain mechanisms underlying motivation and learning. Prerequisite: PSY 325 *General Studies L*
- PSY 426 Neuroanatomy.** (4) N
Structure and function of mammalian brain, including sheep brain dissection. 3 hours lecture, 3 hours lab. Prerequisite: PSY 325 or equivalent *General Studies L*
- PSY 434 Cognitive Psychology.** (3) S
The human organism as a processor of information, from perception to cognition. Abstract concepts, semantic memory, attention, and mental imagery. Prerequisite: PGS 101, PSY 323 or 324 or instructor approval. *General Studies L*
- PSY 437 Human Factors.** 3) F
Emphasis on human factors in high technology systems. Specific topics include systems development, systems analysis, techniques, displays, and controls. Prerequisites: PSY 290 and upper-levels on standing or instructor approval. *General Studies L*
- PSY 470 Psychopharmacology.** (3) F S
Basis of drug action at physiological and behavioral levels. Psychological and medical applications and implications of drugs used in the treatment of mental illness. Prerequisites: PSY 325; 1 semester each of biology and chemistry
- PSY 484 Internship.** (1-12) N
- PSY 494 Special Topics.** (1-4) N
- PSY 498 Pro-Seminar.** (3) F S
a Behavioral Neuroscience Research
General Studies L
- PSY 499 Individualized Instruction.** (1-3) N
- PSY 501 Supervised Teaching.** (4) F
Experience and examination of perspectives on teaching under graduate psychology. Prerequisites: graduate standing in psychology; instructor approval

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see General Studies' page 87. For graduation requirements, see 'University Graduation Requirements' page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see 'Classification of Courses' page 60.

PSY 506 Survey of Research in Environmental Psychology. (3) F
Major topics and paradigms in the study of person environment relationship. Prerequisite: instructor approval.

PSY 512 Advanced Learning. (3) N
Principles and theories of learning, emphasizing research literature. Prerequisite: instructor approval.

PSY 524 Advanced Physiological Psychology. (3) N
Contributions of physiological processes and brain function to fundamental behavioral processes. Prerequisite: instructor approval.

PSY 528 Sensation and Perception. (3) N
Principles of sensory and perceptual processes emphasizing research literature. Prerequisite: instructor approval.

PSY 530 Analysis of Variance in Psychological Research. (3) F
One way and factorial designs, contrasts, post hoc tests, probability of interactions, mixed designs, power, computer applications. Prerequisite: undergraduate statistics or instructor approval.

PSY 531 Multiple Regression in Psychological Research. (3) S
Multiple regression and correlation, hierarchical regression, interactions, curvilinear relationships, categorical predictors, ANOVA, regression, regression diagnostics, regression graphics. Prerequisite: PSY 530 or instructor approval.

PSY 532 Analysis of Multivariate Data. (3) F
Matrix algebra for multivariate procedures, component and factor analysis, canonical and discriminant analysis, classification, MANOVA, logistic regression, hierarchical linear models. Prerequisites: PSY 530 and 531 or instructor approval.

PSY 533 Structural Equation Modeling. (3) S
Path analysis; exploratory and confirmatory factor analysis, recursive and nonrecursive latent variable models, mean and covariance structures, latent growth models. Prerequisite: PSY 532 or instructor approval.

PSY 534 Psychometric Methods. (3) F S
Theory and practice of psychological measurement using classical and modern test theories. Reliability assessment, test validity, test construction, test usage. Prerequisites: PSY 530 and 531 or instructor approval.

PSY 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. Prerequisite: instructor approval.

PSY 536 Statistical Methods in Prevention Research. (3) F S
Statistical methods used in prevention research including epidemiological methods, logistic regression, program effect estimation, estimation and mediation analysis. Prerequisites: PSY 530 and 531 or instructor approval.

PSY 537 Longitudinal Growth Modeling. (3) N
Growth modeling methodology to describe individual variation in development over time. Multilevel and structural equation modeling frameworks are employed. Prerequisite: PSY 533 or instructor approval.

PSY 538 Advanced Structural Equation Modeling. (3) N
Mean and covariance structure analysis. Includes multiple group modeling, two-level hierarchical modeling, longitudinal growth modeling analysis with categorical outcomes. Prerequisite: PSY 533 or instructor approval.

PSY 539 Meta-Analysis I. (1) F
Meta-analysis; searching the literature, coding study characteristics, computing effect sizes. Must be followed by PSY 540 Seminar. Prerequisites: PSY 530 and 531 or instructor approval.

PSY 540 Meta-Analysis II. (2) S
Continuation of PSY 539. Meta-analysis, computing effect sizes and analyzing the heterogeneity of effect sizes. Seminar. Prerequisite: PSY 539.

PSY 541 Research in Cognitive Development. (3) N
Theoretical and empirical issues in the study of children's knowledge and cognitive processes. Comparison of research in Piagetian and other traditions. Prerequisite: admission to Psychology Ph.D. program or instructor approval.

PSY 542 Social Development. (3) N
Major issues in the area of social development are topics for review and critique. Theory, research, and content are covered. Prerequisite: instructor approval.

PSY 550 Advanced Social Psychology. (3) F, S
Theory and research concerning interpersonal perception, decisions on making attitude formation and change, group processes, social motivation, and interaction processes. Prerequisite: instructor approval.

PSY 551 Advanced Social Psychology. (3) F, S
Continuation of PSY 550. Prerequisite: PSY 550 or instructor approval.

PSY 553 Social Influence. (3) N
Research literature relevant for example to attitude formation and change, conformity, obedience, power, compliance, and altruism. Prerequisite: PSY 551 or instructor approval.

PSY 555 Experimental and Quasi-Experimental Designs for Research. (3) N
Review of research techniques. Laboratory and field research analyzed, applications to specific topics. Prerequisite: instructor approval.

PSY 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 issues. Prerequisite: instructor approval.

PSY 572 Psychological Assessment. (3) F
Theory and research on assessment of personality, psychopathology, and intelligence and construction of psychological assessment instruments. Prerequisite: admission to clinical Ph.D. program or instructor approval.

PSY 573 Psychopathology. (3) F
Theory and research relating to the contribution of psychological, physiological, and genetic factors to the development and persistence of abnormal behavior. Prerequisite: admission to Psychology Ph.D. program or instructor approval.

PSY 574 Psychotherapy. (3) S
A detailed survey of the theoretical and empirical literature relating to verbal psychotherapy and interviewing methods. Structured role playing practice in the major procedures. Prerequisite: admission to the clinical Ph.D. program or instructor approval.

PSY 578 Child Psychopathology. (3) N
Major theories and research related to the development of deviant behaviors in children, including some supervised experience in child assessment. Prerequisite: PSY 572 or instructor approval.

PSY 582 Community Psychology. (3) SS
Community systems, intervention techniques, consultation models, history and current status of community mental health movement and conceptualization of the roles of community psychologists in social system intervention. Prerequisite: advanced standing in Psychology Ph.D. program or instructor approval.

PSY 588 Consultation Methods. (3) N
Several theories and strategies of organizational consultation. The development of consultative skills through simulation and practical experience. Prerequisite: advanced standing in Psychology Ph.D. program or instructor approval.

PSY 624 Clinical Neuroscience. (3) S
An examination of the biological underpinnings of psychological disorders at the molecular, cellular, and system levels: schizophrenia, depression, anxiety, etc. Lecture/proseminar. Prerequisites: graduate standing, instructor approval.

Department of Religious Studies

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PROFESSORS

CADY, FELDHAUS, FOARD, SAMUELSON

ASSOCIATE PROFESSORS

CLAY, COUDERT, GEREBOFF, MOORE, MORRISON,
 SCHOBER, SWANSON, WOODWARD

ASSISTANT PROFESSORS

FESSENDEN LEON UMAR

LECTURER

DAMREL

RELIGIOUS STUDIES—B.A.

The B.A. degree in Religious Studies consists of 45 semester hours, 30 of which must be in religious studies (including 21 in upper division courses) and 15 of which must be in related fields. In order for the student to become acquainted with the character and role of religions across a wide spectrum of social and historical contexts, the 30 semester hours in religious studies must include the following courses:

1. REL 305 Ritual, Symbol, and Myth,
2. at least one course from each of the following distribution areas: Religion in the Americas, Religion and Asian Cultures, and Religion and Western Cultures; and
3. two research seminars, including REL 405 Problems in Religious Studies, which may be repeated for credit; or
4. in place of a second seminar, a student may take REL 499 to write an undergraduate thesis.

The Religious Studies major is an appropriate choice for students wishing to explore such areas as African or African American studies; Islamic studies; myth, ritual, and the arts; Native American studies; and religion and politics. All majors must plan their programs in consultation with a departmental advisor. A minimum GPA of 2.50 is required in the 30 semester hours of religious studies courses.

MINOR IN RELIGIOUS STUDIES

The minor in Religious Studies consists of 18 semester hours, at least 12 of which must be in the upper division. Both REL 305 and 405 are required. For minor verification, students must consult a department advisor.

CERTIFICATES AND EMPHASES

The following are certificate programs or emphases offered in the Department of Religious Studies. For more information on each, see "Certificate Programs and Areas of Emphasis," page 339.

Asian Studies Certificate. Students majoring in Religious Studies may elect to pursue an Asian Studies emphasis or East Asian Studies certificate combining courses from the major with selected outside courses of wholly Asian content.

Jewish Studies Certificate. Students majoring in Religious Studies may elect to pursue a Jewish Studies certificate combining courses from the major with selected outside courses in the area of Jewish Studies.

Latin American Studies Certificate. Students majoring in Religious Studies may elect to pursue a Latin American Studies certificate combining courses from the major with selected outside courses of wholly Latin American content.

Russian and East European Studies. Students majoring in Religious Studies may elect to earn a Certificate in Russian and East European Studies by successfully completing one of the options mentioned in "Russian and East European Studies," page 341.

Southeast Asian Studies Emphasis. Students majoring in Religious Studies may elect to earn a Certificate in Southeast Asian Studies by successfully completing the requirements.

Women's Studies. Students majoring in Religious Studies may elect to earn a Certificate in Women's Studies by successfully completing the requirements.

GRADUATE PROGRAM

The faculty in the Department of Religious Studies offer a graduate program leading to the M.A. degree for those who wish to enter a doctoral program in the study of religions, for those who wish to teach at the community college level, and for those in nonacademic careers who desire general competence in the academic study of religions. See the *Graduate Catalog* for requirements.

RELIGIOUS STUDIES (REL)

REL 100 Religions of the World. (3) F S

An introduction to the history of religious traditions of the world including Buddhism, Christianity, Hinduism, Islam, Judaism, and others. Not open to students who have completed REL 200. *General Studies: HUG.*

REL 200 The Study of Religious Traditions. 3 A

A writing-intensive course introducing analytical skills necessary for understanding religious traditions. Beliefs, practices, and communities of several religious traditions of the world. Not open to students who have completed REL 100. *General Studies: L/HU, G.*

REL 201 Religion and the Modern World. (3) A

An introduction to the nature and role of religious beliefs and practices in shaping the lives of individuals and societies with particular attention to the modern world. *General Studies: L/HU.*

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

REL 202 Religion and Popular Culture. (3) F, S

Explores various intersections between religion and the popular media, including music, news, advertising, the visual arts, literature, performance, and film. Lecture/discussion. *General Studies: HU, C.*

REL 203 Saints and Sinners: Explorations in Sacred Biography. (3) F, S

A comparison of the role of biography across religions to examine the process of categorizing people as saints or sinners. Lecture, discussion. *General Studies: HU, H.*

REL 205 Living and Dying. (3) F, S

Ways that religions have understood birth, sexuality and death and the passing of generations. Examples from traditions throughout the world. Lecture/discussion. *General Studies: HU*

REL 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. *General Studies: L/HU, H*

REL 225 African American Religion. (3) A

Introduction to the history and development of the African American religious tradition. Lecture/discussion. *General Studies: HU, C*

REL 240 Introduction to Southeast Asia. (3) F

An interdisciplinary introduction to the cultures, religions, politics, systems, geography and history of Southeast Asia. Cross-listed as ASB 240, GCU 240, HIS 240, POS 240. Credit is allowed for only ASB 240 or GCU 240 or HIS 240 or POS 240 or REL 240. *General Studies: G.*

REL 260 Introduction to Islam. (3) S

Examination of Islam's beliefs, ceremonies, festivals and institutions. Course assumes no prior knowledge about Islam. Lecture/discussion. Cross-listed as HUM 260. Credit is allowed for only HUM 260 or REL 260.

REL 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. *General Studies: HU*

REL 301 Comparative Mysticism. (3) F

Comparative examination of Eastern and Western mystical traditions from antiquity to the present. Lecture/discussion. Prerequisite: REL 100.

REL 305 Ritual, Symbol, and Myth. (3) A

Ritual, symbol, and myth as types of religious expression, with examples selected from the non-iterate religions of the world. *General Studies: L/HU*

REL 310 Western Religious Traditions. (3) F

Religious traditions of Judaism, Christianity and Islam comparing the doctrinal, institutional and ritual systems and social histories. Lecture/discussion. *General Studies: HU, H*

REL 315 Hebrew Bible (Old Testament). (3) A

The nature, content, background, historical situation, and message of the books of the Hebrew Bible in English translation. *General Studies: L/HU, H*

REL 317 Introduction to Rabbinic Judaism. (3) A

A historical analysis of the thought, literature and institutions of rabbinic Judaism. *General Studies: HU, H.*

REL 320 American Religious Traditions. (3) F, S

Examination of the formation, development and interaction of major American religious traditions (Indigenous, African American, Asian American, and Euro American). *General Studies: HU, C, H.*

REL 321 Religion in America. (3) F, S

The history of religion in America with attention to issues of historiography, pluralism, gender, race, ethnicity, politics, and social reform. *General Studies: HU, C, H*

REL 322 Malcolm and Martin. (3) F, S

This course examines and contrasts the lives, ministries, contributions and legacies of Malcolm X and Martin Luther King, Jr. *General Studies: HU, C*

REL 323 Black Religion: A Biographical Approach. (3) F, S

An examination of the experiences, motivations, and contributions of a number of figures associated with African American religion. *General Studies: HU, C*

REL 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. *General Studies: HU, C*

REL 331 History of Native American Religious Traditions. (3) N

The role of religion in Native American history, including missionization and religious adaptation on prophetic, messianic and religious revitalization movements. *General Studies: L/HU, C, H*

REL 332 South American Indian Religions. (3) F, S

An introduction to the sacred stories, ceremonies and beliefs of Native South American peoples in their historical contexts. *General Studies: HU, G*

REL 344 Religion and Values in Japanese Life. (3) S

Japanese values expressed in the life and annual cycles of the family, local and national identities, and popular culture. Lecture/discussion. *General Studies: HU, G*

REL 345 Asian Religious Traditions. (3) F

Introduction to the major concepts of religious beliefs, rituals and practices in Hinduism and Buddhism. Lecture/discussion. *General Studies: HU, G*

REL 350 Hinduism. (3) A

The study of diverse forms of Hinduism through its institutions, literature, folk art and architecture. *General Studies: L/HU, G, H*

REL 351 Buddhism. (3) A

Doctrines, practices and institutions of the Buddhist religion emphasizing its role in the history and culture of Asian societies. *General Studies: L/HU, G*

REL 355 Japanese Cities and Cultures to 1800. (3) S

Relations among ideas and literary values, and performing arts of the ancient aristocracy, medieval samurai and early modern townspeople. Cross-listed as HUM 310. Credit is allowed for only HUM 310 or REL 355. *General Studies: L/HU, H*

REL 365 Islamic Civilization. (3) F

Global historical survey of Islamic cultures and societies up to the modern period. Lecture/discussion. *General Studies: HU, H*

REL 366 Islam in the Modern World. (3) S

Examination of the worldwide transformations of Islamic religion, cultures and societies in the modern period. Lecture/discussion. *General Studies: HU, G, H*

REL 371 New Testament. (3) A

Origins and literature of early Christian communities, historical investigations of the types of oral and written tradition in the New Testament. *General Studies: HU.*

REL 372 Formation of the Christian Tradition. (3) A

Origins, development, and expansion of Christianity: major themes and tensions from the New Testament world to the beginning of the Middle Ages. *General Studies: HU, H*

REL 373 Women in Judaism. (3) S

A study of the legal, social and cultural status of Jewish women in various historical and contemporary societies. Cross-listed as WST 372. Credit is allowed for only REL 373 or WST 372.

REL 374 Witchcraft and Heresy in Europe. (3) N

Background, origins and development of the inquisition. Analysis of marginal groups and the repression. Cross-listed as HIS 340. Credit is allowed for only HIS 340 or REL 374. Prerequisite: upper-division standing or instructor approval. *General Studies: L, H*

REL 377 Religion in Russia. (3) F, S

Examines the history of the various religious traditions of Russia and the former USSR from an interdisciplinary perspective. *General Studies: HU, H*

REL 379 Religion, Nationalism, and Ethnic Conflict. (3) F, S

Examines the role of religion in national and ethnic conflict in the contemporary world. *General Studies: HU, G*

REL 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. *General Studies: L/HU*

REL 382 Religion, Magic, and Science. (3) F, S

The relationship and conflict between religion, magic and science in the west from antiquity to the present. Lecture, discussion. *General Studies: L/HU*

REL 383 Origins, Evolution, and Creation. (3) F

Examines scientific mythology, and religious ideas relating to origins (particularly human). Place of antevolutionism and scientific creationism in American culture. Lecture/discussion. Cross-listed as BIO 344, HPS 311/HUM 371. Credit is allowed for only BIO 344 or HPS 311 or HUM 371 or REL 383.

- REL 385 Contemporary Western Religious Thought.** (3) A
Introduction to contemporary Jewish and Christian thought. Topics include religion and politics, problems of evil, interpretations of God and feminist theology. *General Studies: L/HU*
- REL 390 Women and Religion.** (3) A
The role of women in several organized religions and/or religious sects, including a study of myth and symbols as they are used to establish maintenance and enforce sex-roles within specific religions. *General Studies: HU, G*
- REL 405 Problems in Religious Studies.** (3) F, S
Selected topics in religious studies, involving students in research interests of instructor. May be repeated for credit when topics vary. Seminar. Prerequisite: at least 9 semester hours of REL courses or instructor approval.
- REL 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. *General Studies: HU, H*
- REL 415 The Jewish Mystical Tradition.** (3) A
Examination of some of the esoteric core of Judaism. Movements and literature such as Hasidism and Kabbalah are studied. *General Studies: HU*
- REL 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 or 321 or equivalent. *General Studies: L/HU*
- REL 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 American religion. Prerequisite: REL 320 or 321 or equivalent. *General Studies: L/HU*
- REL 427 American Religious Thought.** (3) N
The thought of representative American religious thinkers, i.e., Jonathan Edwards, William Eery Channing, Horace Bushnell, and Reinhold Niebuhr. Prerequisite: REL 320 or 321 or equivalent. *General Studies: HU, H*
- REL 444 Religion in Japan.** (3) F
Religion in Japanese history, especially the development of Japanese Buddhism, and religion in the modern transformation of Japan. Prerequisite: instructor approval. *General Studies: HU, G, H*
- REL 460 Studies in Islamic Religion.** (3) A
Issues in the interpretation and understanding of Islamic texts, history, society, culture, and rituals. Prerequisites: REL 365 and Religious Studies major or instructor approval. *General Studies: HU, G*
- REL 470 Religion in the Middle Ages.** (3) A
Religious aspects of medieval life and thought: variety of forms of dissent, heresy, and reform movements from the 4th to 13th centuries. *General Studies: HU, H*
- REL 471 Reformation and Modern Christianity.** (3) A
Protestant Reformation to contemporary Christian movements; includes factors in the dissolution of the Medieval Christian synthesis; variety of reform movements and reformation patterns; Catholic counter-reform measures; formation of liberal theology, ecumenical movement, and the World Council of Churches. *General Studies: HU, H*
- REL 480 Religion and Global Politics.** (3) S
Explores the nature and role of religion in international politics in the modern period. Lecture/discussion. *General Studies: G*
- REL 486 Modern Critics of Religion.** (3) A
Major theories and critiques of religion among modern social philosophers and religious thinkers. *General Studies: HU*
- REL 494 Special Topics in Religious Studies.** (3) N
Open to all students. Freshmen by instructor approval only. Topics may be selected from various areas.
- REL 498 PS: Pro-Seminar in Religious Studies.** (3) A
For students with a major or minor emphasis in Religious Studies.
- REL 499 Individualized Instruction.** (1-3) N
- REL 501 Research Methods in Religious Studies.** (3) F
An exploration of the major themes and methods in the study of religion, with primary focus on classic texts. Lecture/discussion.

- REL 502 Research Methods in Religious Studies.** (3) F, S
An exploration of the major themes and methods in the study of religion, with primary focus on contemporary texts. Lecture/discussion.
- REL 591 Seminar.** (3) N
Topics on methodological issues in the study of religion. Prerequisite: Religious Studies graduate student or instructor approval.
- REL 592 Research.** (1-12) N
- REL 598 Special Topics.** (3) F, S
Topics are selected from the following areas:
(a) Christianity
(b) Islam
(c) Judaism
(d) Native American Religion
(e) Problems in Religious Studies
(f) Religion in America
(g) Religion in East Asia
(h) Religion in South and Southeast Asia
(i) Study of Religion, Comparative Religion
(j) Western Religious Thought/Ethics
May be repeated for credit.

Department of Sociology

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PROFESSORS

BOLIN, COBAS, GORDON, HACKETT, KRONENFELD,
KULS, LANER, NAGASAWA, PETERSON,
THOMAS, WEITZ,

ASSOCIATE PROFESSORS

BENIN, BLAIR, HARLAN, JACOBSON, KEITH
MILLER-LOESSI, QIAN, SULLIVAN

ASSISTANT PROFESSOR

AGADJANIAN, GLICK, PADILLA, RHEA

SENIOR LECTURER

FINE

INSTRUCTOR

WILLAMS

SOCIOLOGY—B.A.

The B.A. degree in Sociology requires a minimum of 30 semester hours of Sociology course work and 15 hours in closely related fields. Of the 30 required hours, a minimum of 18 hours must be upper division with at least 12 of the 18 upper-division hours taken in residence at ASU Main Campus. All upper division courses in the major must be completed with a grade of "C" or higher. The following courses are required:

SOC 101 Introductory Sociology <i>SB</i>	3
or SOC 301 Principles of Sociology <i>SB</i> (3)	
SOC 390 Social Statistics I <i>CS</i>	3
SOC 391 Sociological Research <i>SB</i>	3

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses" page 60.

SOC 483 History of Social Thought L/SB ... 3
 or SOC 485 Sociology of Knowledge L/SB 3
 or SOC 486 Contemporary Theory SB (3)

Total ... 12

Sociology majors may complete the remaining 18 required hours through selecting one of two options. For a general sociology degree, students must choose six courses that sample at least three of the seven sociology content areas

1. family,
2. intergroup relations and social psychology;
3. political comparative historical,
4. social problems and processes,
5. stratification occupations organization;
6. urban sociology demography; or
7. race and ethnicity

If majors desire a more focused preparation in a specialized area, they may complete the remaining 18 hours in one of five focus areas: family issues, urban issues, diversity issues, work/organizational issues, and health issues. Students choosing this option must complete two required focus area courses and select the remaining four courses from a list of optional courses within that focus area. SOC 484 Internships are available within the focus area option for those who qualify.

Information concerning the two options for fulfilling major requirements is available in the Department of Sociology office, SS 321, the Sociology Advising Center, SS 304, and on the Internet at www.asu.edu/class/sociology/undergraduate/advising.

MINOR IN SOCIOLOGY

The minor in Sociology requires 18 hours, of which 12 hours must be upper division courses, with at least six upper division hours completed at ASU Main Campus. The required courses are as follows.

SOC 101 Introductory Sociology SB ... 3
 or SOC 301 Principles of Sociology SB 3
 SOC 391 Sociological Research SB ... 3
 or SOC 483 History of Social Thought L/SB (3)
 or SOC 485 Sociology of Knowledge L/SB 3
 or SOC 486 Contemporary Theory SB 3

Total ... 6

The remaining four courses consist of sociology electives.

SECONDARY EDUCATION—B.A.E.

Social Studies. The major teaching field of social studies education consists of 63 semester hours, of which 30 hours may be in criminal justice, economics, geography, history, political science, psychology, and sociology and are exactly those courses required for the B.A. degree in Sociology. Of the remaining hours, two groups of 12 hours each and one of six hours are generally taken in related social sciences plus SED 480 Special Methods of Teaching Social Studies.

The minor teaching field consists of 24 semester hours, at least six of which must be upper division. SOC 101 or 301, and SOC 470 Racial and Ethnic Relations or SOC 474 African Americans in Modern Society are required. The

remaining 18 hours must be approved by the sociology advisor in consultation with the student and must include at least one course from at least four of the following six areas:

1. family;
2. intergroup relations and social psychology,
3. political comparative historical;
4. social problems and processes;
5. stratification occupations organization; or
6. urban sociology demography.

GRADUATE PROGRAMS

The faculty in the Department of Sociology offer programs leading to the M.A. and Ph.D. degrees. See the *Graduate Catalog* for requirements

SOCIOLOGY (SOC)

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. 2 hours lecture, 1 hour discussion. *General Studies SB*

SOC 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. *General Studies: SB*

SOC 312 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. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies SB*

SOC 315 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. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies SB*

SOC 318 Overview of Aging. (3) F
 Multidisciplinary introduction to gerontology. Explores the characteristics, experiences, needs and problems of older persons. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies SB*

SOC 321 Sociology of Work. (3) S
 Social and cultural analysis of industry. Occupational roles, status and social participation of workers. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies SB*

SOC 331 Environmental Sociology. (3) F
 Analysis of human organization responses to population growth, technological change, and environmental stressors on both a national and global scale. Prerequisites: SOC 101 or 301 or instructor approval. *General Studies SB*

SOC 332 Urban Sociology. (3) F, S
 Growth, characteristics and problems of the modern city. Prerequisite: SOC 101 or 301. *General Studies SB G*

SOC 333 Population. (3) F, S, SS
 Theories of population change, births, deaths, and migration. Population processes. Prerequisite: SOC 101 or 301. *General Studies: SB G*

SOC 334 Technology and Society. (3) S
 Development of technology in relation to society, work, science, the environment, public health, and cultural values related to social change. Lecture/discussion. Prerequisite: SOC 101 or 301 or instructor approval

SOC 340 The Sociology of Deviance. (3) F, S, SS
 Sociological analysis of stigmatized behaviors and conditions, including the causes, effects, and management of stigma. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB*

SOC 341 Modern Social Problems. (3) F, S, SS
 Race relations, poverty, unemployment, and other current issues. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB*

SOC 352 Social Change. (3) F, S

Patterns of social change, resistance to change, and change-producing agencies and processes. Prerequisite: SOC 101 or 301. *General Studies: SB, G, H.*

SOC 360 Sociological Psychology. (3) F, S

Interaction patterns between the sociocultural order and individual; socialization process: norms, roles, and statuses; collective behavior. Prerequisite: SOC 101 or 301. *General Studies: SB.*

SOC 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. *General Studies: SB.*

SOC 365 The Sociology of Mass Communication. (3) F, S

A social and cultural exploration of the major mass media as a communicative process in American society. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 368 Sociology of Everyday Life. (3) F, S

Examination of routine everyday behavior as it relates to problems of social order, control, change, identity, and relationships. Prerequisite: SOC 101 or 301 or instructor approval.

SOC 390 Social Statistics I. (3) F, S, SS

Descriptive and inferential statistical methods for analysis of social data. Computer applications. Prerequisites: SOC 101 (or 301) N1 course. *General Studies: CS.*

SOC 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. Prerequisite: SOC 101 or 301 or 390 or instructor approval. *General Studies: SB.*

SOC 415 The Family. (3) F, S, SS

The family considered from the institutional viewpoint; its historical development and its adaptation to a changing culture; the family system in many cultures. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 416 Marriage Problems in Contemporary Society. (3) S

Marital and family problems in today's society from the viewpoint of personal and cultural adjustment. Prerequisites: SOC 101 (or 301) and an additional 3 hours in sociology or instructor approval. *General Studies: L/SB.*

SOC 417 Family Violence. (3) F, S

Current research and theories about domestic violence including child maltreatment, spousal aggression, and courtship violence. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 418 Aging and the Life Course. (3) F, S

Social aspects of aging. Theoretical and methodological perspectives and problems of aging such as life satisfaction, retirement, and adjustment to role loss. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 420 Sociology of Religion. (3) S

Interrelationship of culture, society, and religion; religion and social stratification, religious economics, and political institutions; social change and religion. Emphasis on American society and institutions. Prerequisites: ASB 102 (or SOC 101 or 301) and an additional 3 hours in sociology or instructor approval. *General Studies: L/SB.*

SOC 421 Education and Society. (3) S

Contemporary sociological perspectives are used to examine effects of schools and schooling on individuals and society. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 422 Sociology of Complex Organizations. (3) F

Sociological studies of government agencies, industrial firms, labor unions, military establishments, and other large-scale organizations. Prerequisite: 6 hours in sociology including SOC 101 or 301 or instructor approval. *General Studies: L/SB.*

SOC 423 Social Class and Stratification. (3) S

Social classes and the function of these groupings in a society. Lecture/discussion. Prerequisites: SOC 101 (or 301) and an additional 3 hours in sociology or instructor approval. *General Studies: L/SB.*

SOC 424 Women and Health. (3) S 2001

Women as health care workers and issues of health, illness, and health care for women. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: L/SB.*

SOC 427 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 instructor approval. *General Studies: L/SB.*

SOC 429 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 101 or 301. *General Studies: SB.*

SOC 433 Demographic Methods. (3) S

Science of population analysis, problems in measurements of size, composition, and changes in population. Prerequisite: SOC 101 or 301. *General Studies: SB.*

SOC 446 Sociology of Crime. (3) F

The process of criminalization: exploring the behavior of the definers of crime, and the behavior of those defined as criminals. Prerequisites: SOC 101 (or 301) and 340 or instructor approval. *General Studies: SB.*

SOC 448 AIDS and Society. (3) F

Provides a sociohistorical perspective on stigma and illness in general and on AIDS in specific. Prerequisite: SOC 101 or 301 or instructor approval.

SOC 451 Comparative Sociology. (3) F

Cross-cultural study of basic social institutions, the methodology of cross-cultural research. Prerequisite: ASB 102 or SOC 101 (or 301) or instructor approval. *General Studies: SB, G.*

SOC 455 Social Movements. (3) F, S

Survey of theoretical approaches and research on historical and recent social movements. Emphasis on cultural politics, and social change. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 456 Political Sociology. (3) S

Social factors associated with voting, nature and structure of the electorate and political parties, and the nature of national and international power structure. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB, G.*

SOC 464 Women's Roles. (3) S

Sociological analysis of the development, nature, and consequences of traditional and alternative roles of women in contemporary society. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: L/SB, C.*

SOC 470 Racial and Ethnic Relations. (3) F, S, SS

Problems of minorities in the United States and in other racially and ethnically heterogeneous societies. Evaluation of theories of prejudice and of research dealing with discrimination, desegregation, and assimilation. Lecture/discussion. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB, C.*

SOC 474 African-Americans in Modern Society. (3) F, S, SS

Social and cultural heritage of black Americans, achievements and current trends. Lecture/discussion. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: L/SB, C.*

SOC 483 History of Social Thought. (3) S, SS

Social thought in human culture. Background of modern sociology. Prerequisite: SOC 101 or 301. *General Studies: L/SB.*

SOC 484 Internship. (1-12) F, S

See Sociology advisor.

SOC 485 Sociology of Knowledge. (3) F

Relationship between social conditions and the development of knowledge in modern society. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: L/SB.*

SOC 486 Contemporary Theory. (3) S

Contemporary issues and crises in social theory with major focus on particular theorists. Ideological factors in theory philosophy issues: the nature of theory and its relationship with methodology. Prerequisite: SOC 101 or 301 or instructor approval. *General Studies: SB.*

SOC 500 Research Methods. (1-12) N**SOC 501 Practicum in Survey Research.** (3) F, S

A research practicum in survey fieldwork, analysis, and reporting in the Phoenix Area Study. Prerequisite: SOC 391 or equivalent.

SOC 502 Practicum in Survey Research. (3) F, S

Continuation of SOC 501. Prerequisite: SOC 501.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

SOC 503 Sociology as a Profession I. (1) F

Becoming and working as a sociologist, including how to write a vita, choose a thesis topic, or find dissertation data. Prerequisite: graduate Sociology major.

SOC 504 Sociology as a Profession II. (1) S

Becoming and working as a sociologist including how to write a vita, choose a thesis topic, or find dissertation data. Prerequisite: graduate Sociology major

SOC 505 Applied Regression Analysis. (3) F SS

Multivariate regression topics relevant to sociological data analysis. Computer applications. Prerequisites: SOC 390 (or equivalent), a proficiency examination

SOC 507 Social Statistics IIIA: Categorical Data Analysis. (3) F

Logistic regression and related topics relevant to categorical data analysis in sociology. Computer applications. Prerequisite: SOC 505 or instructor approval

SOC 508 Social Statistics IIIB: Structural Equation Analysis. (3) S

Structural equation models are taught using LISREL and other computer packages. Topics include multiple group analyses and ordinal endogenous variable models. Prerequisite: SOC 505 or instructor approval

SOC 509 Social Statistics IIIC: Event History Analysis. (3) F, S

Proportional hazards models and other methods for analyzing longitudinal data and establishing hazard rates for exploratory variables. Prerequisite: SOC 505 or equivalent

SOC 515 Studies of the Family. (3) S

Current developments in the study of marriage and the family. Prerequisite: instructor approval

SOC 585 Development of Sociology. (3) F

Major sociological theorists including Durkheim, Weber, Marx, Parsons, Merton, Dahrendorf, Homans, and Mead. Prerequisite: instructor approval.

SOC 586 Contemporary Sociological Theory. (3) S

Analysis of major theories, including structural-functional, conflict, social exchange, symbolic interaction, and role theory. Prerequisite: instructor approval.

SOC 587 Contemporary Issues in Sociology. (3) S

Philosophy of social science. Contemporary issues in sociological theory and methods. Prerequisite: instructor approval.

SOC 588 Methodological Issues in Sociology. (3) S

Basic methodological issues in the application of scientific methods to the study of human social life. Emphasis on limited number of major works with contrasting approaches to issues.

SOC 599 Thesis. (1-12) N

Department of Speech and Hearing Science

David Ingram

Chair

(LL 173A) 480/965-2374

www.asu.edu/clas/shs

PROFESSORS

S. BACON, CASE, DORMAN, D. INGRAM, LaPO NTE, W LCOX

ASSOCIATE PROFESSORS

L. SS, SINEX

ASSISTANT PROFESSORS

AZUMA, SHARMA

CLINICAL PROFESSOR

MATHY

CLINICAL ASSOCIATE PROFESSORS

C. BACON, BROWN, MINTZ, REMSON

CLINICAL ASSISTANT PROFESSORS

COOK, K. INGRAM, WEXLER

LECTURERS

BARTO, HOWARD, NEUMANN, O'BRIEN, QUINN, RIGGS

SPEECH AND HEARING SCIENCE—B.S.

The B.S. degree in Speech and Hearing Science consists of 45 semester hours of speech and hearing science courses emphasizing the developmental and scientific aspects of language, speech, and hearing. The following courses, or their approved equivalents, are required:

SHS 250 Introduction to Phonetics	3
SHS 310 Anatomical and Physiological Bases of Speech	3
SHS 311 Physical and Physiological Bases of Hearing	3
SHS 367 Language Science <i>SB</i>	3
SHS 375 Speech Science	3
SHS 376 Psychoacoustics	3
SHS 384 Hearing Disorders	3
SHS 401 Introduction to Audiologic Evaluation	3
SHS 402 Modifying Communicative Behavior	3
SHS 431 Developmental Speech Disorders	3
SHS 450 Observation	1
SHS 465 Speech and Language Acquisition <i>SB</i>	3
SHS 470 Developmental Language Disorders	3
SHS 496 Aural Rehabilitation	3
Total	40

The remaining speech and hearing science courses to complete the major are determined by the students in consultation with an advisor. A list of approved electives is available through the department. Supporting courses from related fields must include the following or their equivalents:

BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
MAT 170 Precalculus <i>MA</i>	3
PGS 101 Introduction to Psychology <i>SB</i>	3
PHY 101 Introduction to Physics <i>SQ</i>	4
PSY 230 Introduction to Statistics <i>CS</i>	3
Total	17

PSY 290 Research Methods (4) is strongly recommended.

GRADUATE PROGRAMS

The faculty in the Department of Speech and Hearing Science offer programs leading to the M.S. degree in Communication Disorders and Ph.D. degree in Speech and Hearing Science. See the *Graduate Catalog* for requirements.

SPEECH AND HEARING SCIENCE (SHS)

SHS 101 American Sign Language I. (4) F, S

Basic receptive expressive conversational skills basic grammar and syntax rules Orientation to deafness and deaf culture Lecture, discussion, practice, lab.

SHS 102 American Sign Language II. (4) F, S

Further development of receptive expressive conversational skills in ASL; finger spelling Continued expression of deaf culture Lecture, discussion, practice lab Prerequisite: SHS 101

SHS 105 Introduction to Human Communication Disorders. (3) F, S

Introduction to hearing, language, and speech problems in children and adults Lecture demonstration.

SHS 201 American Sign Language III. (4) F, S

Continued development of fluency in ASL with an emphasis on more abstract concepts and the ability to narrate events Lecture discussion, discussion, practice Prerequisite with a grade of "C" or higher: SHS 102

SHS 202 American Sign Language IV. (4) F, S

Further development of fluency in ASL with an emphasis on literature, folklore, and signing narratives with multiple characters Lecture discussion, discussion, practice lab Prerequisite with a grade of "C" or higher: SHS 201

SHS 250 Introduction to Phonetics. (3) F

An introduction to English phonetics with emphasis on phonetic transcription, articulation, phonology, and disorders of speech

SHS 310 Anatomical and Physiological Bases of Speech. (3) F

A noncadaveric study of anatomical systems that underlie human speech and language including respiration, phonation, articulation, and related nervous system processes Prerequisite: BIO 201

SHS 311 Physical and Physiological Bases of Hearing. (3) F

Study of the physical characteristics of sound and of the structure and function of the human auditory system. Prerequisites: BIO 201, PHY 101

SHS 320 Facilitating Speech and Language Development in Early Childhood. (3) F, S

Speech and language development and strategies for facilitating communication skills in early childhood educational settings

SHS 367 Language Science. (3) F

Normative aspects and integration of language structure, comprehension, and production in children and adults. *General Studies SB*

SHS 375 Speech Science. (3) F

Normative aspects of speech, hearing, and language Prerequisites: SHS 310, 311

SHS 376 Psychoacoustics. (3) S

Introduction to acoustics, cochlear anatomy and physiology and the perception of sound Prerequisite: SHS 311 or instructor approval

SHS 384 Hearing Disorders. (3) S

Pathologies of the ear and associated peripheral and central hearing disorders characteristics management, and effects on communication Prerequisites: SHS 311, 376.

SHS 401 Introduction to Audiologic Evaluation. (3) F

Measurement of the basic audiologic test battery, including audiograms, immittance masking and speech recognition. Prerequisites: SHS 311 and 376 and 384 or equivalent

SHS 402 Modifying Communicative Behavior. (3) S

Principles and techniques of modifying speech and language behavior. Prerequisite: SHS 250 or equivalent

SHS 431 Developmental Speech Disorders. (3) S

Introduction to the nature of articulation, fluency, resonance, and voice disorders in childhood Prerequisites: SHS 250 and 310 or equivalents

SHS 450 Observation. (1) F, S

Opportunity to obtain observation experience at the ASU Speech and Hearing Center or at external sites Prerequisite: instructor approval.

SHS 465 Speech and Language Acquisition. (3) S, SS

Speech and language development in the normal child. Prerequisite: SHS 367 or equivalent. *General Studies SB*.

SHS 470 Developmental Language Disorders. (3) F

Introduction to the nature and treatment of language disorders in children Prerequisite: SHS 465 or instructor approval

SHS 483 Professional Issues in Communication Disorders. (3) F

Topics related to professional certification accreditation code of ethics, graduate education and other issues in speech language pathology and audiology

SHS 485 Acquired Speech and Language Disorders. (3) S

Introduction to acquired speech and language disorders across the lifespan Prerequisites: SHS 250 310.

SHS 494 Special Topics. (3) F, S

Topics may be selected from the following

- Hearing Disorders
- Research
- Speech and Language Disorders

May be repeated for credit Prerequisite: instructor approval

SHS 496 Aural Rehabilitation. (3) S

Approaches to aural rehabilitation of children and adults Introduction to educational audiology and assistive listening devices. Prerequisites: SHS 375 and 376 and 401 or equivalent

SHS 501 Introduction to Audiologic Evaluation. (3) F

Measurement of the basic audiologic test battery, including audiograms, immittance masking and speech recognition. Prerequisites: SHS 311 and 376 and 384 or equivalent.

SHS 502 Differential Diagnosis for Audiology. (4) F

Differential diagnosis of cochlear and retrocochlear disorders and assessment of vestibular system 3 hours lecture 2 hours lab Prerequisite: SHS 401 or 501 or equivalent

SHS 504 Hearing Aids. (4) S

Operational application and fitting of amplification devices for the hearing impaired 3 hours lecture, 2 hours lab. Prerequisite: SHS 401 or 501 or equivalent

SHS 508 Pediatric Audiology. (3) F

Audiologic assessment screening and development considerations for infants and young children Prerequisite: SHS 401 or 501 or equivalent

SHS 511 Auditory Perception by the Hearing Impaired. (3) F

A study of how and why sensorineural hearing loss alters the perception of sound Prerequisite: SHS 376 or instructor approval

SHS 512 Medical Aspects of Speech and Hearing. (3) F

Correlation of history and physical findings with pathologic physiology and test results in speech and hearing abnormalities

SHS 515 Audiologic Instrumentation and Calibration. (3) S

Electronic instruments used to produce, modify, and measure characteristics of sound Measurement standards and methods for calibration of audiologic equipment Lecture lab Prerequisite: SHS 401 or 501 or equivalent.

SHS 516 Auditory Evoked Potentials. (4) S

Continuation of SHS 502 including electrophysiologic assessment of peripheral and central auditory nervous system Lecture lab. Prerequisite: SHS 502

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see "General Studies" page 87 For graduate requirements see "University Graduate Requirements," page 83 For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60

SHS 545 Speech Perception by the Hearing Impaired. (3) F
Speech perceptua problems of the hearing impaired including those who have cochlear implants Prerequisite SHS 375 or instructor approval

SHS 552 Otoacoustic Emissions as a Diagnostic Tool. (3) F
Study of the types of otoacoustic emissions, their theoretical implications and application to clinical diagnosis. Lecture/discussion/lab Prerequisite SHS 376 or instructor approval

SHS 555 Cochlear Implants. (3) S
Current status of cochlear implant research and development Prerequisites SHS 504 and 545 or instructor approval

SHS 565 Speech and Language Acquisition. (3) S
Speech and language development in the normal child Prerequisite: SHS 367 or equivalent

SHS 566 Psychology of Language. (3) S
The psychological study of the production and comprehension of language across the lifespan

SHS 567 Neural Bases of Communication Disorders. (3) F
Neuroscience and its application to matters of normal and disordered communication. Prerequisite: SHS 310 or equivalent

SHS 570 Communication Disorders and Multicultural Populations. (3) S
Study of racial and ethnic bases and the communication behaviors and disorders in various cultural groups

SHS 571 Augmentative Communication and Language Programming. (3) S
Focus on individuals across the age span who are or who are at risk for being unable to communicate with spoken language. Lecture, lab.

SHS 572 Language Assessment and Intervention in Early Childhood. (3) F
Focus on the birth to 5 year old population who are at risk for or have communication and language disabilities Prerequisite SHS 470 or equivalent

SHS 573 Language Assessment and Intervention with School-Age Populations. (3) S
Focus on later language development linguistic demands of academic settings assessment and intervention strategies for older children and adolescents. Prerequisite SHS 565 or equivalent

SHS 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 equivalent

SHS 575 Aphasia and Related Neurogenic Language Disorders. (3) S
Assessment and treatment of acquired neurological impairment Prerequisite SHS 567

SHS 576 Neuromotor Speech Disorders. (3) S
Evaluation and treatment of the dysarthrias and apraxia of speech Emphasis on acquired adult disorders

SHS 577 Craniofacial Disorders of Communication. (3) S SS
Communication disorders related to anomalies of the craniofacial structures including orofacial clefting of the lip and palate Prerequisite SHS 310 or equivalent

SHS 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 instructor approval

SHS 579 Feeding and Swallowing Disorders Across the Lifespan. (3) F
Focus on individuals across the age span who have feeding and/or swallowing disorders. Assessment and treatment strategies are presented Prerequisite SHS 567

SHS 580 Clinical Practicum. (1-6) F, S, SS
Supervised practicum in audiology or speech language pathology 1 hour staffing and 3 hours of client contact per week per hour. Credit may be repeated for credit Prerequisites: instructor approval, student must not have provisional admission status

SHS 581 Right Hemisphere Syndrome, Traumatic Brain Injury, and Dementia. (3) F
Study of the nature characteristics and clinical management of cognitive and communication impairments accompanying right hemisphere damage, TBI, and dementia Prerequisite SHS 567.

SHS 582 Differential Diagnosis of Communication Disorders. (3) S
Procedures for assessing speech/language disorders in children and adults. 3 hours lecture 2 hours lab Prerequisites: SHS 250 and 310 and 465 and 567 or equivalents

SHS 584 Internship. (1-6) F, S, SS
Off campus directed experiences in audiology or speech language pathology May be repeated for credit Prerequisites: SHS 580 student must consult with coordinator before registration

SHS 585 Articulation and Phonology: Assessment and Intervention. (3) S
Assessment and treatment of developmental articulation and phonological disorders Prerequisites: SHS 250 and 310 or equivalents.

SHS 591 Seminar. (3) F, S, SS
Selected topics regularly offered
(a) Autism and Pervasive Language Disorders
(b) Multiply Handicapped Child

SHS 596 Aural Rehabilitation. (3) S
Approaches to aural rehabilitation in children and adults introduction to educational audiology and assistive listening devices Prerequisite SHS 401 or 501 or equivalent

SHS 792 Research. (1-12) N

SHS 799 Dissertation. (1-15) N

Women's Studies Program

Mary Logan Rothschild
Director
 (EC A209) 480/965-2358
www.asu.edu/clas/womens_studies

CORE FACULTY

Professor: Rothschild,
 Associate Professors: Ferraro, Hibner Koblitz;
 Assistant Professors: K nger, Leong, Lind, Scheiner

AFFILIATED FACULTY

Anthropology

Professor: Koss Chiono,
 Associate Professor Brandt

Art

Professors: Code l, Magenta, Fah man;
 Associate Professor: Schleif

Art History

Associate Professor: Wolfthal

Chicana and Chicano Studies

Professor: Ru z

Communication

Professor: Va ent ne;
 Associate Professors: Carlson Nakayama

Education

Professors: Edelsky Guzetti

Educational Media and Computers

Associate Professors: McIsaac, W son

English

Professors: Adams Crowley, Gut errez, L ghtfoot,
 Nilsen, Rhodes, Sens bar;
 Associate Professors: DeLamotte, Horan, Morgan
 Ass tant Professors: Pritchard, Thompson, Tohe, Webb,
 Senior Lecturer: Oberme er
 Lecturers: Heenan, Norton

Exercise Science and Physical Education

Ass'tant Professor: Swan

Family Resources and Human Development

Professor: Martin

Geography

Professor: Burns

History

Professors: Fuchs, Giffin, Lavin, Warnicke;
 Associate Professors: Gray Gullet, Hendricks, Stoner,
 Ass tant Professor: Ramey

Justice Studies

Professors: Junk, Romero Zatz
 Assistant Professors: Adelman, Menjivar

Languages and Literatures

Professors: Foster, Losse,
 Assistant Professors: Choi George, Gruzinska, Rees;
 Assistant Research Professional: Orlich

Management

Associate Professor: Cook

Music

Professor: Williamson

Philosophy

Assoc ate Professor: McGregor

Political Science

Associate Professor: Dantico

Psychology

Professors: Chassin, Eisenberg Russo,
 Associate Professor: Saenz

Psychology in Education

Professors: Bernste n, Hackett, Kerr;
 Associate Professor: Moore

Recreation Management and Tourism

Professor: Allison

Religious Studies

Assistant Professor: Fessenden

Social Work

Professors: Coudroglou, Segal;
 Associate Professor: Gerdes;
 Ass tant Professors: Brzuzy, Hurdle

Sociology

Professors: Gordon, Kronenfeld, Kulis, Laner Weitz;
 Assoc ate Professors: Berin, M er-Loessi;
 Ass tant Professor: Agadjanian

Theatre

Professor: Knapp

ASU West Women's Studies

Professor: Stage

The Women's Studies Program is an interdisciplinary university program housed in the College of Liberal Arts and Sciences. Information on faculty affiliation is provided for reference.

WOMEN'S STUDIES—B.A. OR B.S.

Women's Studies provides our students with an intensive interdisciplinary liberal arts education that enables them to write well, think critically, and analyze problems effectively. Our students take a variety of courses, including a capstone seminar requiring original research and writing, and an internship that helps them prepare for life after college. Original undergraduate research is encouraged, and some courses involve students in studying community problems and formulating policy solutions.

The B.A. or B.S. degree in Women's Studies consists of 45 semester hours (with a grade of "C" or higher), of which 33 must be taken from WST or WSH prefixes or from other prefixes designated as part of the major. The other 12 must be in closely related fields chosen in consultation with an

academic advisor. At least 36 of the 45 semester hours 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 Women's Studies Program advisor.

All Women's Studies majors must compile a portfolio to leave on file in the Women's Studies Program office upon graduation.

Required Courses. Students must complete the following courses:

WST 100 Women and Society <i>SB, C</i>	3
or WST 300 Women in Contemporary Society <i>SB, C</i> (3)	
WST 377 Creation of Feminist Consciousness <i>L, C</i>	3
WST 378 Contemporary Feminist Theory <i>L, C</i>	3
WST 484 Internship	3
WST 498 PS: Theoretical Issues in Women's Studies <i>L</i>	3
Total	15

Students must also complete two other courses: (1) an upper division course that provides a humanities or fine arts perspective on the lives and contributions of women; and (2) 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.

No course may be used to satisfy more than one requirement.

Electives in Closely Related Fields. Majors must complete 12 hours of courses in fields closely related to women's studies, one of which must be an upper division course that provides a historical perspective on the lives and contributions of women. These courses may be used to satisfy the general education requirements in the College of Liberal Arts and Sciences.

MINOR IN WOMEN'S STUDIES

The Women's Studies minor consists of 18 semester hours, 12 of which must be in the upper division. The following courses are required:

WST 100 Women and Society <i>SB, C</i>	3
or WST 300 Women in Contemporary Society <i>SB, C</i> (3)	
WST 377 Creation of a Feminist Consciousness <i>L, C</i>	3
or WST 378 Contemporary Feminist Theory <i>L, C</i> (3)	
Total	6

Twelve additional hours of approved women's studies courses must be taken after consultation with the women's studies advisor.

Students pursuing a minor must register at least one semester before graduation and are encouraged to meet with the women's studies academic advisor early in their course of studies.

CERTIFICATE PROGRAM IN WOMEN'S STUDIES

The certificate program is equivalent to an interdisciplinary minor, consisting of 21 semester hours and is open to graduate as well as undergraduate students. Students pursu-

ing a certificate must consult with the women's studies advisor. See "Women's Studies," page 341, for a description of the certificate program.

GRADUATE STUDIES

Although the Women's Studies Program does not offer a graduate degree, it is possible to pursue a graduate degree in some existing programs with a thesis or dissertation topic related to women's studies. Information on such programs can be obtained from the Women's Studies Program office.

COURSES IN WOMEN'S STUDIES

Additional courses appear as Special Topics and vary semester to semester. A list of approved interdisciplinary courses that count toward the requirements for the major, minor, and certificate in Women's Studies. The 36 hours of requirements for Women's Studies is available each term in the program office, EC A209.

WOMEN'S STUDIES (WSH)

WSH 413 Lesbian Culture: Images and Realities. (3) S
Explores aspects of lesbian experience from sociological, psychological, historical, political and literary critical perspectives. Lecture-discuss on. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: HU, C*

WSH 464 Voices and Visions. (3) F, S
Explores the contributions of visionary women in the humanities, varying from semester to semester. Repeat credit for different topics. Lecture, discuss on. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: HU, C*

WSH 470 Women and Popular Culture. (3) S
An interdisciplinary examination of how gender is constructed in popular culture forms. Lecture, discuss on. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: HU, C*

WOMEN'S STUDIES (WST)

WST 100 Women and Society. (3) A
Interdisciplinary introduction examining critical issues in women's studies. Not open to students who have credit for WST 300. *General Studies: SB, C*

WST 294 Special Topics. 1-4) N
(a) Women and Social Action

WST 300 Women in Contemporary Society. (3) A
Intensive interdisciplinary examination of such topics as gender roles, work, education, sexuality, politics, health and law. Not open to students who have credit for WST 100. *General Studies: SB, C*

WST 313 Women and Sexuality. (3) F, S
Explores feminist theories about women's sexuality and the relationship of these theories and related research to women's experience. Lecture, discuss on. Prerequisite: WST 100 or 300 or instructor approval.

WST 372 Women in Judaism. (3) S
A study of the legal, social and cultural status of Jewish women in various historical and contemporary societies. Cross-listed as REL 373. Credit is allowed only for REL 373 or WST 372.

WST 373 Latina/Chicana Issues. (3) F, S
Course examines the roles Mexican American, Chicana and/or Latina immigrant women play historically, socially and politically in the United States. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: SB, C*

WST 375 Women and Social Change. (3) F, S
Combines research and theory on a contemporary social problem with a community action experience focusing on women's social change initiatives. Lecture field placement. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: C*

WST 377 Creation of Feminist Consciousness. (3) F, S
Explores the development of feminist theory from its roots to 1960. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: L, C*

WST 378 Contemporary Feminist Theory. (3) F, S

Contemporary feminist theories and exploration of the intersection of gender, race, ethnicity, and class through critical analysis. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: L, C.*

WST 380 Gender, Race, and Class. (3) F, S

Cultural diversity, class, and gender issues in American social life are explored. Lecture, seminar, analysis papers, and writing. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: SB, C.*

WST 457 Gender, Culture, and Development. (3) F, S

Economic, cultural, and sociopolitical contexts for understanding women's roles related to health, family, work, education, and politics in developing countries. Prerequisite: 6 hours of social science credit or instructor approval. *General Studies: SB, G.*

WST 460 Women and the Body. (3) F, S

An interdisciplinary look at how representations of woman as body permeate culture and affect a woman's sense of self. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: SB, C.*

WST 477 Women and Violence. (3) F

Global examination of forms of violence against women at the individual, institutional, and cultural levels, and efforts to control it. Lecture, discussion. Prerequisite: WST 100 or 300 or instructor approval.

WST 484 Internship. (1-3) F, S

Practical experience to enhance the academic perspectives that emerge from women's studies instruction. Prerequisite: preapproval by internship coordinator required.

WST 498 PS: Theoretical Issues in Women's Studies. (3) F, S

Reading and research on important theoretical issues in women's studies. Prerequisite: WST 100 or 300 or instructor approval. *General Studies: L.*



Matthews Center

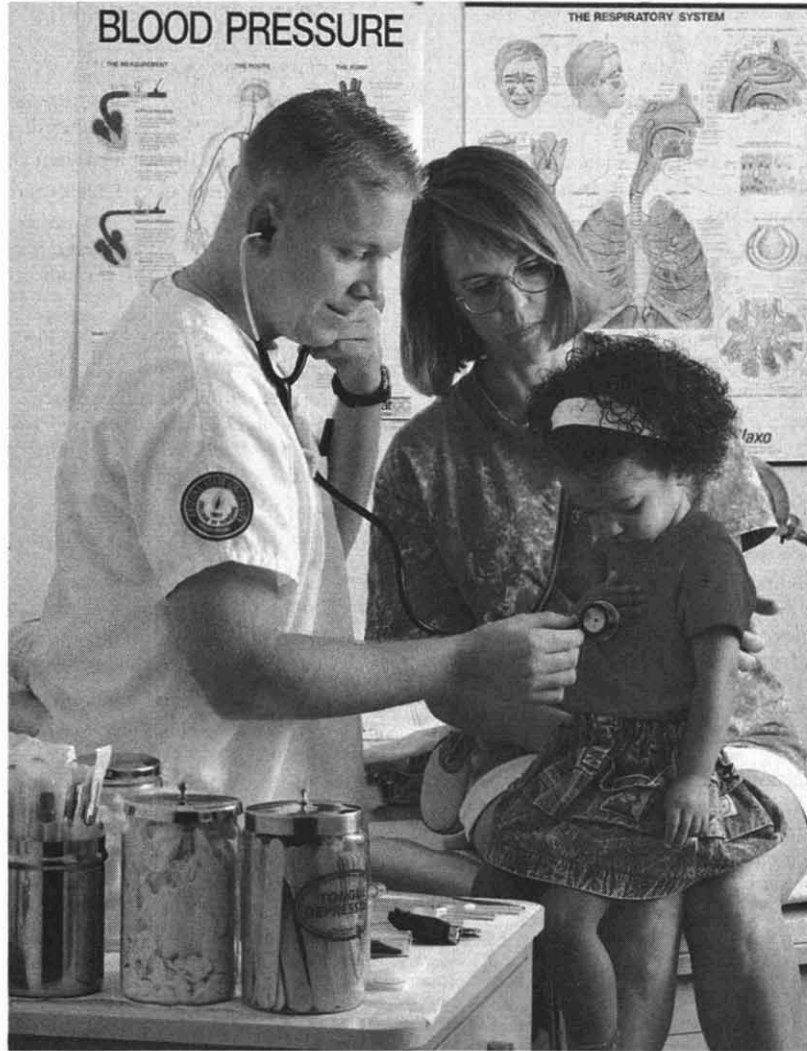
H. Val Peterson photo

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

College of Nursing

Barbara Durand, Ed.D., Dean

www.asu.edu/nursing



College of Nursing students have the opportunity to use their knowledge in clinical settings.

Dave Tevis photo

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PURPOSE

The faculty in the College of Nursing acknowledge their responsibility to health care consumers for the preparation of individuals who provide nursing care of professional quality through teaching, research, and service. The purpose of the College of Nursing is to provide educational programs that prepare professional nurses to meet the health care needs of individuals, groups, and communities. To achieve this purpose, the college offers undergraduate, graduate, and continuing and extended education programs. Within the context of a liberal education, the degree programs prepare professional nurses who

1. understand and respond to changing health and social needs and services,
2. influence nursing practice and health care through leadership and participation in professional and sociopolitical activities; and
3. utilize scientific knowledge to advance professional nursing practice.

The continuing education program provides opportunities for registered nurses (RNs) to improve and expand their nursing practice to meet the health care needs of various populations and to further their own professional development

ORGANIZATION

The College of Nursing is organized around two major clinical divisions: adult health/parent child nursing and community health/psychosocial nursing systems.

The college offers an undergraduate program leading to a Bachelor of Science in Nursing degree, a graduate program leading to an M.S. degree with preparation for advanced practice in nursing, and continuing and extended education opportunities for RNs

ADMISSION

Preprofessional Admission. Students are admitted into the College of Nursing as "prenursing" students. Admission to ASU as a pre-nursing student does not guarantee admission into the professional program. Admission to the professional program is competitive, with the greatest emphasis placed on prerequisite grade point average

In addition to meeting the university requirements for admission, it is recommended that students complete one year each of high school chemistry and biology.

Prenursing students are required to seek academic advising each semester through the College of Nursing Student Services Office. This advising includes course planning as well as information regarding application materials and deadlines

Transfer Credits. While the university accepts transfer credit from other accredited institutions, all transfer credit may not apply toward a Bachelor of Science in Nursing (B.S.N.) degree. Students completing course work at a community college or university other than ASU should consult a College of Nursing academic advisor to plan an appropriate sequence of pre-nursing courses and to apply to the pro-

fessional program. The college may not accept transfer credit (especially science) completed more than 10 years before the date of application.

Professional Program Admission. Prenursing students are eligible for consideration for admission to the professional program if they meet the following criteria:

1. regular admission to the College of Nursing at ASU Main;
2. good standing with ASU and the College of Nursing,
3. minimum prerequisite GPA of 2.75,
4. completion of designated prerequisite courses with earned grade of "C" or higher in each course,
5. completion of the application form,
6. submission of required health and immunization information,
7. a Test of English as a Foreign Language (TOEFL) score of 550 or higher, for international students, and
8. submission of other required materials.

Admission is selective and based on available resources. Meeting the minimum prerequisite GPA does not ensure admission. All qualified applicants may not be admitted. Students admitted to the professional program are required to meet the following criteria:

1. proof of CPR certification Level C American Heart Association Health Care Provider ;
2. proof of negative drug screen;
3. completion of all required health and immunization information; and
4. other required material

Professional program courses are offered at ASU Main and ASU West. Students are asked to specify location preference as part of the application process. Students are expected to complete the professional program on the campus assigned upon admission.

Professional Program Transfer. Students requesting to transfer into the professional program with advanced standing may be required to submit letters of recommendation. Any student enrolled in good standing at any accredited/approved baccalaureate school of nursing within the past two years may apply for admission into the professional program. To be considered for admission to the professional program, students must first be admitted to ASU (see "Undergraduate Admission," page 62). Transfer students must also meet all professional program admission requirements

Admission of Registered Nurses (RNs). All RN students are admitted into the College of Nursing as "prenursing" students. Options available to RN students include RN to B.S.N. and RN to M.S. Several alternatives are available for RNs to facilitate progress toward a degree, including credit by examination and transfer of previously completed general education and nursing courses. RN students must

NOTE: For the General Studies requirement courses, and codes such as L, SQ, C, and H, see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses," page 60.

consult with an advisor in planning their program of study. Refer to "Admission," page 447, for B.S.N. professional program admission criteria.

Additional admission criteria is required for RNs applying to the RN-MS track.

1. GRE scores;
2. resumé;
3. references;
4. goal statement; and
5. other required materials.

In addition, an RN must submit a photocopy of his or her current license to practice nursing as an RN in Arizona. RN students are responsible for adhering to Arizona State Board of Nursing Rules and Regulations.

Readmission to the Professional Program. Students who have not been in continuous enrollment must file a petition requesting readmittance to the professional program and must provide the following documents:

1. proof of current enrollment or readmission to ASU and the College of Nursing;
2. transcripts from all colleges attended; and
3. all other admission requirements as outlined under "Admission," page 447.

Arizona State Board of Nursing Requirement. To be eligible to write the National Council Licensure Examination for Registered Nurses (NCLEX-RN), a student must have a high school diploma or GED certificate as well as proof of graduation from an accredited nursing program. Arizona State law prohibits an individual convicted of a felony from applying for nursing licensure or certification until five years after the date of absolute discharge of sentence.

College Health Requirements. Students enrolled in the professional program are responsible for fulfilling the requirements of the health policies of the College of Nursing. The student is responsible for providing proof to the College of Nursing Student Services Office of having met these requirements before enrollment in the professional program. These health policies include the following requirements:

1. proof of measles (rubeola), mumps, and rubella immunization (MMR);
2. proof of annual tuberculosis screening;
3. completed series of Hepatitis B vaccine;
4. current American Heart Association Level C CPR Certification;
5. proof of tetanus, diphtheria immunization (TD);
6. proof of Varicella (chicken pox) immunization;
7. proof of negative drug screen;
8. annual flu vaccine is recommended; and
9. other health information as needed.

A nursing student may not participate in any clinical experience without meeting these requirements.

Essential Functions. Students admitted to the professional program are expected to meet the Essential Functional Abilities of the Undergraduate Nursing Student. Essential functions for this program include gathering data through the

senses (hearing, seeing, etc.), synthesizing information from a variety of sources, making decisions regarding patient care, and performing necessary physical and mental activities to ensure safe care. For complete details, contact an advisor in the Student Services Office at NUR 108 or call 480-965-2987.

ASU Health Requirements. See "Undergraduate Admission," page 62.

Professional Liability Insurance. It is highly recommended that students carry their own personal professional liability insurance when enrolled in clinical nursing courses.

Health and Accident Insurance. It is strongly recommended that all students carry their own health and accident insurance. Some clinical agencies require students to have current health insurance. See the *Undergraduate Student Handbook*. Each student is personally responsible for costs related to any accident or illness during or outside of school activities.

Automobile Insurance. Students are required by state law to carry automobile insurance. Students are responsible for transportation to and from clinical sites. Extensive travel may be required for selected clinical experiences.

ADVISING

While the College of Nursing provides academic advising, *it is ultimately the responsibility of each student to fulfill academic and program requirements.* Advisors are available by appointment in the College of Nursing Student Services Office, 480-965-2987. Advisors assist students with program planning, registration, preparation of needed petitions, verification of graduation requirements, referrals to university and community resources, and career planning.

Student responsibilities include following university guidelines regarding submission of transcripts from all colleges other than ASU, obtaining the necessary signatures or computer verifications required by the university, and following university procedures for matriculation.

Mandatory Advising. All prenursing students are required to meet with an academic advisor before registering for each semester of classes. In general, all students are encouraged to meet with an advisor each semester. All students on probation are required to meet with an advisor every month.

Program of Study. Students following the curriculum requirements of the 1994–1996 or earlier catalog editions must file a program of study during the first semester of enrollment in the professional program and before registration for professional program Junior Two (JR2) level courses.

Declaration of Graduation. Students following the curriculum requirements of the 1996–1998 or later catalog editions must file a Declaration of Graduation form using the Degree Audit System during the first semester of enrollment in the professional program.

Student Employment. Each of the four semesters in the professional program is composed of 16 credit hours. Seven to eight of these credit hours reflect two to three days in practicum experience. The remaining eight credit hours reflect classroom hours requiring preparation and study. It is

suggested that any additional activities or employment be kept at a minimum

DEGREES

Nursing—B.S.N.

The completion of the curriculum in nursing leads to a Bachelor of Science in Nursing (B.S.N.) degree. In the continuing tradition of the college to be at the forefront in nursing education, curriculum revisions are in process. See an advisor for current program information. The purpose of the program is to prepare beginning professional nurses who possess the theoretical foundation and the clinical competence to function in various health care settings. The graduate is prepared to deliver nursing care services to individuals, families, population groups, and communities. The undergraduate program provides a foundation for graduate studies in nursing at the master's level.

Program objectives for the undergraduate curriculum are directed toward preparation of graduates with generalist abilities. Based on theoretical and empirical knowledge from nursing, the humanities, and physical, biological, and behavioral sciences, graduates are prepared to

1. combine theoretical knowledge from the sciences, humanities, and nursing as a base for critical thinking in professional nursing practice and develop understanding of client, health environment, and nursing
2. organize nursing process to provide safe, competent, and effective nursing care using principle based communication, technical/psychomotor, teaching, management, and therapeutic skills.
3. design and generate comprehensive therapeutic nursing care in partnership with individuals, families, groups, and communities, including those who are culturally diverse and/or vulnerable.
4. generate own professional practice that focuses on health promotion, health restoration, health maintenance, and illness care from a holistic perspective;
5. analyze and apply research findings to nursing practice and identify nursing research problems;
6. display values and behavior consistent with the culture of professional nursing;
7. display personal and leadership characteristics appropriate for professional nursing practice;
8. display responsibility and accountability for professional nursing practice;
9. collaborate with nurses, other health care providers, and clients in the delivery of holistic care that is responsive to changing needs and societal trends, and
10. analyze current nursing and health care services and trends, and identify future health care needs.

Nursing—M.S.

The faculty in the College of Nursing offer a program leading to a Master of Science (M.S.) degree in Nursing with concentrations in adult health nursing, community

health nursing, community mental health/psychiatric nursing, family health nursing, nursing administration, women's health, and parent child nursing with options in childbearing family and nursing of children. The program requires a minimum of 40 semester hours with an earned grade of "B" or higher in all courses in the program of study. Students in the nurse practitioner options are required to complete additional semester hours. Requirements for this program are described in the *Graduate Catalog*. Persons interested in applying for admission to the program should write to the Graduate College for a *Graduate Catalog* and application form (see "Admission to the Graduate College," page 309) and contact the College of Nursing Student Services Office

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see "University Graduation Requirements," page 83.

First-Year Composition Requirement

Completion of both ENG 101 and 102 or ENG 105 or equivalent with a grade of "C" or higher is required for graduation from ASU in any baccalaureate degree program.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement of a minimum of 35 semester hours of approved course work in General Studies, as described in the "General Studies," page 87. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. Many of the university General Studies requirements may be met through completion of College of Nursing course requirements. See an academic advisor for details. General Studies courses are listed in the "General Studies Courses," page 90, in the course descriptions, in the *Schedule of Classes* and in the *Summer Sessions Bulletin*.

COLLEGE DEGREE REQUIREMENTS

College requirements for graduation are consistent with those of the university. The Bachelor of Science in Nursing degree requires 120 semester hours.

Prerequisite Course Requirements

The following courses must be completed before enrolling in the professional program. Completion of these courses does not ensure admission to the professional program (RN students should refer to "RN B.S.N. Degree Requirements," page 450.)

ASB 202 Ethnic Relations in the United States <i>CH</i>	3
BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II	4
CDE 232 Human Development <i>SB</i>	3
CHM 101 Introductory Chemistry <i>SQ</i>	4
ENG 101 First Year Composition	3
ENG 102 First Year Composition	3
FON 241 Human Nutrition	3
HCR 210 Clinical Health Care Ethics <i>HU</i>	3
HCR 220 Health Care Organizations <i>L</i>	3
HCR 230 Culture and Health <i>G</i>	3

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

HCR 240 Human Pathophysiology	4
MAT 117 College Algebra <i>MA</i>	3
MIC 205 Microbiology <i>SG</i>	3
MIC 206 Microbiology Lab <i>SG</i>	1
PGS 101 Introduction to Psychology <i>SB</i>	3
PHI 103 Principles of Sound Reasoning <i>LHU</i>	3
CS statistics elective	3
Total prerequisites	56

MAJOR REQUIREMENTS

The Nursing major requirements are completed after admission to the professional program. RN students should refer to "RN—B.S.N. Degree Requirements," on this page

Nursing Core Courses 1999–2000

Junior Year

First Semester	
NUR 341 Theory I: Health Integrity	4
NUR 351 Introduction to Pharmacology	2
NUR 361 Professional Development I	3
NUR 381 Nursing Practice I	7
Total	6

Second Semester	
NUR 342 Theory II: Health Integrity and Alterations	5
NUR 362 Professional Development II: Nursing Research <i>L</i>	3
NUR 382 Nursing Practice II	8
Total	16

Senior Year

First Semester	
NUR 441 Theory III: Health Integrity and Alterations	6
NUR 461 Professional Development III: The Art of Nursing	3
NUR 481 Nursing Practice III	7
Total	16

Second Semester	
NUR 442 Theory IV: Health Integrity and Alterations	3
NUR 443 Theory V: Leadership and Management	3
NUR 462 Professional Development IV	2
NUR 482 Nursing Practice IV	8
Total	16
Nursing core total	64

Each semester of courses is prerequisite to subsequent semesters. See an advisor for current program information.

RN—B.S.N. DEGREE REQUIREMENTS

Prerequisite Course Requirements

ASB 202 Ethnic Relations in the United States <i>C, H</i>	3
BIO 201 Human Anatomy and Physiology I <i>SG</i>	4
BIO 202 Human Anatomy and Physiology II	4
CDE 232 Human Development <i>SB</i>	3
CHM 101 Introductory Chemistry <i>SQ</i>	4
ENG 0 First Year Composition	3
ENG 102 First Year Composition	3
FON 241 Human Nutrition	3
HCR 240 Human Pathophysiology*	4
MAT 117 College Algebra <i>MA</i>	3
MIC 205 Microbiology <i>SG</i>	3
MIC 206 Microbiology Laboratory <i>SG</i>	1
NUR 341 Theory I: Health Integrity*	4
NUR 342 Theory II: Health Integrity and Alterations*	5
NUR 351 Introduction to Pharmacology*	2
NUR 361 Professional Development I*	3
NUR 381 Nursing Practice I*	7

NUR 382 Nursing Practice II*	9
PGS 101 Introduction to Psychology <i>SB</i>	3
PHI 103 Principles of Sound Reasoning <i>L, HU</i>	3
CS statistics elective	3
Total prerequisites	76

* For alternatives, see an advisor.

Professional Program Requirements

First Semester

NUR 391 Registered Nurse Mobility I: Professional Development <i>L</i>	3
NUR 392 Registered Nurse Mobility II: Health and Wellness	3
NUR 461 Professional Development III: The Art of Nursing	3
Global awareness course (upper division <i>SB</i> or <i>HU</i>)	3
Upper division elective	3
Total	15

Second Semester

NUR 362 Professional Development II: Nursing Research <i>L</i>	3
NUR 441 Theory III: Health Integrity and Alterations	6
NUR 495 Community Health/Home Health Nursing Practice	4
Upper division elective	3
Total	16

Third Semester

NUR 442 Theory IV: Health Integrity and Alterations	3
NUR 443 Theory V: Leadership and Management	3
NUR 462 Professional Development IV	2
NUR 496 Leadership and Management Practice for RNs	5
Total	13
Professional program total	44

RNs interested in pursuing the RN—M.S. track should contact an advisor in the College of Nursing Student Services Office.

ACADEMIC STANDARDS

Students are admitted into the College of Nursing as prenursing students and are subject to the general standards of academic good standing at the university. However, students who maintain standards of academic good standing do not necessarily qualify for admission into the professional program.

Consideration for admission into the professional program is contingent on achieving at least a "C" in all prerequisite courses and earning a minimum GPA of 2.75 in prerequisite courses. In addition, a grade of "C" or higher is required in all course work for the degree.

Once admitted into the professional program, students are allowed only one nursing course failure within the program. The second failure in a nursing course leads to an automatic disqualification from the College of Nursing.

Probation and/or disqualification is in accordance with university policies. Academic dishonesty is not tolerated in any course and is subject to specific College of Nursing policies and procedures.

GRADING POLICY FOR NURSING COURSES

Within the undergraduate program, grades are assigned to reflect levels of achievement in relation to course objectives. Students who do not complete a required nursing course satisfactorily, receiving a grade of "D" or "E" (failing) or a mark of "W" (withdrawal), are not eligible to progress in

the professional program. A student who withdraws from a course with a failing grade reported as an "E3" or "E9" is considered to have failed the course. Students who fail a given course twice are disqualified from the College of Nursing. Students who earn a total of three failures in the professional program courses are also disqualified. A required nursing course may be repeated only once.

Any petition for curriculum adjustment, course substitution, overload, readmission to a nursing course, or readmission to the professional program must be approved by the College Standards Committee.

Withdrawal is in accordance with the withdrawal policy of the university. Students who withdraw from required clinical nursing courses must complete the Interruption in Curricular Progression form. The form is completed by the student in conjunction with the faculty of record for the course(s). Reentry requires advising assistance. In addition, students are responsible for completing the university withdrawal procedure.

An incomplete in a required nursing course must be satisfactorily removed before progression in the professional program is permitted. A grade of "I" is not allowed in clinical courses. See "Grading System," page 76, for university policy.

Audited courses are not accepted as course credit in the minimum 120 semester hour requirement for graduation.

STUDENT RESPONSIBILITIES

Health. Students in the College of Nursing who exhibit or demonstrate a lack of physical and mental health necessary to function successfully as a professional nurse may be required to complete a health examination and have the results made available to the College Standards Committee. Students whose health, behavior, and/or performance have been questioned are reviewed for continuation in nursing courses by the College Standards Committee. The student may appear in person before the committee and personally present information relevant to the committee's review.

Information may also be presented in writing without making a personal appearance.

Professional. Students are held to the professional standards reflected in the American Nurses' Association Code for Nurses. Professional behavior and appearance are required during all nursing course activities.

Student Transportation. Students are responsible for their own transportation to and from health agencies and other selected experience settings, such as home visits to clients. Extensive travel may be required for selected clinical experiences.

Clinical Comprehensive Assessment Test. In preparation for the National Council Licensure Examination for Registered Nurses (NCLEX RN), all senior students, except RN students, are required to take a comprehensive assessment test before graduation.

Laboratory Fees. In several nursing laboratory and clinical courses, students are provided an opportunity to practice and perfect nursing skills before contact with clients. These

courses require an extensive use of equipment and supplies from the college Learning Resource Center. Accordingly, students are assessed a fee for the following courses: NUR 314 for RNs, 427, 428, 429, and 430. Consult with an advisor for information on laboratory fees for Nursing courses in the 1999-2000 curriculum. Lab fees may be assessed on other courses. See the current *Schedule of Classes*.

SPECIAL PROGRAMS

Honors Program. The Nursing Honors Program provides opportunities for academically talented nursing students to engage in educational enrichment opportunities. The program focuses on students in the professional program, however, opportunities are available in lower division courses. For students pursuing upper division honors work, this enriched learning experience begins in the junior year. Honors course work, consisting of at least 18 hours of upper division honors credit, offers a challenging curriculum. Honors students are guided to complete honors credit in courses that compliment their academic and career goals. Students interested in pursuing the Nursing Honors Program are encouraged to seek advisement in the College of Nursing Student Services Office. Once admitted to the professional program, students receive advisement from the honors coordinator.

For more information, call 480/965-2987 or stop by the Student Services Office at NUR 108. Interested students should also contact the University Honors College at 480-965-2359.

ASU West. ASU West hosts the professional program courses. To be eligible to enroll in the professional courses at ASU West, students must be admitted to the College of Nursing at ASU Main, submit all required material for admission to the professional program, and be admitted to the College of Nursing undergraduate professional program.

Continuing and Extended Education Program. The Continuing and Extended Education Program presents a variety of credit and noncredit offerings at ASU Main, ASU West, and other off-campus locations. These offerings are designed to assist practicing professional nurses in main taining and enhancing their competencies, to broaden their scientific knowledge base, and to improve their skills in adapting to the changing health care environment. Programs are organized in response to both the health care needs of the population and the learning needs of nurses engaged in a variety of professional roles and clinical specialties. Workshops, conferences, short evening courses, and special programs are offered at times convenient to the working professional. Some offerings are multidisciplinary and are open to non-RNs. For descriptions of current continuing and extended education offerings, contact the Continuing and Extended Education Program, College of Nursing at 480-965-7431 or visit the Web site at www.asu.edu/nursing/ce.

Community Health Services. The College of Nursing administers a Community Health Services Clinic located in Scottsdale, Arizona. Nurse practitioners provide primary care with an emphasis on promotion of wellness to families

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.



The College of Nursing Building, located on Cady Mall

Michael J. Martin photo

and individuals of all ages. Students in the College of Nursing may receive health care through the clinic for a fee. Students may obtain the health and immunization material required for admission to the professional program at the clinic's facility. The facility also serves as a learning laboratory for both master's and baccalaureate nursing students.

GENERAL INFORMATION

Student Services. The Student Services Office in the College of Nursing provides academic advising, general advising, and referral to university resources. The staff of the Student Services Office is available to help students with a variety of concerns related to academic or personal issues. Prospective students wanting more information on College of Nursing programs or wanting to schedule an advising appointment should contact the College of Nursing Student Services Office at 480/965-2987.

Scholarship and Financial Aid. For information regarding scholarships and loans, see "Financial Aid," page 57. Information about scholarship and loan funds for nursing students may be obtained from the Student Financial Assistance Office or the College of Nursing Student Services Office.

Learning Resources. The Learning Resource Center (LRC) contains a well-supplied nursing laboratory, audiovisual media, a variety of computers, and computer software related to nursing and health care.

Clinical Facilities. Learning experiences with patients/clients and families are provided under the supervision of

qualified faculty with the cooperation of a variety of federal, state, county, private health, and other agencies. The College of Nursing has contracts with more than 200 different agencies in the Phoenix metropolitan area and also operates its own unique nurse-managed clinic in a community setting. Various clinical laboratory facilities are available to students in this essential component of the program.

Student Activities. All ASU students are members of the Associated Students of ASU (ASASU) and participate in campus activities of interest to them. The student government of the university, ASASU, has a strong presence and offers a variety of services and activities. It is the official representative of the student body in matters of governance and budgeting.

College Council of Nursing Students. The CCNS is a member of ASASU and serves as the governing body of all student activities in the college. The council acts as a liaison between the Graduate Nurse Organization (GNO), the Student Nurses' Association (SNA), and the Nursing Students for Ethnic and Cultural Diversity. The CCNS provides for communication, cooperation, and understanding among undergraduate students, graduate students, and faculty and represents the college in university and nonuniversity affairs.

Graduate Nurse Organization. GNO is the coordinating body for nursing students in the graduate program. It provides programs, information, and orientation services for graduate students and complements their academic experiences.

Student Nurses' Association. SNA is a professional nursing organization. By being a member of SNA, the student belongs to the National Student Nurses' Association (NSNA), which is the student counterpart of the American Nurses Association for RNs. NSNA provides means for financial assistance, career planning, a voice in Washington, an opportunity for involvement, and low-cost comprehensive malpractice insurance.

Nursing Students for Ethnic and Cultural Diversity. This organization was formed in 1989 to provide a network of information and support for students interested in issues of cultural awareness and diversity.

Sigma Theta Tau. The Beta Upsilon chapter of Sigma Theta Tau was chartered at the College of Nursing in 1976. Membership in Sigma Theta Tau is an honor conferred on undergraduate and graduate students who have demonstrated outstanding academic and professional achievement.

ROTC Program. Students pursuing a commission through either the Air Force or Army ROTC programs are required to take from 12 to 20 hours in the Department of Military Science. To preclude excessive course overloads, these students should plan on an additional one to two semesters and/or summer school to complete degree requirements. ROTC students must meet all of the degree requirements of the college.

College of Nursing

Barbara A. Durand
 Dean
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PROFESSORS

DURAND, PERRY, THURBER

ASSOCIATE PROFESSORS

ADAMS, BAGWELL BR LLLHART DIRKSEN GALE,
 SMEURT, K LLEEN, KOMNEN CH, MATTSO, PRIMAS

ASSISTANT PROFESSORS

ALPERS, CESAROTTI, CLARKE STEFFEN, LONG,
 MCCARTHY, McGRATH RODR GUEZ SEHESTED,
 SOUSA, ZUNKEL

CLINICAL ASSOCIATE PROFESSORS

BECK, BELL, FARGOTSTE N HAGLER JASPER,
 KASTENBAUM, STILLWELL, WHITE

CLINICAL ASSISTANT PROFESSORS

P. JOHNSON, W JOHNSON MORRIS, NUNEZ,
 SHEARMAN, WOTRING

INSTRUCTOR

ROSDAHL

COMMUNITY HEALTH PRACTICE (CHP)

See the *Graduate Catalog* for the CHP courses.

HEALTH CARE RELATED (HCR)

HCR 210 Clinical Health Care Ethics. (3) F, S, SS
 Health care ethics emphasizing analysis and ethical decisions on making
 at clinical and health policy levels for health care professionals. Pre-
 requisites: ENG 101 102 *General Studies HU*

HCR 220 Health Care Organizations. (3) F, S
 Overview of United States health care delivery systems financing,
 health policy basic principles of budgeting cost benefit analysis, and
 resource management. Cross listed as HSA 220. Credit is allowed for
 only HCR 220 or HSA 220. Prerequisites: ENG 101 102 *General
 Studies L*.

HCR 230 Culture and Health. (3) F, S
 Cultures of diverse groups and health/ness. Cross cultural communi-
 cation, awareness of own cultural influences and generous and aterna-
 tive health practices. Prerequisite: ASB 202 *General Studies G*

HCR 240 Human Pathophysiology. (4) F, S
 Chemical biological biochemical and psychological processes used in
 study of structural and functional alterations in health with selected
 therapeutic. Prerequisites: BIO 201 and 202 and M C 205 and 206 or
 equivalents

NURSING (NUR)

FOR CATALOGS AFTER 1996-98

NUR 314 Health Assessment for Registered Nurses. (3) F, S
 Introductory knowledge and skills for systematic physical psychoso-
 cial and developmental nursing assessment over the life span 2
 hours lecture, 3 hours lab. Prerequisite: RN status

NUR 341 Theory I: Health Integrity. (4) F, S

Concepts related to health integrity with focus on individual clients
 Prerequisite: admission to professional nursing program. Pre- or
 corequisites: NUR 351 361 381.

NUR 342 Theory II: Health Integrity and Alterations. (5) F, S

Concepts related to selected alterations in health integrity with focus
 on individual families and groups. Prerequisite: Junior courses
 Pre- or corequisites: NUR 362 382

NUR 351 Introduction to Pharmacology. (2) F, S

Foundations of pharmacology and interventions. Prerequisite: admis-
 sion to professional nursing program

NUR 361 Professional Development I. (3) F, S

Introduction to professional nursing roles and responsibilities. Prereq-
 uisite: admission to professional nursing program

NUR 362 Professional Development II: Nursing Research. (3) F, S

Introduction to concepts and issues in nursing research. Emphas-
 es quantitative and qualitative research processes. Examination of nurs-
 ing research literature. Prerequisite: Junior *General Studies L*.

NUR 381 Nursing Practice I. (7) F, S

Application of health assessment, nursing process, and basic skills to
 promote and maintain health integrity of individual clients. Lab clinical
 experience. Prerequisite: admission to professional nursing program.
 Pre- or corequisites: NUR 341 351 361

NUR 382 Nursing Practice II. (8) F, S

Application of nursing process with selected individuals, families, and
 groups experiencing alterations in health integrity. Lab clinical exper-
 ence. Prerequisite: Junior I. Pre- or corequisites: NUR 342, 362.

NUR 391 Registered Nurse Mobility I: Professional Development.
 (3) F, S

Historical, philosophical and theoretical bases for professional nurs-
 ing practice. Enhancement of critical inquiry skills through exploration
 of selected issues. Prerequisite: admission to professional nursing
 program. *General Studies L*

NUR 392 Registered Nurse Mobility II: Health and Wellness. (3) F,
 S

Concepts of health integrity and community-based practice and pro-
 fessional nursing roles. Prerequisite: NUR 391

NUR 441 Theory III: Health Integrity and Alterations. (6) F, S

Effective spring 2001
 Concepts related to health integrity and alterations with focus on ind-
 ividuals, families, groups, aggregates, and communities. Prerequisite:
 Junior or II. Pre- or corequisites: NUR 461 481

NUR 442 Theory IV: Health Integrity and Alterations. (3) F, S

Effective fall 2001.
 Advanced concepts related to health integrity and alterations in that
 integrity with focus on selected client populations. Prerequisite: Senior
 or I. Pre- or corequisites: NUR 443 462 482

NUR 443 Theory V: Leadership and Management. (3) F, S

Effective fall 2001.
 Selected theories and concepts of organizations management lead-
 ership with focus on nursing management and leadership in health
 care organizations. Prerequisite: Senior or I. Pre- or corequisites: NUR
 442 462 482

NUR 450 School Nursing Practice. (3) SS

Role of the professional nurse in planning implementation, and evalua-
 tion of the school health program. Prerequisite: RN license

NUR 451 Health Assessment of the Child. (3) SS

Maintenance of good health in the school aged child using health
 assessment and promotion techniques. Lecture discussion, self
 study demonstration. Prerequisite: RN license

NUR 452 Nursing of Children with Developmental Disabilities. (3)
 SS

Congenital and acquired physical and mental developmental disor-
 ders including the evaluation of child and family and community
 resources. Prerequisite: RN license.

NUR 461 Professional Development III: The Art of Nursing. (3) F, S

Effective fall 2000
 Exploration of the aesthetic ethical and personal patterns of know-
 ing in nursing. Prerequisite: Junior I

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C and H), see "General Studies" page 87. For graduation requirements see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.

NUR 462 Professional Development IV. (2) F S*Effect ve fa l 2001*

Focus on role transition to professional nursing. Prerequisite: Senior or I

NUR 481 Nursing Practice III. 7 F, S*Effect ve spr ng 2001*

Application of concepts and clinical practice related to health integrity and alterations with focus on individual, family, groups, aggregates, communities. Lab, clinical experiences. Prerequisite: Junior or I. Prerequisite: NUR 441, 461.

NUR 482 Nursing Practice IV. 8 F, S*Effect ve fa 2001*

Capstone course with focus on synthesis and application of patterns of knowledge and leadership management concepts in collaborative nursing practice. Lab, clinical experiences. Prerequisite: Senior or I. Prerequisite: NUR 442, 443, 462.

NUR 494 Special Topics. 1-4 F, S, SS

Advanced study and/or supervised practice in an area of nursing. Lecture and lab to be arranged. Prerequisite: 12 hours of nursing major or instructor approval.

NUR 495 Community Health Home Health Nursing Practice. (4) F S*Effect ve spr ng 2001*

Theoretical content related to community and home health care. Clinical practice with individual, family aggregates. 1 hour lecture, 3 hours lab. Prerequisite: NUR 392. Corequisite: NUR 362.

NUR 496 Leadership and Management Practice for RN's. (5) F S*Effect ve spring 2001*

Capstone leadership and management experience for the RN student which utilizes patterns of knowledge in nursing practice. Clinical lab. Prerequisite: NUR 362, 392, 443, 461. Corequisite: NUR 495, 496.

NUR 500 Research Methods. 3 F S

Research methods including research conceptualization and design in nursing. Prerequisite: admission to graduate nursing program. Graduate-level inferential statistics course.

NUR 501 Advanced Adult Health Assessment/Promotion:**Advanced Theory I. 4 F**

Designed to expand adult health assessment/promotion skills through knowledge strategies essential for developing and interpreting data. Lecture demonstration. Prerequisite: a core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 502 Management and Maintenance of Adults with Chronic**Health Alterations: Advanced Theory II. (4) S**

Includes theory research that guides the management/maintenance of adults with chronic health alterations. Psychophysiological interrelationships of illnesses emphasized. Lecture, seminar. Prerequisites: NUR 501. a core and flexible core courses except thesis/project. Prerequisite: NUR 580.

NUR 503 Management and Maintenance of Adults with Acute**Health Alterations: Advanced Theory II. (3) S**

Emphasizes theoretical research foundations essential for advanced practice involving care of adults with acute episodic alterations in health. Lecture, seminar. Prerequisite: NUR 501. Prerequisite/corequisite: NUR 580.

NUR 521 Community Mental Health Psychiatric Nursing:**Advanced Mental Health Assessment. (3) F**

Students gain knowledge of theories related to holistic health assessment for the promotion of psychosocial health and development of mental health assessments. Lecture, seminar, lab. Prerequisite: a core and flexible core courses except thesis project.

NUR 522 Community Mental Health Psychiatric Nursing:**Advanced Theory I. 3 F**

Analysis of issues, theories, and research in restoration and promotion of mental health. Emphasizes developing conceptual framework for psychiatric nursing. Prerequisite: NUR 521. a core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 523 Community Mental Health/Psychiatric Nursing:**Advanced Theory II. (3) S**

Focus of this course is development of theoretical basis for intervention and a knowledge base for collaboration and consultation in the mental health area. Prerequisite: NUR 522. a core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 524 Psychoneuroimmunology Approaches to Practice. (3)**SS**

Overview of theories, concepts, and research in psychoneuroimmunology including physiological aspects and application to a holistic nursing model. Seminar. Prerequisite: admission to graduate nursing program.

NUR 531 Nursing of Children: Advanced Theory I. (3) F

Focus on current practices, research, and issues related to health promotion and disease prevention for children and adolescents. Lecture, seminar. Prerequisite: a core and flexible core courses except thesis/project. Corequisite: NUR 580.

NUR 532 Nursing of Children: Advanced Theory II. (3) S

Focus on concepts, theories, and research as basis for strategies related to management of illness and health maintenance for children. Lecture, seminar. Prerequisite: NUR 531; a core and flexible core courses except thesis/project. Corequisite: NUR 580.

NUR 533 Nursing of Children with Special Needs: Advanced Theory II. (3) S

Focus on concepts, theories, and research related to acute and chronic health deviations of children. Lecture, seminar. Prerequisite: NUR 531 or instructor approval. Prerequisites: NUR 531 (or instructor approval). a core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 534 Women's Health: Advanced Theory I. (4) F

Focuses on theories, principles, and research related to managing the health of normal perinatal women and families. Cooperative learning strategies. Prerequisite: a core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 535 Women's Health: Advanced Theory II. (4) S

Focuses on management of nursing care for high-risk perinatal women and women with common health problems. Cooperative learning strategies. Prerequisite: NUR 534, a core and flexible core courses except thesis/project. Corequisite: NUR 580.

NUR 551 Theoretical Foundations of Advanced Practice Nursing.**(3) F S**

Designed to facilitate student exploration and examination of the foundations of advanced nursing practice. Lecture, seminar. Prerequisite: admission to graduate nursing program.

NUR 552 Health Care Issues and Systems. (3) F, S

Analysis of organization, financing, service delivery, and outcomes of the health system. Emphasizes policy issues, roles, and challenges for nurses. Lecture, seminar. Prerequisite: admission to graduate nursing program.

NUR 553 Life Span Development. (3) F

Critical examination of concepts, theories, issues, and research related to developmental periods throughout the life span. Biological and health cognitive, psychosocial, and sociocultural influences are analyzed. Lecture, discussion. Prerequisite: admission to graduate nursing program.

NUR 554 Population-Based Health Care. (3) F S

Identification and assessment of specific community health needs and health care patterns of target populations. Promotion, protection, and improvement of health is addressed when planning health care services. Lecture, seminar. Prerequisite: admission to graduate nursing program.

NUR 558 Advanced Pediatric Health Assessment. (2) S

Expansion of basic health assessment skills and development of clinical problem-solving skills for advanced practice nurses. Assessments of infants, children, and adolescents included. Lecture, lab. Prerequisite: admission to graduate nursing program; undergraduate health assessment within the last five years.

NUR 559 Advanced Health Assessment. (3) S

Expansion of basic health assessment skills and development of clinical problem-solving skills for advanced practice nurses. Assessments of infants, children, adolescents, and adults included. Lecture, lab. Prerequisite: admission to graduate nursing program; undergraduate health assessment within the last five years.

NUR 561 Advanced Practice Nursing Role. (2) SS

Focuses on the examination and implementation of the role of the advanced practice nurse, emphasizing major components and sub-components of the role. Lecture, seminar. Prerequisite: admission to graduate nursing program or instructor approval.

NUR 562 Family Nurse Practitioner Advanced Theory I: Health Promotion, Management, and Maintenance. (4) F
First didactic role specialty course. Focus on concepts and strategies to promote, manage, and maintain health of child, adult, and family. Prerequisite: all core and flexible core courses except thesis/project. Corequisite: NUR 580.

NUR 563 Family Nurse Practitioner Advanced Theory II: Health Promotion, Management, and Maintenance. (4) S
Second didactic role specialty course utilizing knowledge from previous courses to formulate therapeutic promotion, management, and maintenance findings across the life span. Prerequisites: NUR 562; all core and flexible core courses except thesis project. Corequisite: NUR 580.

NUR 564 Applied Pharmacotherapeutics for Advanced Practice. (3) S
Lifespan course for advanced nurse practitioners to expand knowledge of pharmacotherapeutic concepts and principles. Lecture, discussion, case studies. Prerequisite: admission to graduate Nursing program.

NUR 565 Applied Physiology Pathophysiology in Advanced Practice. (3) S
Advanced nurse practitioner course designed to expand previous acquired anatomy and physiology knowledge and discern pathologic alterations across the lifespan. Lecture, seminar, case studies. Prerequisites: admission to graduate Nursing program; undergraduate anatomy and physiology.

NUR 566 Pediatric Physiology Pathophysiology. (3) S
Analysis of the patterns of heredity, cellular differentiation, and development of systems in the infant to adolescent. Prerequisite: admission to graduate Nursing program.

NUR 571 Teaching in Nursing Programs. (3) N
Analysis of theories, issues, and research related to teaching in nursing. Focus on the process of teaching/learning. Seminar, cooperative learning. Prerequisite: graduate standing.

NUR 578 Gestalt Therapy I. (3) F
An introduction to theory and methodology of Gestalt therapy and its uses for mental health promotion and restoration.

NUR 579 Gestalt Therapy II. (3) S
Focus on further development of Gestalt therapy and its application in working with various client populations. Prerequisite: NUR 578.

NUR 580 Practicum (Electives). (1–4) N
Clinical application of theories, concepts, and principles such as health promotion, health management, health maintenance, teaching, management, and special clinical studies.

NUR 580 Advanced Nursing Practicum I, II. (2–6) F, S
Clinical application of theories, concepts, and principles. The areas of concentration include the following:

- Adult Health Nursing
- Community Health Nursing
- Community Mental Health/Psychiatric Nursing
- Family Health Nursing
- Nursing Administration
- Parent/Child Nursing with the Tracks of the Childbearing Family and Nursing of Children

Prerequisite: admission to graduate Nursing program. Corequisites: NUR 501 or 502 or 503 or 522 or 523 or 531 or 532 or 533 or 534 or 535 or 562 or 563.

NUR 582 Advanced Human Physiology. (3) F
Analyzes major theories and concepts of human physiology. Interrelationship of physiology and health is explored. Prerequisite: admission to graduate Nursing program.

NUR 584 Community Health Nursing Internship. (3) S
Students operationalize community health nursing/public health content in leadership roles in a variety of community agencies. Clinical internship. Prerequisite: NUR 580.

NUR 585 Stress Reduction. (3) N
Theory application and evaluation of mind/body relaxation methods, nursing physiology, and effects. Research findings emphasized. Day student practice. Prerequisite: graduate standing or instructor approval.

NUR 586 Advanced Pathophysiology. (3) S
Manifestation of altered human physiology and disease. Systems theory is used to analyze the relationships of disease and physiology. Prerequisites: NUR 582, admission to graduate Nursing program.

NUR 589 Research Utilization. (3) F, S
Emphasizes on the synthesis and application of research to an identified clinical nursing problem. Prerequisite: all core and flexible core courses except thesis/project. Corequisite: NUR 593.

NUR 591 Seminar. (2–4) N
Advanced topics, including curriculum development and health promotion. Prerequisite: instructor approval in selected courses.

NUR 593 Applied Project. (1) F, S
Preparation of a supervised applied project that is a graduation requirement in some professional majors. Prerequisite: all core and flexible core courses. Corequisite: NUR 589.

NUR 598 Special Topics. (2–4) N
Special study, including issues in health care and organizational management in nursing ethics issues and clinical nurse specialist role.

(a) **Community Public Health Nursing Theory and Role.** (3) S
Students analyze synthesis of the theoretical and conceptual basis of community public health nursing applicable to current and future nursing roles. Lecture, discussion, cooperative learning strategies. Prerequisite: admission to the Nursing graduate program or admission to the community health practice concentration of the Arizona graduate program in Public Health or instructor approval.

NUR 599 Thesis. (1–6) F, S, SS
Research proposal development, data collection and analysis, thesis writing, and thesis oral defense. Six hours required. Prerequisite: all core and flexible core courses.

NURSING (NUR)

FOR CATALOGS BEFORE 1998–99

NUR 403 Research in Nursing Practice. (3) F, S
Effective through fall 2000.

Components of the research process. Significance of research to the improvement of nursing practice and development of the profession. Prerequisite: 3 hours statistics. *General Studies: L.*

NUR 406 Leadership and Management in Nursing. (2) F, S
Effective through spring 2001.

Selected theoretical frameworks for organization, management, and leadership in nursing. Prerequisite: NUR 403 or instructor approval.

NUR 407 Contemporary Issues in Nursing and Health. (2) F, S
Effective through spring 2001.

Selected contemporary issues influencing nursing and the health care system. Prerequisite: senior status or instructor approval.

NUR 411 Gerontological Nursing. (2) F, S
Effective through fall 2000.

Provides perspective of biopsychosocial gerontological content applicable to nursing practice and research. Prerequisite: FON 241 or instructor approval.

NUR 427 Community Health Nursing. (3) F, S
Effective through fall 2000.

Introduction to public health theory and principles of community health nursing practice.

NUR 428 Management of Clients in Health Care Settings. (4) F, S
Effective through spring 2001.

Application of principles of nursing management and leadership in health care settings. 1 hour lecture, 9 hours lab. Pre- or corequisites: NUR 406, 407.

NUR 429 Community Health Nursing: Clinical. (4) F, S
Effective through fall 2000.

Clinical experience in community health nursing roles and leadership strategies in a variety of settings. 12 hours lab. Pre- or corequisite: NUR 427.

NUR 430 Home Health Care. (3) F, S
Effective through spring 2001.

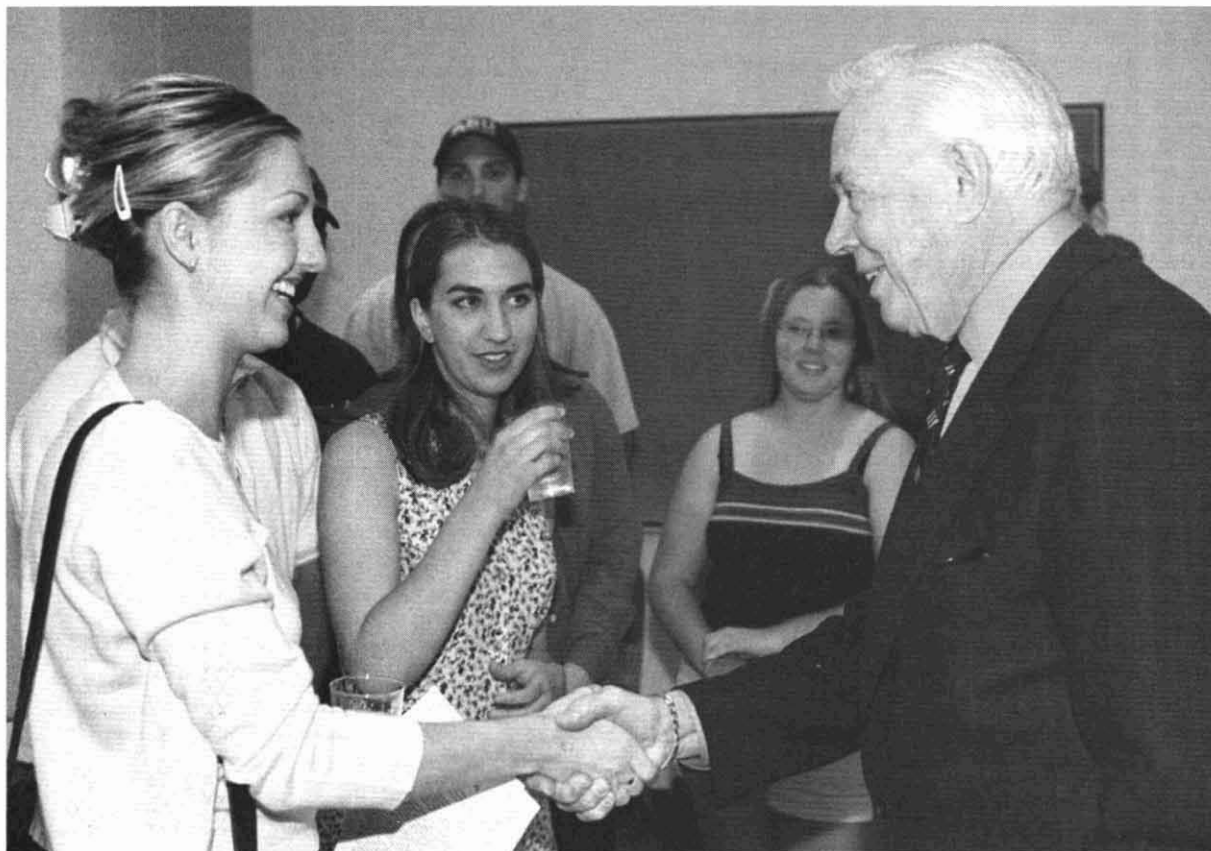
Issues, trends, and practice in the development and delivery of home health care. 1 hour lecture, 6 hours lab. Prerequisites: NUR 411, 429.

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additona omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

College of Public Programs

Anne L. Schneider, Ph.D., Dean

www.asu.edu/copp



Hugh Downs meets students at a reception celebrating the renaming of the Department of Communication to the Hugh Downs School of Human Communication.

Tim Tumble photo

American Indian Studies Program	461	School of Justice Studies	470
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PURPOSE

The faculty in the College of Public Programs offer a wide range of undergraduate and graduate course work, both on and off campus, to full time and part time students. Each academic unit of the college not only assumes responsibility in preparing its own majors, but provides a variety of service courses for the rest of the university. The college is committed to providing excellence in teaching, research, and public service. Consequently, the units work closely with numerous public, quasi public, and private agencies at the national, regional, state, and local levels

ORGANIZATION

The College of Public Programs is composed of six academic units, each administered by a chair or director:

Department of Recreation Management and Tourism
Hugh Downs School of Human Communication
School of Justice Studies
School of Public Affairs
School of Social Work
Walter Cronkite School of Journalism and
Telecommunication

The general administration of the college is the responsibility of the dean, who is responsible to the university president through the senior vice president and provost. For more information, visit the college's Web site at www.asu.edu/copp.

ADMISSION

Freshmen and Transfers. Individuals interested in admission to an undergraduate program in the College of Public Programs should refer to "Undergraduate Admission," page 62. Those who meet the minimum university admission requirements will be admitted to the undergraduate academic unit of the college as a *premajor* in that respective academic unit

Major Status Admission Requirements. On January 1, 1999 the School of Social Work officially became a part of the College of Public Programs. In order to accommodate the smooth transition of the school into the college, major status admission requirements and other college degree requirements established by the College of Public Programs will not apply to the School of Social Work during the 1999-2000 academic year but will be phased in during subsequent years. All School of Social Work admission and degree requirements for the 1999-2000 academic year are described in this catalog (see "School of Social Work," page 478).

Entry to any undergraduate academic unit of the college with status as a major requires:

1. the completion of at least 56 semester hours with a minimum cumulative GPA of 2.50;
2. the university First Year Composition requirement and the university numeracy requirement (see "University Graduation Requirements," page 83); and

3. the College of Public Programs writing competence, communication, and computer requirements see "College Degree Requirements," page 458).

The academic units may also have additional requirements. The ASU GPA is computed on ASU courses only and must be based on a *minimum* of nine semester hours of courses with grade options of "A," "B," "C," "D," or "E"

Most upper division courses in the college are not open to premajors. Premajors should check the catalog information in their major fields to determine any course enrollment restrictions.

Students should refer to the section of the catalog and advising documents with reference to their preferred areas of study for specialized departmental retention requirements and/or continued enrollment in their major courses.

Transfer Credit. In most cases, course work successfully completed at a regionally accredited four year institution of higher education is accepted into the respective academic unit.

Transferable course work successfully completed at an accredited two year institution of higher education (community or junior college) transfers as lower-division credit up to a maximum of 64 semester hours

Successful completion is defined for purpose of transfer as having received a grade comparable to an "A," "B," or "C" at ASU. The acceptance of credits is determined by the director of Undergraduate Admissions, and the utilization of credits toward degree requirements is at the discretion of the academic unit.

ADVISING

The advising mission for the College of Public Programs professional academic advising staff is to assist students in developing meaningful educational plans that will meet their academic, career, and personal goals in an ongoing process of evaluation and clarification

The advisors strive to perform their duties in a professional, ethical, confidential, accurate, and supportive manner, respecting student diversity and needs, and always holding the individual in highest regard. The student and advisor should accomplish this process in a spirit of shared responsibility to develop academic excellence, strong decision making skills, and self reliance.

A student who has been admitted to the College of Public Programs is assigned an academic advisor from the academic unit of the student's major area of study. Questions on advising should be directed to the student's academic advisor or to the College Student Services Office, WILSN 203

Mandatory Advising. The following categories of students are required to receive advising and to be cleared on the Mandatory Advising Computer System before they may register for classes.

1. all freshmen;
2. transfer students in their first semester at ASU;
3. students with admissions competency deficiencies;
4. students with special admissions status;

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C and H) see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses," page 60.

College of Public Programs Baccalaureate Degrees and Majors

Major	Concentration	Degree	Administered By
Broadcasting	Emphases: broadcast journalism, business/management	B.A.	Walter Cronkite School of Journalism and Telecommunication
Communication	—	B.A., B.S.	Hugh Downs School of Human Communication
Journalism	Emphases: news editorial, public relations, visual journalism	B.A.	Walter Cronkite School of Journalism and Telecommunication
Justice Studies	—	B.S.	School of Justice Studies
Recreation	Recreation management, tourism	B.S.	Department of Recreation Management and Tourism
Social Work		B.S.W.	School of Social Work

- 5. students on probation,
- 6. students who have been disqualified,
- 7. students with a cumulative GPA less than 2.00; and
- 8. readmitted students

Course Load. A normal course load per semester is 15-16 semester hours. The maximum number of hours for which a student can register is 18 semester hours unless an overload petition has been filed and approved by the Department/School Standards Committee and the Academic and Student Affairs Committee of the college. Semester course loads may be further limited for students in mandatory advising.

Petitions for overload are not ordinarily approved for students who have a cumulative GPA less than 3.00 and who do not state valid reasons for the need to register for the credits. Students who register for semester hours in excess of 18 and do not have an approved overload petition on file have courses randomly removed through an “administrative drop” action.

Specific degree requirements are explained in detail under the respective college, school, and department sections.

DEGREES

The faculty in the College of Public Programs offer undergraduate academic instruction in five departments or schools. Successful completion of a four-year program of 120 semester hours is specified by the respective academic unit. See “College of Public Programs Baccalaureate Degrees and Majors” table, on this page.

GRADUATE PROGRAMS

Master’s degree programs are offered by all of the academic units of the College of Public Programs and four of the units offer doctoral degrees. See the “College of Public Programs Graduate Degrees and Majors” table, page 459.

For more information on courses, faculty, and programs, see the *Graduate Catalog*.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements.

First-Year Composition Requirement

Students must demonstrate reasonable proficiency in written English by achieving a grade of “C” or higher in

both ENG 101 and 102 (or ENG 107 and 108 for international students), or in ENG 105 or its equivalent. Should a student receive a grade lower than “C” in any of the courses, it must be repeated until the specified proficiency is demonstrated. Composition courses transferred from out of state institutions must be evaluated and approved by the University First-Year Composition Office or by other advisors specifically designated for this purpose.

General Studies Requirement

All undergraduate students in the College of Public Programs are required to complete the university General Studies requirement to be eligible for graduation in any of the undergraduate curricula offered by the college.

General Studies courses are regularly reviewed. To determine whether a course meets one or more parts of the General Studies requirement, see “General Studies,” page 87, and the current *Schedule of Classes*. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

General Studies courses are also identified following course descriptions according to the “Key to General Studies Credit Abbreviations,” page 89.

COLLEGE DEGREE REQUIREMENTS

In addition to the university General Studies requirement, the College of Public Programs also has requirements in communication, computer science, humanities and fine arts, social and behavioral sciences, and writing competence.

Communication Requirement

All undergraduate majors are required to take one of the following courses:

COM 100 Introduction to Human Communication <i>SB</i>	3
COM 225 Public Speaking <i>L</i>	3
COM 230 Small Group Communication <i>SB</i>	3
COM 241 Introduction to Oral Interpretation <i>L/HU</i>	3
COM 259 Communication in Business and the Professions	3

These courses present an overview of human communication and help the student to develop oral presentation skills and competence. The course may be included within the university General Studies requirement, the College of Public Programs requirements, or the department/school degree program, where appropriate. Journalism and Broadcasting majors are limited to COM 225 or 241. Recreation majors are limited to COM 225, 241, or 259.

College of Public Programs Graduate Degrees and Majors

Major	Concentration	Degree	Administered By
Communication		M.A.	Hugh Downs School of Human Communication
Communication	Communicative development, inter-cultural communication, organizational communication	Ph.D.	Hugh Downs School of Human Communication
Justice Studies		M.S. ¹	School of Justice Studies
Justice Studies	Criminal and juvenile justice; dispute resolution; law, justice, and minority populations; law, policy, and evaluation; women, law, and justice	Ph.D. ²	Committee on Law and Social Sciences
Justice Studies		J.D./Ph.D. ³	Committee on Law and Social Sciences College of Law
Mass Communication	—	M.M.C.	Walter Cronkite School of Journalism and Telecommunication
Public Administration	Public information management, public management, public policy analysis and evaluation, urban management and planning	M.P.A.	School of Public Affairs
Public Administration	—	D.P.A.	School of Public Affairs
Recreation		M.S.	Department of Recreation Management and Tourism
Social Work		M.S.W., Ph.D.	School of Social Work

Graduate students in the School of Justice Studies and the Department of Anthropology are able to receive a concurrent M.S. degree in Justice Studies and M.A. degree in Anthropology.

² This program is administered by the Graduate College. See "Graduate College," page 304.

³ Ph.D. students in Justice Studies are able to acquire a joint J.D./Ph.D. with concurrent admission to the College of Law at ASU and fulfillment of joint requirements.

Computer Requirement

A computer course is required for all undergraduate majors. Any numeracy (CS) course from the university General Studies list is acceptable. It may be included within the numeracy requirement or department or school degree program, where appropriate.

Non-English Language Requirement

The Walter Cronkite School of Journalism and Telecommunication requires proficiency in a language other than English for majors in Journalism and Broadcasting. Communication majors have the choice of demonstrating proficiency in a language other than English under the B.A. Proficiency is defined as completing the second semester intermediate level, or higher, of a language other than English.

Humanities and Fine Arts Requirement

Six hours are required from the university General Studies list from departments other than the student's major.

Social and Behavioral Sciences Requirement

Nine hours are required from the university General Studies list from departments other than the student's major.

Writing Competence Requirement

In addition to ENG 101 and 102 First Year Composition or their equivalent, one of the following courses in advanced written expository composition is required of all undergraduate majors:

BUS 301 Fundamentals of Management Communication L	3
ENG 215 Strategies of Academic Writing L	3
ENG 216 Persuasive Writing on Public Issues L	3
ENG 217 Writing Reflective Essays L	3
ENG 218 Writing about Literature L	3
ENG 301 Writing for the Professions L	3
JRN 201 Journalism Newswriting L	3
TCM 201 Radio Television Writing L	3

The writing competence course may be counted as fulfilling the university General Studies literacy and critical inquiry (L) requirement if it is on the university approved list.

Pass/Fail Option

The College of Public Programs does not offer any courses for pass/fail credit. Courses completed for pass/fail credit outside the College of Public Programs may count only as elective credit in meeting degree requirements.

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H) see General Studies page 87. For graduation requirements see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

Limitation on Physical Education Activity Hours

No more than eight hours of physical education activity courses may be counted within the minimum 120 hours required for graduation.

MAJOR REQUIREMENTS

Students should refer to the respective department or school section of the catalog and to department or school advising documents for more information on requirements

Undergraduate Credit for Graduate Courses. To enable undergraduate students to enrich their academic development, the Graduate College and the individual academic units of the College of Public Programs allow qualified students to take graduate level courses for undergraduate credit. To qualify for admission to a graduate level course, the student must have senior status (87 or more semester hours successfully completed) and a cumulative GPA of 3.00 or higher. In addition, permission to enroll must be given before registration and must be approved by the instructor of the course, the student's advisor, the department chair or school director, and the dean of the college in which the course is offered

ACADEMIC STANDARDS AND RETENTION

Good Standing. Any premajor or major student of the respective academic units of the college is considered in good standing for the purpose of retention if the student maintains a cumulative GPA of 2.00 or higher in all courses taken at ASU. However, in order to achieve major status in the undergraduate degree programs in the college, students must have a cumulative GPA of 2.50 or higher at ASU.

Probation. Any student who does not maintain good standing status is placed on probation. A student on academic probation is required to observe any limitations or rules the college may impose as a condition for retention.

Disqualification. A student who is on probation becomes disqualified if (1) the student has not returned to good standing or (2) the student has not met the required semester GPA.

Disqualification is exercised at the discretion of the college and becomes effective on the first day of the fall or spring semester following college action. A disqualified student is notified by the Office of the Registrar and/or the dean of the college and is not allowed to register for a fall or spring semester at the university until reinstated. A student who is disqualified may not attend as a nondegree student.

Reinstatement. Students seeking reinstatement after disqualification should contact the College Student Services Office regarding procedures and guidance for returning to good standing. When reinstatement includes readmission, application must be made to the Readmissions Section of the Office of the Registrar.

All academic discipline action is the function of the College Student Services Office, WILSN 203, under the direction of the dean of the college. Students having academic problems should contact this office for advising at 480 965 1034.

SPECIAL PROGRAMS

University Honors College

The College of Public Programs cooperates with the University Honors College, which affords superior undergraduate opportunities for special classes taught by selected faculty. Honors students receive special advising, priority pre registration, and complete a senior honors thesis. Participating students can major in any academic program. A full description of the requirements and the opportunities offered by the University Honors College can be found in the "University Honors College" section, page 323

For more information, contact the College Student Services Office, WILSN 203 (480 965-1058), and the University Honors College.

College of Public Programs Council

The College of Public Programs Council is a unit of Associated Students of Arizona State University (ASASU) and serves as the coordinating body of student activities in the college. The council fosters communication, cooperation, and understanding among undergraduate students, graduate students, faculty, and staff. As the official representative student organization to the dean and college administration, the council appoints student members to faculty committees, cosponsors events with the college alumni association, and represents students at college and university functions.

Center for Nonprofit Leadership and Management

The mission of the Center for Nonprofit Leadership and Management is "to improve the quality of life in communities by enhancing the performance of nonprofit organizations." Varied strategies accomplish this mission and include coordination of educational offerings, selected technical assistance to nonprofits, support for research projects for faculty and students, and the convening of nonprofit leaders and managers through a variety of training opportunities. The center supports the activities of three complementary nonprofit management education programs: the ASU American Humanics program (undergraduate certificate), the Nonprofit Management Institute (extended education certificate), and a graduate certificate in nonprofit leadership and management currently under consideration for approval. For more information call 480 965 0607.

Center for Urban Inquiry

The Center for Urban Inquiry focuses on civic involvement. The center's mission is to examine the unique features of the new urban West in the United States, particularly intersections of growth and development with citizen activism and community building. By harnessing the unique resources of the university, the center engages in partnerships with urban citizens, including youths, to increase awareness, promote inclusion, and address needs. Center programs include seed grants to students working in teams in pursuit of urban research and community service; service learning that involves students in community building; technical assistance to neighborhood organizations, schools and hospitals; and the production of works that appeal broadly to urban audiences, including performances, exhibits, and videos.

For more information, call 480 965 9216.

College of Public Programs

The academic units within the College of Public Programs may use the CPP prefix for course offerings that cross disciplinary boundaries

COLLEGE OF PUBLIC PROGRAMS (CPP)

CPP 194, 294, 394, 494 Special Topics.

CPP 484 Internship.

CPP 498 Pro-Seminar.

CPP 499 Individualized Instruction.

CPP 580 Practicum.

CPP 583 Field Work.

CPP 584 Internship.

CPP 590, 690 Reading and Conference.

CPP 591, 691 Seminar.

CPP 593 Applied Project.

CPP 594 Conference and Workshop.

CPP 598 Special Topics.

American Indian Studies Program

Carol C. Lujan
Director

(MHALL 220) 480/965-3634

Fax 480/965-2216

www.asu.edu/copp/americanindian

ASSOCIATE PROFESSORS

LUJAN RIDING IN

The American Indian Studies Program emphasizes the political and cultural experience of the various American Indian peoples of the United States. Course work focuses on the cultures, arts, history, and contemporary experiences of the various American Indian nations. The curriculum also concentrates on the practical application for professional career development, preparation for advanced degree programs, and preparation for service to Indian governments and reservations. It emphasizes scholarly expertise in selected fields of study and its practical application to community service.

CERTIFICATE IN AMERICAN INDIAN STUDIES

The certificate program recognizes the need for training American Indian and non Indian students for employment and leadership roles in American Indian government, in state/federal agencies, in education programs, and in urban and Indian community programs.

To this end the American Indian Studies certificate program seeks to address the myriad of contemporary social, political, and economic problems and issues impacting American Indian people.

The program provides students with

1. useful knowledge pertaining to American Indian sovereignty, government, law, history economic development, and culture;
2. practical experience in the form of an internship working in an American Indian government, a community program, an educational entity, an urban program, or a state/federal agency; and
3. educational skills so that graduates can pursue jobs with an American Indian focus

For more information, contact the director of the American Indian Studies Program at 480 965 6977

AMERICAN INDIAN STUDIES (AIS)

AIS 180 Introduction to American Indian Studies. 3 A
Introduction to the study of American Indian justice issues from an interdisciplinary perspective. Primary topics include sovereignty, law, and culture. *General Studies: C*

AIS 194 Special Topics. (1-4) F, S

AIS 280 American Indian Law and Society. 3 F, S

Examines the sovereign status of American Indians and legal relations between the tribes and the U.S. government. Lecture, studio, and televised presentation. *General Studies: C*

AIS 294 Special Topics. 1-4) F, S

AIS 394 Special Topics. (1-4) F, S

AIS 494 Special Topics. 1-4) F, S

AIS 484 Internship.

AIS 498 Pro-Seminar.

AIS 499 Individualized Instruction.

Asian Pacific American Studies Program

Thomas K. Nakayama
Director

(GHALL 2) 480/965-9711

Fax 480/965-9189

www.asu.edu/copp/asianamerican

ASSOCIATE PROFESSOR

NAKAYAMA

ASSISTANT PROFESSOR

de JESÚS

ACADEMIC ASSOCIATE

WONG

PURPOSE

Asian Pacific American Studies is an interdisciplinary undergraduate program that examines the experiences of Asian Americans and Pacific Islanders within the United States, particularly in the Southwest. The program is designed to help students of all ethnicities to

1. appreciate the diversity of Asian American and Pacific Islander cultures, experiences, and histories;
2. understand the U.S. experience in new ways; and

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see General Studies page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.



Stauffer Communication Arts Building

Tim Trumble photo

3. participate more effectively in an increasingly diverse society.

A certificate program offers courses that provide students with opportunities to think critically about interethnic cooperation and conflict. The program integrates teaching, research, and community service.

Certificate in Asian Pacific American Studies

Course Requirements. The certificate program requires 21 semester hours. Fifteen core hours must be fulfilled by the following courses:

APA 294 ST: Introduction to Asian Pacific American Studies.....	3
APA 394 ST: Asian Pacific American Experience	3
APA 484 Internship	3
APA 494 ST: Asian Pacific American Communities.....	3
APA 494 ST: Asian Pacific American Contemporary Issues.....	3

The remaining six semester hours must be filled by courses from an approved list, including any additional courses with an APA prefix, as well as ASB 242, COM 263, MCO 460, and SOC 470.

Students must apply for the certificate program through the Asian Pacific American Studies Program office.

For more information, contact the program director, at 480/965-9711.

ASIAN PACIFIC AMERICAN STUDIES (APA)

APA 194 Special Topics. (1–4) F, S

APA 294 Special Topics. (1–4) F, S

Open to all students. Selected topics may include:

- (a) Introduction to Asian Pacific American Ethnic Studies
- (b) Introduction to Asian Pacific American Studies
- (c) Introduction to Ethnic Studies

May be repeated for credit.

APA 394 Special Topics. (1–4) F, S

Open to all students. Selected topics may include:

- (a) Asian Pacific American Cultural Politics
- (b) Asian Pacific American Experience:
 - Chinese American
 - Filipino American
 - Japanese American
 - Pacific Islander
- (c) Asian Pacific American Legal History
- (d) Asian Pacific American Literature
- (e) Asian Pacific American Women Issues and Identities
- (f) Asian Pacific Americans and Media

May be repeated for credit.

APA 484 Internship. (1–12) F, S

APA 494 Special Topics. (1–4) F, S

Open to all students. Selected topics may include:

- (a) Asian Pacific American Communities
- (b) Asian Pacific American Contemporary Issues
- (c) Asian Pacific American Leadership

May be repeated for credit.

APA 498 Pro-Seminar. (1–7) F, S

APA 499 Individualized Instruction. (1–3) F, S

Hugh Downs School of Human Communication

Jess K. Alberts

Director

(STAUF A412) 480/965-5095

Fax 480/965-4291

www.asu.edu/copp/communication

PROFESSORS

ARNOLD, BANTZ, BROOME, CANARY, JAIN, MARTIN,
McPHEE, PETRONIO, VALENTINE

ASSOCIATE PROFESSORS

ALBERTS, BULEY, CARLSON, COREY, CORMAN,
CRAWFORD, DAVEY, GUERRERO, MAYER,
NAKAYAMA, TROST

ASSISTANT PROFESSORS

DAVIS, TRETHERWAY

FULL INSTRUCTIONAL PROFESSIONAL

OLSON

PURPOSE

The Hugh Downs School of Human Communication exists to advance the understanding of message-related human behavior for the purpose of improving communicative interactions. Teaching, research, and service are directed to the continued development of knowledge and application of principles of communication. Courses of study are designed to provide students with relevant programs adapted to individual academic and professional goals. Courses are not offered in broadcasting or journalism.

GENERAL INFORMATION

A minimum GPA of 2.50 is required for enrollment in all upper-division courses and COM 207. A minimum GPA of 2.25 is required for enrollment in COM 110, 241, 250, and 263.

Communication Major Requirements. Undergraduate premajor students may be admitted to major status after meeting all of the following requirements:

1. College of Public Programs major status admission requirements (see "Admission," page 457), and
2. completion of 12 semester hours of Communication major core course requirements (COM 100, 207, 225, 308) with a minimum grade of "C" in each.

Students may reach major status upon successful completion of COM 308; they do not need to apply for major status.

DEGREE REQUIREMENTS

B.A. and B.S. Degrees

Students can choose from two baccalaureate degrees, each of which requires a minimum of 42 hours of Communication course work. The B.A. requires an additional six semester hours of upper division related area course work or competency in a language other than English at the intermediate level (e.g. SPA 201 and SPA 202). The B.A. also requires completion of one capstone course for a letter grade COM 404, 407, or 484—to total 51 hours. The B.S. requires a General Studies CS (statistics) course, COM 408, and one of the following capstone courses: COM 404 or 407 for a total of 51 hours.

Each degree requires that students take four core courses (COM 100, 207, 225, and 308) plus 15 hours (five courses) where introductory courses are paired with advanced courses described below.

Students must choose three of the following three hour courses for a total of nine hours:

COM 110 Elements of Interpersonal Communication <i>SB</i>	3
or COM 310 Relational Communication (3)	
COM 241 Introduction to Oral Interpretation <i>L/HU</i>	3
COM 250 Introduction to Organizational Communication <i>SB</i>	3
COM 263 Elements of Intercultural Communication <i>SB, C, G</i>	3
COM 321 Rhetorical Theory and Research <i>L/HU H</i>	3

Students must then match two of the three courses selected above with the corresponding 400 level courses the last two digits of the course numbers match from the following list for a total of six hours:

COM 410 Interpersonal Communication Theory and Research <i>SB</i>	3
COM 421 Rhetoric of Social Issues <i>HU</i>	3
COM 441 Performance Studies <i>HU</i>	3
COM 450 Theory and Research in Organizational Communication <i>SB</i>	3
COM 463 Intercultural Communication Theory and Research <i>SB, G</i>	3

Another 15 hours (five courses) must be communication electives, only three hours (one course) of which may be 100 or 200 level. A minimum grade of "C" is required in all communication courses except for a maximum of six semester hours of "Y" credit available to qualified students in COM 281, 382, and/or 484.

To assure the breadth and depth of their education, all Communication undergraduates must complete the require

ments of the university General Studies, the College of Public Programs, and the Hugh Downs School of Human Communication. For descriptive information on university requirements, refer to "General Studies," page 87, and "University Graduation Requirements," page 83. Students in the College of Public Programs are required to take an advanced composition course (which will meet the General Studies L requirement) Although many Communication courses meet the university General Studies requirements for literacy and critical inquiry (L), humanities and fine arts, and the social and behavioral sciences, students must take an advanced composition course *from the list provided by the College of Public Programs*; as well as a total of six hours of humanities and a total of nine hours of social and behavioral sciences from disciplines *other than* Communication.

Students should consult their advisors for current information concerning College of Public Programs and Hugh Downs School of Human Communication lists of courses applicable to General Studies requirements and for information concerning differences in requirements for the B.A. and B.S. degrees.

Communication Internships

Internships consist of supervised field experiences and are available to upper level undergraduate students with major status and a GPA higher than 2.50 (COM 484). An application for internship must be completed in the semester before the intended term for an internship. Contact the school for specific deadline dates. Internships must receive prior approval from the Internship Programs coordinator *before* student registration for the course. Internships may be taken once or repeated for credit up to a total of 12 semester hours, but not more than six semester hours may be applied toward the major.

MINOR IN COMMUNICATION

The minor in Communication consists of 15 semester hours of courses, including COM 100 plus COM 225 or 259, and nine additional semester hours, at least six of which must be upper-division. Nine of the total 15 semester hours must be ASU Main resident credits. No pass/fail, "Y" credit, or credit/no credit courses will be allowed. Communication courses which are required for one's major may not also count for the minor. All prerequisite and GPA requirements must be met. The "C" minimum requirement must be met for each class.

GRADUATE PROGRAMS

In addition to offering an M.A. degree program, the Hugh Downs School of Human Communication also administers the interdisciplinary Ph.D. degree program in Communication. See the *Graduate Catalog* for the requirements and areas of concentration.

COMMUNICATION (COM)

COM 100 Introduction to Human Communication. (3) F, S, SS
A top course oriented introduction to basic theories, dimensions, and concepts of human communication and behavior. *General Studies SB*

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional non-bus courses offered but not listed in this catalog see "Classification of Courses" page 60.

COM 110 Elements of Interpersonal Communication. (3) F, S, SS
Demonstration and practice of communication techniques in establishing and maintaining interpersonal relationships. Prerequisite: 2.25 GPA. *General Studies: SB*

COM 207 Introduction to Communication Inquiry. (3) F, S, SS
Bases of inquiry into human communication including introduction to notions of theory, philosophy problems, and approaches to the study of communication. Prerequisites: COM 100 2.50 GPA.

COM 222 Argumentation. (3) F, S
Philosophical and theoretical foundations of argumentation including a comparison of models of advocacy and evidence. *General Studies: L*

COM 225 Public Speaking. (3) F, S, SS
Verbal and nonverbal communication in platform speaking. Discussion and practice in vocal and physical delivery and in purposeful organization and development of public communication. *General Studies: L*

COM 230 Small Group Communication. (3) F, S, SS
Principles and processes of small group communication, attitudes, and skills for effective participation and leadership in small groups; small group problem solving and decision making. *General Studies: SB*

COM 241 Introduction to Oral Interpretation. (3) F, S, SS
The communication of literary materials through the mode of performance. Verbal and nonverbal behavior, interface of interpreter with literature and audience, and rhetorical and dramatic analysis of literary modes. Prerequisite: 2.25 GPA. *General Studies: L/HU*

COM 250 Introduction to Organizational Communication. (3) F, S, SS

Introduction to the study of communication organizations including identification of variables, roles and patterns influencing communication organizations. Prerequisite: 2.25 GPA. *General Studies: SB*

COM 251 Interviewing. (3) N
Principles and techniques of interviewing including practice through real and simulated interviews, informational, persuasive and employee-related situations. Not open to freshmen.

COM 259 Communication in Business and the Professions. (3) F, S, SS

Interpersonal, group, and public communication in business and professional organizations. Not open to freshmen and not available for credit toward the major.

COM 263 Elements of Intercultural Communication. (3) F, S, SS
Basic concepts, principles, and skills for improving communication between persons from different minority racial, ethnic and cultural backgrounds. Prerequisite: 2.25 GPA. *General Studies: SB, C, G*

COM 271 Voice Improvement. (3) N
Intensive personal and group experience to improve normal voice usage, including articulation and pronunciation.

COM 281 Communication Activities. (1-3) F, S, SS
Nongraded participation in forensics or interpretation occur in activities. Maximum 3 semester hours each semester. Prerequisite: instructor approval.

COM 294 Special Topics. (3) F, S, SS
Prerequisite: instructor approval.

With the exception of COM 300 and 400 enrollment in 300- and 400-level COM courses require a minimum cumulative ASU GPA of 2.50

COM 300 CIS: Communication in Interdisciplinary Studies. (3) F, S, SS

Examination and analysis of communication in the context of other academic disciplines. May be repeated for credit. Prerequisites: COM 100 and 225 or COM 259, 2.00 GPA.

COM 308 Empirical Research Methods in Communication. (3) F, S, SS
Examination of empirical research methods in communication, including experimental, survey, descriptive and other quantitative approaches. Prerequisites with a grade of "C" or higher: COM 207, MAT 114 or higher level MAT course. *General Studies: L*

COM 310 Relational Communication. (3) F, S
Exploration of communication issues in the development of personal relationships. Current topics concerning communication in friendship, romantic and work relationships. Prerequisite: COM 100 or instructor approval.

COM 312 Communication, Conflict, and Negotiation. (3) F, S
Theories and strategies of communication relevant to the management of conflicts and the conduct of negotiations. Prerequisite: COM 100 or instructor approval.

COM 316 Gender and Communication. (3) F, S
Introduction to gender-related communication. Verbal, nonverbal and paralinguistic differences and similarities are examined with a sociopsychological and historical perspectives. *General Studies: SB, C*

COM 317 Nonverbal Communication. (3) F, S
The study of communication using space-time movement, facial expression, touch, appearance, environment, objects, voice and gender cultural variables. Not open to students with credit in COM 294, ST Beyond Words.

COM 319 Persuasion and Social Influence. (3) F, S, SS
Variables that influence and modify attitudes and behaviors of message senders and receivers including analysis of theories, research and current problems. Prerequisite: COM 207 or equivalent. Prerequisite for nonmajors: POS 401 or PSY 230 or QBA 221 or SOC 390 or STP 226 or instructor approval. *General Studies: SB*

COM 320 Communication and Consumerism. (3) A
Critical evaluation of messages designed for public consumption. Perceiving, evaluating and responding to political, social and commercial communication. *General Studies: SB*

COM 321 Rhetorical Theory and Research. (3) F, S
Historical development of rhetorical theory and research in communication from classical antiquity to the present. Prerequisite: COM 207 or equivalent. Prerequisite for nonmajors: POS 401 or PSY 230 or QBA 221 or SOC 390 or STP 226 or instructor approval. *General Studies: L/HU, H*

COM 323 Communication Approaches to Popular Culture. (3) F, S, SS
Critical analysis of popular culture within social and political contexts, emphasis on multicultural influences and representations in everyday life. Lecture, discussion. Prerequisite: COM 100 or instructor approval. *General Studies: C*

COM 325 Advanced Public Speaking. (3) F, S
Social and pragmatic aspects of public speaking as a communication system. Strategies of rhetorical theory and the presentation of forms of public communication. Prerequisite: COM 225 or instructor approval. *General Studies: L*

COM 341 Social Contexts for Performance. (3) N
Adaptation and performance of literature for the community outside the university. Research into the practical uses of performed literature.

COM 344 Performance of Oral Traditions. (3) N
Cultural beliefs and values studied through ethnographic research and performance of personal narratives, folklore, myths, legends and other oral traditions. Lecture, fieldwork, research paper. *General Studies: HU, C*

COM 357 Communication Technology and Information Diffusion. (3) F
Study effects of new communication technology on society, organization, and individuals. Hands-on experience plus critical analysis of theory and research. Prerequisites: COM 250 (or MGT 301 or PGS 430 or SOC 301) and CSE 180 (or equivalent) or instructor approval. *General Studies: SB*

COM 371 Language, Culture, and Communication. (3) F, S
Cultural influences of language on communication, including social functions of language, bilingualism, multiculturalism, and dialectalism. Prerequisite: COM 263 or instructor approval. *General Studies: SB, C, G*

COM 382 Classroom Apprenticeship. (1-3) F, S, SS
Nongraded credit for students extending their experience with a content area by assisting with classroom supervision in other COM courses (maximum 3 semester hours each semester). Prerequisites: 2.50 GPA; written instructor approval.

COM 400 CIP: Communication in Professions. (3) F, S, SS
Specialized study of communication processes in professional and organizational settings. May be repeated for credit. Lecture, discussions. Prerequisites: COM 100 and 225 or COM 259, 2.25 GPA.

COM 404 Research Apprenticeship. (3) F, S
Direct research experience on faculty projects. Student/faculty match based on interests. Lecture, apprenticeship. Prerequisites: COM 308 (or instructor approval) application required.

COM 407 Advanced Critical Methods in Communication. (3) S
Examination of critical approaches relevant to communication including textual analysis, social theory, cultural studies and ethnography. Lecture, discussion. Prerequisite: COM 308.

COM 408 Quantitative Research Methods in Communication. (3) F S

Advanced designs measurement techniques and methods of data analysis of communication research Prerequisites: COM 308 and a general statistics course (EDP 454 or POS 401 or PSY 230 or QBA 221 or SOC 390 or STP 226) or instructor approval

COM 410 Interpersonal Communication Theory and Research. (3) F, S, SS

Survey and analysis of major research topics paradigms and theories dealing with message exchanges between and among social peers. Prerequisites: COM 110 (or 310) and 308 or instructor approval. *General Studies SB*

COM 411 Communication in the Family. (3) A

A broad overview of communication issues found in marriage and family life, focusing on current topics concerning communication in the family. Prerequisites: COM 110 (or 310) and 207 or instructor approval. *General Studies SB*

COM 414 Crisis Communication. (3) N

Role of communication in crisis development and intervention.

COM 417 Communication and Aging. (3) N

Critical study of changes in human communicative patterns through the later adult years with attention on intergenerational relationships and self-concept functions

COM 421 Rhetoric of Social Issues. (3) F S

Critical rhetorical study of significant speakers and speeches on social issues of the past and present Prerequisites: COM 308 and 321 or instructor approval *General Studies: HU*

COM 422 Advanced Argumentation. (3) N

Advanced study of argumentation on theories and research as applied to public forum adversary scholarly and legal settings Prerequisite: COM 222 or instructor approval.

COM 426 Political Communication. (3) F

Theories and criticism of political communication, including campaigns, mass persuasion, propaganda and speeches. Emphasis on rhetorical approaches *General Studies: SB*

COM 430 Leadership in Group Communication. (3) N

Theory and process of leadership in group communication, emphasizing philosophical foundations, contemporary research, and applications to group situations Prerequisite: COM 230 or instructor approval.

COM 441 Performance Studies. (3) F S, SS

Theory, practice, and criticism of texts in performance Emphasis on the interaction between performer text, audience and context Prerequisites: COM 241 and 308 or instructor approval. *General Studies: HU*

COM 445 Narrative Performance. (3) N

Theory and practice of performing narrative texts (e.g. prose fiction, oral histories diaries essays letters). Includes scripting, directing and the rhetorical analysis of storytelling Prerequisite: COM 241 or instructor approval *General Studies: HU*

COM 446 Interpretation of Literature Written by Women. (3) N

Students explore, through performance and critical writing, literature written by women *General Studies: HU C*

COM 450 Theory and Research in Organizational Communication. (3) F, S, SS

Critical review and analysis of the dominant theories of organizational communication and the corresponding research strategies Prerequisites: COM 250 and 308 or instructor approval *General Studies: SB*

COM 453 Communication Training and Development. (3) A

Examination of the procedures and types of communication training and development in business industry, and government Prerequisite: COM 250 or instructor approval

COM 463 Intercultural Communication Theory and Research. (3) F, S, SS

Survey and analysis of major theories and research dealing with communication between people of different cultural backgrounds primarily in international settings. Lecture discussion, small group work Prerequisites: COM 263 and 308 or instructor approval *General Studies: SB, G*

COM 465 Intercultural Communication Workshop. (3) N

Experiential based study of communication between members of different cultures designed to help students improve their intercultural communication skills Prerequisite: instructor approval.

COM 480 Methods of Teaching Communication. (3) N

Analysis organization, and presentation of textual and other classroom materials. Prerequisite: instructor approval.

COM 484 Communication Internship. (6) F S, SS

Prerequisites: COM 225, 308, application required.

COM 494 Special Topics. (1-3) F S, SS**COM 501 Research Methods in Communication.** (3) F

Critical analysis of systems of inquiry in communication focusing on the identification of variables and approaches to conducting research in communication Prerequisite: instructor approval

COM 504 Theories and Models in Communication. (3) F

Theory construction metatheoretical concerns models, construct definition, and comparative analysis of current theories in communication Prerequisite: instructor approval

COM 508 Quantitative Research Methods in Communication. (3) F

Empirical research designs measurements, and statistical strategies and techniques in analyzing and evaluating experimental and descriptive research in communication Prerequisites: COM 501 and 504 or instructor approval.

COM 509 Qualitative Research Methods in Communication. (3) S

Qualitative research methods including interviewing, field methods, and other nonquantitative techniques for analyzing communication Prerequisites: COM 501 and 504 or instructor approval.

COM 510 Interpersonal Communication Theory and Research. (3) A

Contemporary theories and research in interpersonal communication Prerequisites: COM 501 and 504 or instructor approval

COM 512 Death, Society, and Human Experience. (3) N

Examines dying death bereavement and suicide from both individual and sociocultural perspectives in terms of options for communication and action in death related situations Prerequisite: instructor approval

COM 521 Rhetorical Criticism of Public Discourse. (3) N

History and significance of rhetorical theory and criticism in the analysis of public discourse Prerequisites: COM 501 and 504 or instructor approval

COM 584 Communication Internship. (1-12) F, S, SS**COM 596 Pro-Seminar in Communication.** (0) F

Discussion of research projects with the faculty Prerequisite: admission to the graduate program

COM 604 Theory Construction in Communication. (3) F

Review and analysis of philosophical problems inherent in communicative research and of metatheories designed to deal with these problems Prerequisite: COM 504 or instructor approval

COM 607 Contemporary Rhetorical Methods. (3) S

Analysis of issues in the practice of rhetorical communication research including criticism and scholarship. Seminar.

COM 608 Multivariate Statistical Analysis of Data in Communication. (3) S

Statistical analysis of communication research data Multivariate procedures used in communication research and methods of causal analysis. Prerequisites: COM 501 and 508 or equivalents

COM 609 Advanced Qualitative Research Methods in Communication. (3) F

Analysis of issues in the practice of qualitative communication research including data gathering, fieldwork issues, analysis strategies, and reporting results Prerequisite: COM 509 or instructor approval

COM 680 Practicum: Research in Communication. (3) S

Guided practice in the conduct of communication research Topic identification procedures formats and ethics of publishing. Prerequisite: COM 604

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C and H) see "General Studies" page 87 For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses" page 60

COM 691 Seminar. (3) F, S, SS

Seminar topics such as the following may be offered:

- (a) Current Organizational Approaches to Communication
- (b) Examination of Privacy and Disclosure
- (c) Intercultural Aspects of Communication
- (d) Interpersonal and Relational Communication
- (e) Research in Performance Studies
- (f) Rhetorical Issues
- (g) Social Influence

Lecture/discussion Prerequisite: instructor approval

COM 792 Research. 1-12) N

COM 799 Dissertation. 1-15) N

Walter Cronkite School of Journalism and Telecommunication

(STAUF A231) 480/965-5011

Fax 480/965-7041

www.asu.edu/cronkite

PROFESSORS

CRAFT, CRONKITE, DOIG, GODFREY, HALVERSON,
MERRILL, SYLVESTER, WATSON, YOUM

ASSOCIATE PROFESSORS

ALLEN, BARRETT, BRAMLETT SOLOMON, GALICIAN,
HOY, LENTZ MATERA RUSSELL, RUSSOMANNO

ASSISTANT PROFESSOR

GORMLY

CLINICAL PROFESSORS

ITULE, LEIGH

LECTURERS

CASAVANTES, NICHOLS

SENIOR ADMINISTRATIVE PROFESSIONAL

LEIGH

PURPOSE AND PHILOSOPHY

The primary purpose of the Walter Cronkite School of Journalism and Telecommunication is to prepare students to enter positions in media fields. The school strives to meet its mission through a three pronged approach:

1. classroom instruction in a blend of conceptual courses, such as media law, media ethics, media history, and media management and skills courses, such as writing, editing, reporting, and production techniques.
2. on campus media work opportunities, such as the *State Press* the independent daily newspaper, KASR radio; KAET TV; KAET TV Cactus State Poll; and "Newswatch," a weekly student produced cable television news magazine program; and
3. off campus media work opportunities, including internships in print, broadcast, public relations, and visual journalism.

In addition to preparing students to assume positions in the media and media related enterprises, the school provides courses that lead to a better understanding of the role

and responsibility of the media in society's public and private sectors.

ADMISSION

Preprofessional Admission

Students admitted to ASU also may be admitted to the Walter Cronkite School of Journalism and Telecommunication with preprofessional status. Preprofessional admission to the school does not guarantee admission to the upper division professional program. All preprofessional students enrolling in courses in the school must complete a minimum of 30 semester hours with at least a 2.50 GPA before they are permitted to enroll in school courses at the 200 level. All preprofessional students who intend to take courses beyond the 100 level must pass an English proficiency examination administered by the school.

Professional Program Admission

Admission to the Walter Cronkite School of Journalism and Telecommunication professional program, which enrolls students in their junior and senior years, is competitive and based on available resources. Once a student is granted admission, the upper division professional program requires a minimum of two years to complete.

A separate application procedure is required for entry to the upper division professional program. To be eligible to apply for admission to the professional program, students must meet the following requirements:

1. be admitted to ASU as a classified student;
2. have completed at least 56 semester hours by the close of the semester in which the application is submitted;
3. have completed lower division courses or their equivalents, as specified below;
4. have completed, with a passing score, the English proficiency examination administered by the school, and
5. College of Public Programs major status admissions requirements.

As described above, students must have completed specified lower division courses. Broadcasting preprofessionals must complete the following courses:

MCO 110 Introduction to Mass Communication SB	3
or MCO 120 Media and Society SB (3)	
TCM 200 Fundamentals of Radio Television	3
TCM 201 Radio Television Writing L	3
TCM 235 <i>Production Techniques*</i>	3
Total	12

* TCM 235 may be in progress at the time of application but must be completed to enroll in the professional program courses.

Journalism preprofessionals must complete the following courses:

JRN 201 Journalism News Writing L	3
MCO 110 Introduction to Mass Communication SB	3
or MCO 120 Media and Society SB (3)	
Total	6

To be considered for admission to the school's upper division professional program, students must obtain an

application form from the school office in STAUF A231. Precise application procedures and submission deadlines are outlined on the form. Completion of the minimum requirements for eligibility does not guarantee admission to the upper division professional program. The admissions committee considers a variety of criteria, including cumulative GPA, media experience, writing ability, and commitment to the field.

ADVISING

Students should follow the sequence of courses outlined on school curriculum check sheets and the advice of the school's academic advisors. All students who enroll as pre-professionals or who seek and ultimately gain professional status should meet regularly with Walter Cronkite School of Journalism and Telecommunication academic advisors. Conscientious, careful planning and early advising are crucial to students who desire to progress through the program in a timely fashion.

DEGREES

The faculty in the school offer programs leading to two undergraduate degrees: the B.A. degree in Broadcasting and the B.A. degree in Journalism. Students select one of two areas of curricular emphasis in the broadcasting program: broadcast journalism or business management. Students select one of three areas of curricular emphasis in the journalism program: news editorial, public relations, or visual journalism.

The school offers a program leading to the graduate degree Master of Mass Communication.

TRANSFER STUDENTS

Transfer students must be admitted formally to ASU and must adhere to the admission procedures to be considered for admission to the professional program in the Walter Cronkite School of Journalism and Telecommunication.

Students completing their first two years of course work at a community college or four-year institution other than ASU should consult the school's academic advisors at least three months before they hope to be considered for admission to the school's professional program. Transfer student admission to ASU does not guarantee admission to the upper division professional program.

PROGRAM REQUIREMENTS

Because the Walter Cronkite School of Journalism and Telecommunication is accredited by the Accrediting Council on Education in Journalism and Mass Communication, its students are required to take a minimum of 90 semester hours in courses outside the major of broadcasting or journalism, with no fewer than 65 semester hours in liberal arts and sciences. This requirement ensures that students receive a broad academic background.

At least 18 semester hours of major courses required by the school, including one writing course, must be taken at ASU. A student must receive a grade of "C" or higher in all courses taken in the major and in the required related field area. Specific areas that may be used to fulfill the related

field requirement are listed on the curriculum check sheets for each major and are available in the school office. Courses elsewhere in the university that duplicate or are closely related to school subject matter may be restricted by the school.

B.A. REQUIREMENTS

All students are required to demonstrate proficiency in a language other than English (a foreign language or American Sign Language). Proficiency is defined as completing the second semester intermediate level, or higher, of a language other than English with a grade of "C" or higher.

Broadcasting. The major in Broadcasting consists of a minimum of 30 semester hours in Walter Cronkite School of Journalism and Telecommunication courses. Students must take the following courses:

MCO 110 Introduction to Mass Communication <i>SB</i>	3
or MCO 120 Media and Society <i>SB</i> (3)	
MCO 402 Mass Communication Law <i>L</i>	3
TCM 200 Fundamentals of Radio-Television	3
TCM 201 Radio-Television Writing <i>L</i>	3
TCM 235 Production Techniques	3
Total	15

The student also must choose one major professional emphasis area from the following: broadcast journalism or business management.

These courses are in addition to other degree requirements. See "University Graduation Requirements," page 83.

Journalism. The major in Journalism consists of a minimum of 30 semester hours in Walter Cronkite School of Journalism and Telecommunication courses. Students must take the following required school courses:

JRN 201 Journalism Newswriting <i>L</i>	3
JRN 301 Reporting <i>L</i>	3
JRN 313 Introduction to Editing.....	3
MCO 110 Introduction to Mass Communication <i>SB</i>	3
or MCO 120 Media and Society <i>SB</i> (3)	
MCO 402 Mass Communication Law <i>L</i>	3
MCO 418 History of Mass Communication <i>SB H</i>	3
or MCO 421 News Problems (3)	
or MCO 430 International Mass Communication <i>G</i> (3)	
or MCO 450 Visual Communication <i>HU</i> (3)	
Total	18

The student also must choose one major professional emphasis area from the following three: news-editorial, public relations, or visual journalism.

These courses are in addition to other degree requirements. See "University Graduation Requirements," page 83.

Related Field. Each student is required to complete a 12 semester-hour related field to complement the courses taken in the major emphasis areas.

See the curriculum check sheets for each major for the full details and approved related field areas.

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H) see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

SECONDARY EDUCATION—B.A.E.

Journalism. The academic specialization in journalism as a major teaching field consists of 45 semester hours. The following courses are required

JRN 201 Journalism Newswriting <i>L</i>	3
JRN 301 Reporting <i>L</i>	3
JRN 313 Introduction to Editing	3
JRN 351 Photojournalism I	3
MCO 110 Introduction to Mass Communication <i>SB</i> or MCO 120 Media and Society <i>SB</i> 3	3
MCO 402 Mass Communication Law <i>L</i>	3
Approved elective	3
Total	21

An additional 24 semester hours, including 12 semester hours in school course offerings, must be taken on approval by the advisor in consultation with the student. The remaining courses may be in closely related fields.

The academic specialization in journalism as a minor teaching field consists of 24 semester hours. The following courses are required

JRN 201 Journalism Newswriting <i>L</i>	3
JRN 301 Reporting <i>L</i>	3
JRN 313 Introduction to Editing	3
JRN 351 Photojournalism I	3
MCO 110 Introduction to Mass Communication <i>SB</i> or MCO 120 Media and Society <i>SB</i> 3	3
Approved elective	3
Total	18

The remaining courses are to be selected in consultation with a journalism advisor

GENERAL STUDIES REQUIREMENTS

The students must satisfy the university General Studies requirement found in "General Studies," page 87, and the College of Public Programs course requirements found under "College Degree Requirements," page 458. The school requires the student to accumulate a total of 31 semester hours in General Studies. The student is advised to review carefully the appropriate school curriculum check sheet to be sure courses taken move the student toward graduation with the least amount of delay and difficulty. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses.

General education requirements for the Walter Cronkite School of Journalism and Telecommunication follow

Humanities and Fine Arts. Three to six semester hours are required for a total of nine semester hours when combined with university General Studies.

Social and Behavioral Sciences. Six to nine semester hours are required for a total of 15 when combined with university General Studies.

Additional courses may be taken in each of the groups and from the electives listed to complete the total of 51 semester hours required by the school

Within the program there are specific course requirements. Students are required to take one course in each of the following areas: communication (applied speech, computer science, economics, English composition (beyond the freshman level), English literature, history, mathematics

numeracy requirement, two natural science lab courses, philosophy, political science (either POS 110 or 310), psychology, and statistics.

MINOR IN MASS COMMUNICATION

The faculty in the School of Journalism and Telecommunication offer a minor in Mass Communication consisting of required course MCO 120 Media and Society, and 12 additional semester hours of upper division Main campus resident credit taken from a list of approved courses. The following courses are included:

MCO 418 History of Mass Communication <i>SB, H</i>	3
MCO 430 International Mass Communication <i>G</i>	3
MCO 450 Visual Communication <i>HU</i>	3
MCO 456 Political Communication <i>SB</i>	3
MCO 460 Race, Gender and Media <i>C</i>	3
MCO 494 Special Topics	3

The student must be at least a sophomore (25 semester hours) to take upper division courses, must maintain a minimum 2.00 overall GPA to pursue the minor in Mass Communication, must obtain a minimum "C" grade in each course in the minor, and must have a major other than Journalism or Broadcasting

GRADUATE PROGRAM

Master of Mass Communication. The curriculum for the M M C degree is designed to help students achieve intellectual and professional growth, to prepare students for positions in the mass media, and to provide a background to enable those currently in the media to advance their careers. Information on the Master of Mass Communication programs detailed in the *Graduate Catalog*.

JOURNALISM (JRN)

JRN 201 Journalism Newswriting. 3 F S SS
Writing news for the print media. Prerequisites: MCO 110 (or 120) successful completion of English proficiency requirement demonstrated typing ability of 30 words per minute. *General Studies: L*

Enrollment 300 and 400 level JRN courses requires admission to the professional program.

JRN 301 Reporting. (3) F S
Fundamentals of news gathering, interviewing and in depth reporting. Prerequisites: JRN 201, major *General Studies: L*

JRN 313 Introduction to Editing. 3 F, S
Copyediting and headline writing. Electronic editing on personal computer terminals. Prerequisites: JRN 301 major.

JRN 351 Photojournalism I. 3 F S
Taking, developing and printing pictures for newspapers and magazine production on a media deadline basis. Students should have their own cameras. Prerequisite: JRN 201 or instructor approval

JRN 401 Public Relations Techniques. 3) F, S
Theory and practice of publicity, public relations and related techniques and procedures. Prerequisites: JRN 301 (or TCM 315) major

JRN 412 Editorial Interpretation. 3) N
The press as an influence on public opinion. The role of the editorial in analyzing and interpreting current events. Prerequisite: JRN 301

JRN 413 Advanced Editing. 3) F, S
Theory and practice of newspaper editing, layout and design, picture, and story selection. Prerequisite: JRN 313

JRN 414 Electronic Publication Design. 3) F S
Theory, organization, and practice of layout, typography and design in traditional and multimedia publishing. Prerequisite: JRN 401.

JRN 415 Writing for Public Relations. 3) F, S
Development of specific writing techniques for the practitioner in public relations agencies and divisions of major organizations. Prerequisite: JRN 401

JRN 417 Public Relations Campaigns. 3 F
Theory, principles and literature of public relations and how they relate to audiences, campaigns and ethics. Prerequisites: JRN 401, 415 instructor approval.

JRN 420 Reporting Public Affairs. 3 F S
Instruct on and assignments in reporting the courts, schools, government, social problems and other areas involving public issues. Prerequisite: JRN 301

JRN 440 Magazine Writing. (3) F S
Writing and marketing magazine articles for publication. Prerequisite: JRN 301 or instructor approval

JRN 451 Photojournalism II. (3) F S
Theory and practice of photojournalism with emphasis on shooting lighting, and layout for the media. Prerequisite: JRN 351

JRN 452 Photojournalism III. 3 F, S
Advanced theory and practice of photojournalism with emphasis on the photo essay and illustrations in black and white and color or 2 hours lecture, 2 hours lab. Prerequisite: JRN 451

JRN 465 Precision Journalism. 3 S
An advanced writing course with focus on reporting polls and surveys and other numerical based stories as well as on understanding the concepts that underlie polls and surveys. Lecture, lab. Prerequisite: JRN 301 or instructor approval

JRN 470 Depth Reporting. 3 F S
The course is designed to introduce students to strategies for writing in depth newspaper or magazine articles. Lecture, lab. Prerequisite: JRN 301; professional status; instructor approval

MASS COMMUNICATION (MCO)

MCO 110 Introduction to Mass Communication. (3) F, SS
Organization, function and responsibilities of the media and adjunct services. Primary emphasis on newspapers, radio, television and magazines. Not open to students with credit for MCO 120. Prerequisites: ENG 101 and 105 or ENG 107. *General Studies SB.*

MCO 120 Media and Society. (3) F, S
Role of newspapers, magazines, radio, television, and motion pictures in American society. Not open to students with credit for MCO 110. Designed for nonmajors. *General Studies SB.*

MCO 402 Mass Communication Law. (3) F, S, SS
Legal aspects of the rights, privileges and obligations of the press, radio, and television. Prerequisites: 70 hours JRN/TCO professional program status. *General Studies L.*

MCO 418 History of Mass Communication. 3 F, S
American journalism from its English and colonial origins to the present day. Development and influence of newspapers, magazines, radio, television, and news gathering agencies. *General Studies SB, H.*

MCO 421 News Problems. (3) S
Trends and problems of the news media emphasizing editorial decisions in the processing of news. Prerequisite: 9 hours of mass communication/journalism/telemmunication on courses or instructor approval

MCO 430 International Mass Communication. (3) F, S
Comparative study of communication and media systems. Information gathering and dissemination under different political and cultural systems. *General Studies G.*

MCO 450 Visual Communication. (3) F, S, SS
Theory and tradition of communication through the visual media with emphasis on the continuity of traditions common to modern visual media. *General Studies, HU.*

MCO 456 Political Communication. (3) F, S
Theory and research related to political campaign communication. The persuasive process of political campaigning: the role of the media, the candidate and image creation. *General Studies SB.*

MCO 460 Race, Gender, and Media. 3 S
Readings seminar designed to give students a probing examination of the interface between African Americans and the mass media in the United States. *General Studies C.*

MCO 463 Introduction to Media Statistics. (3) F, S
An introduction to statistical analysis as applied to the mass media. Prerequisite: professional status in Broadcasting or Journalism

MCO 470 Issues Management and Media Strategy. (3) F
Strategic aspects of media planning and management in public relations, public affairs, crisis communication, lobbying, media ethics and government relations. Seminar. Prerequisite: JRN 401 or instructor approval

MCO 494 Special Topics. (3) N

MCO 501 Newswriting and Reporting. 3 F
Designed for graduate students in the MMC program who have undergraduate degrees in nonjournalism areas. Objective is to teach fundamentals of writing and reporting. Lecture/lab. Prerequisite: acceptance into MMC graduate program

MCO 503 Press Freedom Theory. 3 S
Examination of philosophical and legal aspects of press freedom. Emphasis on First Amendment theory evolution from 1791 to present

MCO 510 Research Methodology in Mass Communication. (3) F, S
Identification of research problems in mass communication. Overview of questionnaire construction. Attention to survey history, content analysis, experimental and legal research methods.

MCO 520 Mass Communication Theories and Process. (3) F
Analysis of various theoretical models of mass communication with emphasis on the applications of these theories to various professional communication needs

MCO 522 Mass Media and Society. (3) S
Mass media as social institution particularly interaction with government and public. Emphasis on critical and normative statements

MCO 530 Media Ethics. (3) F
Ethical conventions and practices of print and electronic media as they relate to the government and private sectors of the society

MCO 531 Broadcast Journalism. (3) S
News and information practices of networks, stations, and industry. Practice in writing, reporting and editing with emphasis on video. Lecture, lab. Prerequisite: MCO 501

MCO 540 Historical Legal Methods. (3) S
Introduction to legal and historical methods necessary to conduct qualitative mass communication research. Prerequisite: MMC graduate student

MCO 560 Arizona Media Law. 3 F
Case study approach of first amendment issues, media access, confidentiality and invasion of privacy as applied to media organizations in Arizona. Lecture seminar

MCO 593 Applied Project. (1-12) N

TELECOMMUNICATION (TCM)

TCM 200 Fundamentals of Radio-Television. 3 F, S, SS
Structure of telecommunication in the United States: history, regulation, organization, with emphasis on broadcasting. Relationship to advertising, research and government agencies. Prerequisites: MCO 110 or 120. Successful completion of English proficiency requirement

TCM 201 Radio-Television Writing. 3 F, S, SS
Writing for electronic media: news and continuity. Prerequisites: MCO 110 or 120, successful completion of English proficiency requirement demonstrated typing ability of 30 words per minute. *General Studies L.*

TCM 235 Production Techniques. 3 F, S, SS
Introduction to basic concepts of audio and video production. Operation of portable cameras, recorders, microphones, lighting and postproduction equipment will be introduced. Prerequisites: TCM 200. Successful completion of English proficiency requirement

Enrollment in 300 and 400 level TCM courses require admission to the professional program.

TCM 300 Advanced Broadcast Newswriting. (3) F, S
Technique and practice in newswriting for broadcast and cable applications. Prerequisite: TCM 201

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C and H), see General Studies, page 87. For graduation requirements see University Graduation Requirements page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60.

- TCM 315 Broadcast News Reporting.** (3) F, S
 News and format on practices of networks, stations, and industry. Practice in writing, reporting, and editing with emphasis on audio. Prerequisite: TCM 201 *General Studies I*.
- TCM 330 Advanced Broadcast Reporting.** (3) F, S
 News and information practices of networks, stations, and industry. Advanced practice in writing, reporting, and editing with emphasis on video. Prerequisite: TCM 300
- TCM 332 Broadcast Programming.** (3) F, S, SS
 Programming theory and evaluation; regulation; ethics; and responsibility; and basics of audience psychographics and effects. Prerequisite: TCM 200
- TCM 433 Broadcast Sales and Promotion.** (3) F, S
 Basics of electronic media marketing practices; including commercial time sales techniques and radio/TV promotion fundamentals. Prerequisite: TCM 200.
- TCM 435 Cable TV and Emerging Telecommunication Systems.** (3) F, S
 Structures and utilization of cable industry and instructional evaluation; satellite and videocassettes. Prerequisite: TCM 200
- TCM 437 Advanced TV Production.** (3) F, S
 Emphasis on individual production projects of the student's own concept and design; editing, field, and postproduction techniques. Prerequisite: TCM 235
- TCM 472 Broadcast Station Management.** (3) F, S, SS
 Management principles and practices, including organization, procedures, policies, personnel problems, and financial aspects of station management. Prerequisite: TCM 332
- TCM 475 Television Newscast Production.** (3) F, S
 Writing, reporting, and production of the television newscast. The course serves as the capstone of the broadcast journalism emphasis. Prerequisite: instructor approval.

School of Justice Studies

David Theo Goldberg
Director
(WILSN 331) 480/965-7682
Fax 480/965-9199
www.asu.edu/copp/justice

REGENTS' PROFESSOR

ALTHE DE

PROFESSORS

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 HAYNES, HEPBURN, JOHNSON, JURK, LAUDERDALE,
 MUSHENO, ROMERO, SCHNEIDER, ZATZ

ASSOCIATE PROFESSORS

BORTNER, LUJAN, RIDING IN

ASSISTANT PROFESSORS

ADELMAN, BERNSTEIN, HANSON, MENJVAR

MISSION

Students pursuing the B.S. degree in Justice Studies will find an interdisciplinary classroom experience emphasizing ideas from the social sciences, philosophy, and legal studies. The degree is designed for students interested in studying issues of justice and those desiring justice-related careers, including law. Students will develop an understanding of the meaning of justice and injustice, both descriptive and normative, and analyze often controversial issues through critical inquiry and social science investigation. The faculty primarily focuses on theories of justice and injustice. Students

accordingly learn about conflict and its negotiation, crime and violence, adolescents and delinquency, punishment and alternatives to punishment, and differential institutional and socioeconomic treatment of populations based on gender, race, class, and ethnic identities, including American Indian peoples.

The heart of any university program is its faculty. The School of Justice Studies boasts a faculty with strong scholarly credentials. Faculty members include national and local award recipients in research, teaching, and public service. The faculty is committed to challenging students to develop their own understandings of justice, to analyze critically, and to propose possible solutions to a wide variety of contemporary issues concerning social justice.

While completing the Justice Studies curriculum, students will encounter opportunities to develop transferable skills, including critical thinking, oral and written discourse, computer literacy, and problem solving. Faculty encourage students to practice justice through various experiential approaches, including volunteer work, service learning, and internships. Students actively engage in their education via discussion, cooperative learning, field trips, and case-based classroom formats.

ADMISSION

Upon admission to the university, Justice Studies students are classified as premajors. Justice Studies students must earn major status before taking 400-level JUS resident credit courses required for graduation.

Justice Studies students may achieve major status by (1) meeting the College of Public Programs major status admission requirements (see "Admission," page 457), and (2) completing all of the following classes with a 2.50 minimum average GPA and a minimum grade of "C" in each:

Choose between the course combinations below 6 or 3	
ENG 101 First Year Composition 3)	
ENG 102 First Year Composition 3	
<i>or</i>	
ENG 105 Advanced First Year Composition 3	
JUS 105 Introduction to Justice Studies 3	
or JUS 305 Principles of Justice Studies (3)	
JUS 301 Research in Justice Studies 3	
JUS 302 Basic Statistical Analysis in Justice Studies CS 3	
JUS 303 Justice Theory 3	
College writing competence requirement 3	

Eligibility

For Justice Studies students to take a nonrequired 300-level JUS course, they must have at least a "C" in each of the JUS required courses: JUS 105 or 305, 301, 302, and 303, and a minimum average GPA of 2.50 for these four classes.

For non-Justice Studies students to take a 300-level JUS course, they must have a minimum of 56 earned semester hours (junior status) and a minimum cumulative GPA of 2.00. Non-Justice Studies students may take JUS 301, 302, and 303 with school approval.

For non-Justice Studies students to take a 400-level JUS course, they must have a minimum of 56 earned semester hours (junior status) and a minimum cumulative GPA of 2.50.

ADVISING

Justice Studies students admitted as premajors are advised by one of the school's academic advisors. All students are encouraged to seek advising in order to formulate an appropriate educational plan.

Upon admission to the university, every Justice Studies undergraduate receives the *Undergraduate Advisement Guide* and an evaluation of transfer work, if any. For further information, contact the school at 480 965 7682.

DEGREES

Justice Studies—B.S.

The curriculum for the B.S. degree in Justice Studies provides interdisciplinary social science courses relevant to law and justice for students working in the justice field, students anticipating justice related careers (including the legal profession), and interested non Justice Studies students

JUSTICE STUDIES MINOR

The minor is designed for students interested in developing an understanding of meanings of justice and injustice and analyzing often controversial issues through critical inquiry and social science investigation.

Fifteen hours of graded classroom course work in Justice Studies is required, including JUS 105 or 305 and JUS 303. No pass/fail or credit/noncredit course work may be applied to the minor. A minimum of nine hours must be resident credit at ASU Main Campus, six hours of which must be upper-division credit. Students must receive a minimum grade of "C" for all courses in the minor and meet all course eligibility requirements, including prerequisites. Please consult the minor verification form available in the school office.

DEGREE REQUIREMENTS

The faculty in the School of Justice Studies awards a B.S. degree upon the successful completion of a curriculum consisting of a minimum of 120 semester hours including the university General Studies requirement, College of Public Programs requirements, justice studies courses, and electives. Additionally, the student must:

1. earn major status;
2. earn a minimum of 45 semester hours of upper division credits;
3. complete the school's minimum residency requirement of 24 semester hours (see the *Undergraduate Advisement Guide*);
4. earn a grade of "C" or higher in all justice studies courses taken at ASU that apply to the justice studies component of the curriculum (i.e., nonelectives); and
5. meet the university's residency and scholarship requirements.

GENERAL STUDIES REQUIREMENTS

To assure the breadth and depth of their education, all Justice Studies undergraduates must complete the university

General Studies requirement and additional fundamental requirements prescribed by the College of Public Programs and the School of Justice Studies. For descriptive information on these requirements, see "General Studies," page 87. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. The school implements the ASU continuous enrollment policy for First Year Composition and the University-Mathematics (MA) requirement.

MAJOR REQUIREMENTS

The required justice studies component consists of 51 semester hours, of which 15 must be taken in a related field approved by the school. The following courses are required for all degree candidates. Equivalent courses may be substituted when appropriate.

JUS 105	Introduction to Justice Studies	3
	or JUS 305 Principles of Justice Studies	3
JUS 301	Research in Justice Studies	3
JUS 302	Basic Statistical Analysis in Justice Studies	3
JUS 303	Justice Theory	3
Total		12

Through advising, a group of justice studies courses may be recommended to ensure a comprehensive exposure appropriate to the student's interests. The faculty encourage students interested in criminal justice issues and career areas to take JUS 100 The Justice System.

Electives. The faculty encourage students to utilize the unique opportunities afforded by the university to pursue personal and educational interests, whether in the form of a broad sampling of other disciplines or the deeper probing of a single field. Specifically, the faculty suggests that students take a minimum of one course in American government, behavioral psychology, and sociology.

Transfer of Community College Credits. Credits transferred from accredited community colleges are accepted as lower division credits up to a maximum of 64 semester hours. The acceptance of credits is determined by the director of Undergraduate Admissions and the utilization of credits toward degree requirements is determined by the faculty of the School of Justice Studies.

GRADUATE PROGRAMS

The faculty in the School of Justice Studies offer an M.S. degree in Justice Studies, which can be earned with a concurrent M.A. degree in Anthropology. The faculty in the School of Justice Studies are also the primary contributors to the interdisciplinary Ph.D. degree in Justice Studies.

For more information on courses, faculty, or programs see the *Graduate Catalog*.

JUSTICE STUDIES (JUS)

JUS 100 The Justice System. (3 F, S, SS)
 Overview of the justice system. Roles of law enforcement personnel, the courts, and correctional agencies. Philosophical and theoretical views. Historical perspective. *General Studies: SB.*

NOTE. For the General Studies requirement, courses and codes (such as L, SQ, C, and H) see General Studies, page 87. For graduation requirements see University Graduation Requirements, page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

JUS 105 Introduction to Justice Studies. (3 F S SS

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Not open to students with credit in JUS 305. This course is appropriate for freshmen and sophomores. Lecture/discussion.

JUS 200 Topics in Concepts and Issues of Justice. (3) A

Use of critical thinking skills to analyze and comprehend controversies and social issues (e.g., abortion, affirmative action, capital punishment, the flat tax, and immigration). May be repeated for credit with different titles. Lecture, discussion. *General Studies*. SB

JUS 294 Special Topics. (1-3) F S SS

Topics chosen from various fields of justice studies.

JUS 301 Research in Justice Studies. (3) F, S SS

Focuses on developing and evaluating research designs, data collection, and the relationship between validity and reliability. Methods for conducting research are also stressed. Prerequisite: Justice Studies student.

JUS 302 Basic Statistical Analysis in Justice Studies. (3) F, S SS

Introduction to the fundamentals and application of descriptive and inferential statistics with emphasis on the justice area. Prerequisite: intermediate algebra or higher. *General Studies*. CS

JUS 303 Justice Theory. (3) F S SS

An examination of classic and contemporary philosophies and theories of justice, including legal, social, and criminal justice. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 305 Principles of Justice Studies. (3) F, S SS

Introductory overview to the study of justice from a social science perspective. Primary topics include justice theories and justice research. Not open to students with credit in JUS 105. This course is appropriate for juniors and seniors. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 306 Police and Society. (3) A

Focuses on community policing, criminal inquiry of administrative decisions on making perspectives on police citizen violence, street practices, urban policing. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 308 Courts and Society. (3) A

History and development of courts. Relationship between dispute resolution mechanisms and cultural social structure processes in which they are embedded. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 310 Corrections and Justice. (3) A

Examines the United States prison conditions, types of offenders, issues including drugs, gangs, drunk driving, racial discrimination, and intermediate punishments. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 311 Crime, Prevention, and Control. (3) A

Prevention and control of crime is examined by a review of contemporary theories, justice agency procedures, and social policies. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 320 Community and Social Justice. (3) A

Definitions of community will be discussed and analyzed. Impact of environment on behavior, promises of community organization for social empowerment. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. SB C

JUS 321 Wealth Distribution and Poverty. (3) A

Examination of wealth and income distribution in the United States and analysis of demographic and political forces producing an increasing unequal society. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. SB C

JUS 329 Domestic Violence. (3) A

Legal, historical, theoretical, and treatment aspects of domestic violence, including child abuse, woman battering, incest, and marital rape. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 335 Organized Crime. (3) A

The nature of organized crime and its legal activities, theories of containment, and efforts by justice agencies to counter its dominance in society. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 345 White Collar Crime. (3) A

Basic white collar concepts and categories, causes and effects; mechanisms and contexts of operation, social and criminological responses. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 360 Law and Social Control. (3) A

Resolution of social issues through the application of law as an agent of social control. Nature, sanctions, and limits of law. Categories of law and schools of jurisprudence. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. SB

JUS 365 Substantive Criminal Law. (3) A

Crimes against persons, property, and society. Legal analysis, primary appellate decisions, substantive criminal law issues, trial court determinations. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 368 Procedural Criminal Law. (3) A

Due process with respect to individual liberty; privacy and government power, emphasis on broad ideas of political and social theory. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 375 Crime and the Mass Media. (3) A

Survey of the impact of mass media and popular culture on crime policies and social policy. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. SB

JUS 385 Justice and Everyday Life. (3) A

Justice and injustice in everyday life and how small things can become legal issues. The role of language and interaction in social order. Lecture, group work. Prerequisites: JUS 105 (or 305), 301, 302, 303. *General Studies*. SB

JUS 394 Special Topics. (1-3) A

Topics chosen from various fields of justice studies. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 404 Imperatives of Proof. (3) A

Issues of evidence, rules of proof, establishing fact and identity in the justice system. Lecture, case analysis, cooperative learning, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. L

JUS 410 Punishment: Logic and Approach. (3) A

Analyses forms of punishment, how and why they have changed. Areas include philosophy, history, and social structure of punishment. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 415 Gender and International Development. (3) A

Examines the ways in which international development is gendered as well as women's rights as human rights, both national and international arenas. Lecture/seminar. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. L G

JUS 420 Women, Work, and Justice. (3) A

Examination of gender inequality in the workplace including the nature of women's work, theoretical issues, and models for promoting gender justice at work. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. SB, C

JUS 422 Women, Law, and Social Control. (3) A

An examination of social, economic, and legal factors that are relevant to mechanisms of social control of women, including formal legal control and informal control through violence. Prerequisite: see "Eligibility" under "School of Justice Studies."

JUS 425 Race, Gender, and Crime. (3) A

Critical examination of major theories, research findings, policies, and controversies concerning race, ethnicity, gender, and crime. Lecture/discussion, cooperative learning. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. L/SB C

JUS 440 Administration and Justice. (3) A

Diversity issues, procedural justice and service delivery, relationships between state and economic forces, including processes of regulation, state administrative apparatuses. Lecture, case analysis, cooperative learning, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. L

JUS 450 Alternatives to Incarceration. (3) A

Investigation of various alternatives to incarceration: advantages/disadvantages; major issues including net widening, cost effectiveness, risk assessment, community crime prevention. Lecture, research. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies*. L

JUS 460 Feminism and Justice. (3) A

Explores feminist thought and critiques traditional political theories. Examines issues of racial sexuality and the law. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies"

JUS 463 Discretionary Justice. (3) A

Use abuse, key issues/manifestations of discretion in legal system and other societal institutions. Theoretical empirical linkages between discretion and discrimination, based on race ethnicity, and gender. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies: SB.*

JUS 465 Death Penalty in the United States. (3) F S, SS

Focuses on capital punishment in the United States. Explores negotiation of law, politics, morality, public policy and culture. Lecture/discussion case study. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies L*

JUS 469 Political Deviance and the Law. (3) A

An examination of the controversies created by political and deviant behavior, including a critical view of law as an agent of social control. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies: L/SB, C*

JUS 470 Alternative Dispute Resolution. (3) A

Critical examination of the tenets of alternative dispute resolution movement, exposure to the programs of ADR including community and court based. Lecture/cooperative learning field research. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies L/SB C*

JUS 474 Legislation of Morality. (3) A

Addresses historical and contemporary issues related to social justice movements, law and morality in a pluralistic society. Issues include AIDS, burials, rights, homosexuality, poverty, prostitution, and racial discrimination. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies: L/SB, C*

JUS 477 Youth and Justice. (3) A

A critical examination of youth related justice issues including economic justice, violence against youth, delinquency and the juvenile justice system. Lecture, group work, film. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies: L/SB*

JUS 479 Law and Disputing. (3) F S

Critical analysis of the controversies created by disputes, law and other forms of social control. Lecture/discussion. Prerequisite: see "Eligibility" under "School of Justice Studies." *General Studies SB*

JUS 484 Internship. (3-6) F S, SS

Assignments in a justice related placement designed to further the student's integration of theory and practice. Internships are arranged through consultation of students with placements. Students must consult with the school for appropriate application and registration procedures. May be taken for a total of 12 semester hours of which a maximum of 6 are applied to the major. Prerequisites: major status. Justice Studies student.

JUS 494 Special Topics. (1-3) A

Topics chosen from various fields of justice studies. Lecture, discussion. Prerequisite: see "Eligibility" under "School of Justice Studies"

JUS 498 Pro-Seminar. (1-3) F S, SS

Small group study and research for advanced students. May be repeated for credit up to a maximum of 9 hours, no more than 3 applied to the major. Prerequisites: major status. minimum cumulative GPA of 3.00; instructor approval.

JUS 499 Individualized Instruction. (1-3) F, S, SS

Original study or investigation in the advanced student's field of interest under the supervision of a faculty member. May be repeated for credit up to a maximum of 6 hours, all applicable to the major. Readings, conferences, tutorials. Prerequisites: major status. minimum GPA in JUS courses of 3.00; senior standing; instructor approval.

JUS 500 Justice Research Methods. (3) A

Theories and methods of research with emphasis on development of designs most relevant to justice data and problems.

JUS 501 Justice Theory. (3) A

Theories and philosophies of social, economic, political and criminal justice. Applications of theories to contemporary justice issues. Lecture, discussion.

JUS 503 Crime and Social Causation. (3) A

Theories of deviance and crime as they relate to social policies and specific response of the justice complex.

JUS 509 Statistical Problems in Justice Research. (3) A

Methodological problems of research design and statistical methods specific to justice studies.

JUS 510 Understanding the Offender. (3) A

Survey of learning personality, and biological theories of causation and their relevance to understanding criminal and delinquent behavior.

JUS 514 Justice Policy. (3) A

Assessment of the politics of justice policy as well as an understanding of the basic tools available to social scientists for analyzing the formulation, implementation and evaluation of justice policy.

JUS 515 Comparative Justice. (3) A

Focuses on justice, equity, and human rights cross-culturally. Examining both theoretical and methodological issues. Seminar.

JUS 520 Qualitative Theory and Data Collection. (3) A

The basic theoretical rationale and perspectives for qualitative research, e.g., symbolic interactionism. Techniques for data collection, e.g., ethnography and depth interview.

JUS 521 Qualitative Data Analysis and Evaluation. (3) A

Analysis of qualitative data, e.g., field notes, depth interview transcripts, document analysis, coding, and retrieval with a microcomputer, qualitative evaluation.

JUS 542 American Indian Justice. (3) A

Designed to provide a broad overview of American and Alaskan Native issues of justice and justice in contemporary society.

JUS 547 Program Evaluation. (3) A

Nature role of program evaluation types, program monitoring impact and process assessment, evaluability assessment methods utilization and politics of evaluation. Lecture, lab. Prerequisite: JUS 500 recommended.

JUS 550 Alternatives to Incarceration. (3) A

Investigation of various alternatives to incarceration advantages/disadvantages; major issues including net widening, cost effectiveness, risk assessment, community crime prevention. Lecture, research.

JUS 560 Women, Law, and Social Control. (3) A

Gender issues in the exercise of formal and informal mechanisms of social control including economic social factors both violent and nonviolent.

JUS 570 Juvenile Delinquency. (3) A

Study of delinquency including causation theories. Alternative definitions of delinquency, official statistics and the critical and analysis of the interaction between social institutions and youth.

JUS 571 Juvenile Justice System. (3) A

Graduate level introduction to juvenile justice system, including historical development philosophical orientation organizational structure, and contemporary controversies.

JUS 579 Political Deviance. (3) A

The seminar examines the politics of deviance by integrating the study of conflict with aspects of social organization especially state formation.

JUS 584 Internship. (3 or 6) F, S, SS

Assignments in a justice agency designed to further the student's integration of theory and practice. Placements are arranged through consultation with students and agencies.

JUS 588 Justice and the Mass Media. (3) A

An analysis of the nature and impact of mass media messages about justice concerns for social order. Lecture, discussion.

JUS 591 Seminar. (1-3) A

Topics chosen from various fields of justice studies. May be repeated for credit.

JUS 593 Applied Project. (1-12) N**JUS 610 Law and the Social Sciences.** (3) A

Analysis of the theoretical grounds underlying diverse studies of law and society creation and administration of law, and jurisprudence and politics.

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JUS 620 Justice Research and Methods. (3) A

Concept development research design data collection strategies legal research and building computer databases relevant to the study of justice

JUS 630 Data Analysis for Justice Research. (3) A

Variable and multivariate techniques of data analysis and hypothesis testing for justice-related research and use of information and statistical programs

JUS 640 Theoretical Perspectives on Justice. (3) A

Analysis of philosophical perspectives of justice linkages between social science theory and justice constructs, application of justice to social issues.

JUS 650 Advanced Qualitative Data Analysis. (3) S

Advanced qualitative data collection and analysis techniques, including ethnography in-depth interviews field notes, coding, transcribing content analysis textual analysis Seminar

JUS 669 Political Trials and Indigenous Justice. (3) A

Focuses upon research on political trials, deviance and concepts of indigenous and contemporary justice. Lecture, discussion

JUS 691 Seminar. (1-3) F, S, SS

Topics chosen from various fields of justice studies. May be repeated for credit

School of Public Affairs

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PERRY, WESCHLER

ASSOCIATE PROFESSORS

ALOZ E, BROWN, CAMPBELL DeGRAW LAN

ASSISTANT PROFESSORS

DeLORENZO, McCABE

DISTINGUISHED RESEARCH FELLOW

PFISTER

The faculty in the School of Public Affairs offer an undergraduate public administration concentration of 18 semester hours of course work within the Bachelor of Interdisciplinary Studies program. The school also offers a 42 semester hour professional Master of Public Administration (M.P.A.) degree and an interdisciplinary program leading to the Doctor of Public Administration (D.P.A.) degree. The M.P.A. degree is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA). Consult the *Graduate Catalog* for information about these programs.

PUBLIC AFFAIRS (PAF)**PAF 401 Statistics.** (3) F, S

Survey of statistical concepts and techniques with application to public administration. Does not count toward program of study. Satisfies statistics prerequisite requirement for PAF 501 and 502

PAF 501 Public Service Research. (3) F, S

Philosophy, scope, and methods, public service research design values, and ethics. Prerequisite: an approved course in statistics.

PAF 502 Computer Applications. (3) F, S

Computer applications in public affairs software packages for data analysis decisions making information dissemination and problem solving Prerequisite: PAF 501.

PAF 503 Public Affairs. (3) F, S

The development and context of American public administration and policy the role of administration in governance and values and ethics in administration

PAF 504 Public Affairs Economics. (3) F, S

The basics of public sector economics microeconomic and macroeconomic concepts applied to public sector decisions and policies.

PAF 505 Public Policy Analysis. (3) F, S

Institutional and formal analysis of policy processes decisions making, and problem solving values ethics and the uses of policy analysis. Prerequisites: PAF 504 satisfaction of the statistics requirement

PAF 506 Public Budgeting and Finance. (3) F, S

The legal social economic, political institutional and ethical foundations of governmental finance, budgets and budgeting Prerequisites: PAF 502 504

PAF 507 Public Human Resource Management. (3) F, S

Personnel systems, behavior and management of people in public organizations collective behavior, unionism conflict management motivation productivity, and ethics

PAF 508 Organization Behavior. (3) F, S

Theory and application in the management of organizational behavior with emphasis on leadership and the public service

PAF 509 Public Service. (3) F, S

Capstone application of core course knowledge, skills and abilities required for public service. Prerequisites: PAF 501 502 503 504, 505 506, 507, 508

PAF 510 Governmental Budgeting. (3) N

Theories, applications and consequences of budget decisions making Prerequisite: PAF 504

PAF 511 Governmental Finance. (3) N

Sources of funding, management of funds and debts and general pattern of expenditures in states, counties cities and districts Prerequisite: PAF 504

PAF 520 Public Management. (3) N

The management process in government and public agencies with emphasis on the executive leadership within the public sector

PAF 521 Organization Theory. (3) N

Organization theory and current research emphasis with application to public administration strategic organizations.

PAF 522 Public Labor Relations. (3) N

Rise of public unionism, managerial policy toward unionism conflict resolution, impact of unionism on budgets personnel policies and public policy.

PAF 523 The City and County Manager. (3) A

The manager's role and resources in the differing forms of administrative, legislative and community sectors

PAF 525 Public Program Management. (3) N

Governmental service programming formulation financing, operating evaluation and reporting Analysis of interagency relationships and the role and conduct of research in the programming process

PAF 526 Public Sector Human Resource Development. (3) N

Concepts and techniques of organizational development in the public sector, including staffing supervisor training executive development resource planning and employee training

PAF 529 Organization Change and Development. (3) N

Exploring the nature and management of change and development as a tool to achieve organizational goals, effecting planned change.

PAF 530 Management of Urban Government. (3) N

Administrative practices and behavior within the urban political administrative environment Functional areas such as citizen participation urban planning urban transportation and the conflicts between urban politics and administrative efficiency

PAF 531 Community Conflict Resolution. (3) N

Interdisciplinary approach to understanding the dynamics of community conflict Strategic considerations in policy design and advocacy potential to react to conflict. Relevant modes and research findings generated by both case studies and comparative methods

PAF 532 Urban Planning Administration. (3) N

Historical and present day uses of urban planning and procedures for its implementation. Basic principles and practices

PAF 533 Urban Growth Administration. (3) N

Examines the process of urban growth and change. Partnership roles played by public and private sectors in management are emphasized.

PAF 535 Urban Housing Policy. (3) N

Comprehensive consideration of the revitalization of American cities with major emphasis upon the housing process and related institutions and services.

PAF 536 Urban Policy Making. (3) N

Analysis of the opportunities and costs of influencing public policy and the roles of officials and bureaucracies in decision making.

PAF 540 Advanced Policy Analysis. (3) A

Emphasizes the structure of policy problems, forecasting policy alternatives, optimizing resources, and reducing uncertainty in policy making. Prerequisite: PAF 505 or instructor approval.

PAF 541 Program Evaluation. (3) N

Various methodologies available for the evaluation of public policies and programs. Prerequisite: PAF 501 or instructor approval.

PAF 546 Environmental Policy and Management. (3) N

Analysis of environmental policy and planning issues and principles related to the analysis and management of natural and urban/regional resources.

PAF 547 Science, Technology, and Public Affairs. (3) N

The influence of science and technology on governmental policy making. Scientists as administrators and advisors, governmental policy making for science and technology, government as a sponsor of research and development.

PAF 548 Women, Politics, and Public Policy. (3) N

Explores how political philosophy, politics, and public policy affect and are affected by women.

PAF 549 Diversity Issues and Public Policy. (3) N

Examination of public policy issues concerning or affecting women, black, Latino, Asian, and American Indian communities, as well as those groups' impact on the policy process.

PAF 550 Information Management. (3) N

Concepts and theory of information and information technology in public sector organizations.

PAF 551 Computers in Administration. (3) N

Experience in use of computer technology for public administration problem solving.

PAF 552 Public Information Systems. (3) N

Systems analysis concepts and theory as applied to administration. Alternative modes of information organization and their impact on public decision making.

PAF 555 Research Data Management. (3) N

Techniques and problems associated with data management in a research environment. Database management systems, security and integrity, accessibility, and cost.

PAF 556 Database Management Systems. (3) N

Concept and use of modern database management systems in an administrative organization. Advantages and disadvantages of this approach.

PAF 561 Comparative Administration. (3) N

Literature on comparative public administration theory. Bureaucracies and their impact on the political development process. Selected nations are studied.

PAF 562 Intergovernmental Relations. (3) A

Evolution, growth, present status, and characteristics of the U.S. federal system of government. Federal-state relations, state-local relations, regionalism, councils of government, interstate cooperation, grants-in-aid, and revenue sharing.

PAF 563 Report Preparation. (3) N

Intensive practice in written and oral presentation of reports to conferences with problems in public administration. Visual aids techniques.

PAF 564 Political Economy. (3) A

Classical and contemporary literature and historical development of governmental and economic arrangements with special emphasis on the role of the state.

PAF 591 Seminar. (1-12) F, S

Topics may include but are not limited to the following:

- (a) Business and Government
- (b) Emergency Management
- (c) General Public Administration
- (d) Information Management
- (e) Public Finance Administration
- (f) Public Management
- (g) Public Policy Analysis
- (h) Urban Affairs and Urban Planning

PAF 600 Research Design and Methods. (3) A

Advanced methods of research design and data collection. Prerequisites: formal graduate-level coursework in statistics and in research methods.

PAF 601 Seminar: Policy Analysis and Evaluation. (3) A

Normative and conceptual issues of policy formulation, implementation, and evaluation, methods of policy analysis and evaluation.

PAF 602 Seminar: Foundations of Public Administration. (3) A

Ethical, social, legal, and philosophical foundations of public administration.

PAF 603 Seminar: Organization and Behavior in the Public Sector. (3) A

Structure, organization, conduct, and performance of public sector institutions in the administration of public policy. Prerequisite: PAF 602.

Department of Recreation Management and Tourism

Carlton F. Yoshioka

Chair

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SCHNEIDER, SONMEZ

RECREATION—B.S.

The B.S. degree program in the Department of Recreation Management and Tourism centers upon the systematic study of leisure-related phenomena, including human behavior and development, resource use, environmental and social issues, and public policy. It is a professional program that features full exposure of students to a multifaceted concept of leisure and the quality preparation of these students for professional level entry into leisure service occupations.

This multidisciplinary degree program is designed to provide the student with the competencies necessary for employment in management and program delivery positions in diverse leisure agencies such as municipal recreation and park departments, county park departments, YMCAs, YWCAs, Boys and Girls Clubs of America, and other

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nonprofit agencies, visitor and convention bureaus, senior centers, retirement communities, resorts, clinical rehabilitation centers, hospitals, destination management companies, and other components of the tourism/commercial recreation industry. Graduates have also been employed by state offices of tourism, state parks departments, various federal recreation resource agencies, and professional sports arenas.

Concentrations

Students may select from two concentrations: (1) recreation management and (2) tourism.

Recreation Management. Students pursuing the recreation management concentration can further specialize in therapeutic recreation, community and urban recreation, outdoor recreation, or nonprofit/youth agency administration (American Humanities). In addition to the core, these concentrations consist of 15 semester hours of recreation-related courses and 15 semester hours of related-areas courses.

Within the recreation management concentration, students may specialize in Therapeutic Recreation and in doing so, may qualify to sit for the National Council for Therapeutic Recreation Certification exam. This professional development prepares graduates for careers in both clinical and community settings, working with disabled individuals in their pursuit of quality leisure experiences. This is a growing field and the only program of its kind in Arizona.



The Moeur Building, home of the Department of Recreation Management and Tourism

H. Val Peterson photo

Tourism. The tourism concentration consists of 33 semester hours of major core courses, nine semester hours of tourism-related requirements, nine semester hours of tourism options, and 12 semester hours of nonmajor related course work.

Tourism students may choose to follow either the marketing and community development track or the services track for their related course work. Information on both of these tracks is available from the academic advisor.

DEPARTMENTAL MAJOR REQUIREMENTS

Students may declare Recreation as their major but cannot register for upper-division core classes without *professional status*. To be officially admitted with professional status to the B.S. degree program in Recreation, students must:

1. meet the College of Public Programs major status admission requirements (see "Admission," page 457);
2. complete REC 120 and 210 with a grade of "C" or higher;
3. complete either COM 225, 241, or 259; and
4. tourism students must also have a "C" or higher in ECN 112.

Transfer students who have completed 56 semester hours or more at another institution must remove any of the above course or scholastic deficiencies before being admitted with *professional status* to the B.S. degree in Recreation.

To graduate, students must complete the university General Studies requirement and the College of Public Programs course requirements in addition to major requirements. General Studies courses may not be used concurrently toward the General Studies requirement and related requirements within the major core.

MINORS

The department offers minors in Recreation Management and in Tourism. The minor in Recreation Management consists of REC 120 Leisure and the Quality of Life, REC 160 Leisure and Society, and 15 additional semester hours of course work, including 12 hours at the upper-division level, from ASU Main. The Recreation Tourism minor consists of REC 120 Leisure and the Quality of Life and 12 additional semester hours of upper-division approved courses from ASU Main.

CERTIFICATE PROGRAM

Nonprofit/Youth Agency Administration: American Humanities Certificate Program. The certificate program in Nonprofit/Youth Agency Administration: American Humanities features professional affiliation with and certification by American Humanities, Inc., the national leader in education for youth and human service agency administration. American Humanities collaborates with such agencies as the American Red Cross, Big Brothers/Big Sisters, Boys and Girls Clubs of America, the Boy Scouts of America, Camp Fire, the Girl Scouts of the USA, Habitat for Humanity, Junior Achievement, the United Way, YMCA, and YWCA.

This program provides an academic approach featuring unique issues of voluntary, not-for-profit agency management and includes active participation by agency profes-

sionals who offer workshops, seminars, field trips, and experiential education experiences

REC 220 Introduction to Nonprofit Youth and Human Service Agencies.....	3
REC 300 Fund Raising.....	3
REC 310 Volunteerism.....	3
REC 320 Youth and Human Service Workshop.....	1
REC 420 American Humanities Institute.....	1 2
REC 430 Managing Not for Profit Agencies.....	3
Minimum total.....	14-15

PROGRAM REQUIREMENTS

The 63 semester hour B.S. degree in Recreation includes 33 semester hours of major core courses, which must be taken on the ASU Main campus.

Recreation Major Core Courses

REC 120 Leisure and the Quality of Life <i>SB</i>	3
REC 210 Leisure Delivery Systems.....	3
REC 330 Programming of Recreation Services <i>L</i>	3
REC 350 Promoting and Marketing Recreation Services.....	3
REC 364 Foundations of Therapeutic Recreation.....	3
REC 462 Management of Recreation Services.....	3
REC 463 Senior Internship.....	12
REC 482 Assessment and Evaluation of Recreation Services.....	3
Total.....	33

REC 330, 350, 462, and 482 require *professional status* and must be taken in sequence. REC 463 is the final capstone course taken in the department.

Two hundred hours of recreation leadership experience (volunteer hours) are required before enrollment in REC 463 Senior Internship. Students are not permitted to take additional course work during their senior internship placement period. Approval of internships for main campus students must be received from the Department of Recreation Management and Tourism office on the main campus.

A student must attain a grade of "C" or higher in all courses within the major, including the related area. Specific courses that may be used to fulfill the related requirements are listed on checksheets available in the department office.

In both the recreation management and tourism concentrations, the related areas and directed electives course work must be selected from a departmental list of approved university courses.

GRADUATE PROGRAM

M.S. Degree in Recreation. The curriculum for the M.S. degree in Recreation is designed to help students achieve both academic and professional goals. Areas of concentration include outdoor recreation, recreation administration, social psychological aspects of leisure, and tourism and commercial recreation. Students may complete a thesis or an applied project option. Information on the M.S. degree in Recreation is detailed in the *Graduate Catalog*.

RECREATION (REC)

REC 120 Leisure and the Quality of Life. 3) F, S SS

Conceptual foundations for understanding the role of leisure in the quality of life. Social, historical, psychological, cultural, economic, and political foundations of play, recreation, and leisure. *General Studies' SB.*

REC 150 Outdoor Pursuits. 3) SS

Theories and practical applications related to outdoor recreation pursuits. Interdisciplinary approach to wilderness issues and philosophies, culminating in an outdoor experience. Field trip required.

REC 160 Leisure and Society. 3) A

Analysis of the human relationship to leisure. Historical survey of philosophical, psychological, and socioeconomic bases for development of systems that provide leisure programs. Non-Recreation majors only. *General Studies' SB.*

REC 210 Leisure Delivery Systems. (3) F S

Introduction to development, management, and organization of the public, not-for-profit, and private sectors of the leisure services profession. The course is organized into five modular units which study the delivery of services in the recreation and tourism professions. Lecture/field trip. Prerequisite: Recreation professional status.

REC 220 Introduction to Nonprofit Youth and Human Service Agencies. (3) F S

Introduction to the not-for-profit youth and human service sector and its role in United States society, the economy, and service delivery systems.

REC 300 Fund Raising. (3) A

Methods, techniques, and directed experience in fund raising for voluntary youth and human services agencies. Budget control and accountability.

REC 305 Introduction to Travel and Tourism. 3) F S

An examination of the components of the travel and tourism industry at the state, national, and global levels. *General Studies' G.*

REC 310 Volunteerism. (3) A

Administration of volunteer service programs. Study and analysis of the volunteer personnel process.

REC 315 Community Recreation Systems. (3) S

Explores and assesses community recreation delivery systems in the United States. Prerequisite: REC 210.

REC 320 Youth and Human Service Workshop. 1) F, S

Forum for exchange between students and professional agency personnel. Variable topics, guest speakers. Prerequisite: instructor approval.

REC 325 Tourism Accommodations. 3) A

Local, national, and international overview of the lodging and food service industries. Prerequisites: REC 305, Recreation major or minor.

REC 330 Programming of Recreation Services. (3) F S

Foundations for effective program planning in varied leisure delivery systems. Prerequisite: Recreation professional status. *General Studies' L.*

REC 340 Outdoor Survival. (3) A

Interdisciplinary approach to outdoor survival including attitudes, psychological stress, physiological stress preparation, hypothermia navigation, flora, and wildlife. Field trips required.

REC 345 Meeting and Convention Planning. (3) A

Basic aspects and skills in planning meetings and conventions. Industry and market overview of certified meeting planners. Prerequisite: REC 305.

REC 350 Promoting and Marketing Recreation Services. 3) F, S

Basic principles of promoting recreation services and strategies focus on promoting and marketing concepts as they apply to recreation/tourism settings. Prerequisite: Recreation professional status.

REC 364 Foundations of Therapeutic Recreation. (3) F S

Introduction to special recreation and therapeutic recreation services for persons with disabilities. Offers both a community and clinical perspective on specialized services. Prerequisite: Recreation professional status or instructor approval.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

REC 370 Outdoor Recreation Systems. (3) F

Introduction to outdoor recreation resource delivery systems. History of wilderness and outdoor recreation on resources; the role of outdoor recreation in society; outdoor recreation agencies; related environmental issues. Prerequisite: junior standing or instructor approval.

REC 372 Tourism Planning. (3) F, S

Application of economic and regional development concepts and theories to destination product development. Prerequisites: REC 305. Recreates on major or minor.

REC 380 Wilderness and Parks in America. (3) F, S

An examination of the American Conservation Movement and the relationships between the environment and recreation behavior. *General Studies SB/H*

REC 390 Adaptive Aquatics. (3) N

Focuses on delivery of aquatic programs for the mentally and physically challenged. Lecture/lab.

REC 400 Processes and Techniques in Therapeutic Recreation. (3) A

In-depth analysis of theoretical and philosophical approaches to therapeutic recreation on practice with emphasis on various facilitation techniques used in therapy. Prerequisite: REC 364 or instructor approval.

REC 401 Program Design and Evaluation in Therapeutic Recreation. (3) F, S

In-depth analysis of assessment, treatment planning, program implementation, documentation, and evaluation strategies employed in therapeutic recreation practice. Prerequisites: REC 364 and 400 or instructor approval.

REC 415 Tourism Transportation Systems. (3) A

Examination of the role of various modes of transportation in domestic and international tourism development. Prerequisites: REC 305, Recreation major or minor.

REC 420 American Humanics Institute. (1-2) F, S

Ministerial national management institute for preparation of youth development and nonprofit management staff. Lecture/out-of-state conference. May be repeated for credit. Prerequisite: instructor approval.

REC 430 Managing Not-for-Profit Agencies. (3) S

Analysis of administrative structure, decisions making, and program delivery with not-for-profit youth and human service agencies. Prerequisites: REC 220; senior standing.

REC 440 Recreation Areas and Facilities Development and Management. (3) A

Survey of development and management of public, private and commercial recreation areas and facilities with a focus on meeting program needs.

REC 458 International Tourism. (3) F, S

A global examination of international tourism and its significance as a vehicle for social and economic development. *General Studies G*

REC 460 Clinical Issues in Therapeutic Recreation. (3) A

An exploration of contemporary problems/issues confronting the therapeutic recreation field: includes philosophical, historical, practice management, research, and educational issues. Lecture/off-campus lab. Prerequisites: REC 364 and 400 or instructor approval.

REC 462 Management of Recreation Services. (3) F, S

Basic principles of administration and the application in successful administration situations. Analysis of administrative function, structure, and policies. Prerequisites: REC 330, Recreation professional status.

REC 463 Senior Internship. (6 or 12) F, S, SS

Supervised guided experience in selected agencies. Prerequisites: REC 462. Recreates on major or senior standing.

REC 470 Environment Interpretation and Education. (3) F

Introduction to park interpretation and environmental education which includes theories, principles, and techniques.

REC 480 Natural Resource Tourism. (3) S

Examines the interaction of tourism with culture, natural environment as well as the impacts of tourism on the environment.

REC 482 Assessment and Evaluation of Recreation Services. (3) F, S

Introduction to applied research with an emphasis on program evaluation, research design, data collection on techniques and data analysis. Prerequisites: REC 330-350. Recreates on professional status.

REC 494 Special Topics. (1-3) F, S

Special topics selected by department faculty.

REC 500 Research Methods I. (3) A

Introduction to recreation research methods, with emphasis on methodological questions, research issues and techniques relevant to contemporary social research. Prerequisite: 500-level or higher approved statistics course.

REC 501 Program Evaluation and Information Management. (3) N
Development of skills in several professional areas, including evaluation, needs assessment, information and data collection, data management/analysis, computer applications and report writing.

REC 530 Recreation and Tourism Service Management. (3) S 2002
Examination and application of organizational behavior, leadership, human resources, and development planning and risk management to profession.

REC 552 Foundation of the Recreation and Tourism Professions. (3) A

Examination of the philosophical and conceptual foundations of play, leisure, recreation and tourism; history of the profession, professional and research issues.

REC 555 Social and Psychological Aspects of Recreation and Tourism Behavior. (3) A

Theoretical review and empirical analysis of social, cultural, and psychological foundations of leisure behavior with practical implications.

REC 558 Integrative Seminar. (3) A

Advanced exploration and assessment of current trends within the leisure studies profession. This course has variable topics, including but not limited to: cross-cultural analysis of leisure, urban recreation, planning and resources, socio-cultural dimensions of tourism development, wilderness management. Prerequisite: REC 552.

REC 569 Current Issues in Tourism. (3) A

General survey of the tourism literature with an emphasis on relevant theories, concepts and current research.

REC 570 Social Aspects of Outdoor Recreation Management. (3) A

An analysis of the social aspects of natural resource recreation management and planning. Prerequisite: REC 370 or equivalent.

REC 593 Applied Project. (1-12) N**REC 598 Special Topics.** (1-12) N**REC 599 Thesis.** (1-12) N

School of Social Work

(WHALL 135) 480/965-3304

Fax 480/965-5986

sww.asu.edu

PROFESSORS

ASHFORD, COUDROGLOU, DALEY, KETTNER, LeCROY, MacEACHRON, MARTINEZ, BRAWLEY, MORONEY, SEGAL

ASSOCIATE PROFESSORS

GERDES, GUSTAVSSON, MONTERO, NICHOLS, PAZ, RILEY, CURTISS, STEINER, WALLER

ASSISTANT PROFESSORS

BELL, BRZUZY, HURDLE, LARSON, MARGLIA, NAPOLI, STROMWALL

ACADEMIC PROFESSIONALS

GONZALEZ-SANTANA, JOHNSTON, KNUTSON, WOODS

PURPOSE

The purpose of the School of Social Work is to prepare professional social work practitioners who are committed to the enhancement of individual family and group problem solving capacities and the creation of a more nurturing, just, and humane social environment.

The mission of the School of Social Work is the training of professional social workers for beginning level generalist practice (B.S.W.) and for clinical, administrative, and community practice (M.S.W.). The focus is on those populations who are most oppressed and most in need of social services. A special emphasis is placed on working with ethnic and racial minorities of the Southwest.

The school is committed to the university's mission to be competitive with the best public research universities in the country. Faculty members have active research agendas under way that venture into a wide variety of topics, including work with children, with drug and alcohol abusers, with the developmentally disabled, in human services planning, and in many other areas of interest.

ORGANIZATION

The School of Social Work is organized around three program areas:

1. Bachelor of Social Work (B.S.W.);
2. Master of Social Work (M.S.W.); and
3. Doctor of Philosophy (Ph.D.) with a major in Social Work.

The M.S.W. program has two concentrations in the second year: (1) direct practice (DP) and (2) planning, administration, and community practice (PAC). In considering the PAC concentration, students need to be aware that, because of space availability, preference is given to individuals with significant previous experience.

For more information regarding the Masters and Ph.D. programs, see the *Graduate Catalog*.

ADMISSION

Bachelor of Social Work

The B.S.W. degree program is divided into the pre-Social Work major and the Social Work major.

The pre Social Work major consists of freshman and sophomore students who have been admitted to the university and have declared Social Work as their major, as well as students transferring to the School of Social Work from other colleges within the university and other universities or community colleges who have not completed the admission requirements to the program. Students transferring from other universities or community colleges as premajors should follow the procedure outlined under "Transfer Credit," page 65. Students transferring from other colleges within the university must obtain a Change of College form from the School of Social Work, Academic Services, WHALL 135.

Admission Procedure for Social Work Majors. This admission procedure is for students who have 54 semester hours or more and have taken SWU 271 Introduction to Social Work, 291 Social Service Delivery Systems, 301 Human Behavior in the Social Environment I, and 310 Social Work Practice I. Students wishing to enter the Social Work major are required to apply for admission to the program in addition to obtaining an official Certificate of Admission to the university. Students are eligible to apply

for admission to the Social Work major during the last semester of the sophomore year. It is expected that applicants have completed 54 semester hours and the required social work courses by the end of the semester in which they are applying. Students are admitted to the major at the beginning of the term following the semester during which they apply.

Students may obtain a Social Work major application packet at the School of Social Work, Academic Services, WHALL 135, or request that one be mailed to their home address by calling 480/965 6081.

Applications are reviewed for admission for the fall and spring semesters. Students applying must have a Certificate of Admission to the university in their files by November 1 for spring admission and March 1 for fall admission. All other application materials (i.e., application form, additional statement, and two letters of reference) must be returned to

SCHOOL OF SOCIAL WORK
ACADEMIC SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 871802
TEMPE AZ 85287-1802

Materials must be received by November 1 for spring admission or March 1 for fall admission. Failure to meet these deadlines may result in the applicant having to wait for the next admissions period. Applicants are notified by mail of the committee's decision. Those applicants who have been denied admission may request a conference with the B.S.W. program coordinator to discuss the decision and to obtain guidance in the development of future plans.

Criteria for Admission. Social Work majors may achieve admission as a major by meeting the College of Public Programs major status admissions requirements.

Admission is also based on the following criteria:

1. A minimum cumulative GPA of 2.50 is required.
2. A minimum cumulative GPA of 2.75 in core social work courses (SWU 271, 291, 301, and 310) and a grade of "C" or higher in all social work courses are required.
3. Lower division General Studies requirements described by the university and as part of the B.S.W. program must be completed.
4. The applicant's educational and career goals must be compatible with the educational objectives of the school.
5. Before admission to the major, applicants are required to have a minimum of 240 hours of social work experience in human services. Voluntary, paid, and/or equivalent family personal experiences are acceptable.
6. References are required for each applicant. Two references from persons who have known the applicant in a professional capacity are to be submitted by the applicant. Additionally, a third reference is later requested by the school from the applicant's SWU

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

310 instructor This reference is used in the field placement process

Admission is selective and based on available resources Not all students who meet minimum requirements are admitted to the program

For more information, see "Admission," page 457.

Leave of Absence. Occasionally, for health or personal reasons, Social Work majors find it necessary to interrupt their studies. Students considering such requests meet with an academic advisor to look at alternatives and then submit a written request to the B.S.W. program coordinator. A student may request a leave of absence from the Social Work program for a period of one year (This leave applies only to the Social Work program and not to the university. No leave of absence is granted from the university.) Except when recommended by the Committee on Academic and Professional Standards, the student must be in good standing in the program at the time the request is made. Students should be aware that nonattendance at the university for one or more semesters requires reapplication to the university. Failure to request a leave of absence by Social Work majors results in removal from the program.

Readmission. Undergraduate students (premajor and major) who have previously attended ASU but have not been enrolled at this institution for one or more semesters are required to apply for readmission following university procedures as outlined under "Readmission to the University," page 73. Students who were previously Social Work majors may, in addition, be required to reapply for major status.

Transfer Students. The university standards for evaluation of transfer credit are listed under "Transfer Credit," page 65. Community college students planning to transfer at the end of their first or second year should plan their community college courses to meet the requirements of the ASU curriculum selected. Students attending Arizona community colleges are permitted to follow the degree requirements specified in the ASU catalog in effect at the time they begin their community college work, providing their college attendance is continuous. See "Guidelines for Determination of Catalog Year," page 83.

Arizona students are urged to refer to the *Arizona Higher Education Course Equivalency Guide* (CEG) for the transferability of specific courses from Arizona community colleges. Copies of the guide are available from Academic Services, WHALL 135. Students may also access the guide through the Office of Academic Articulation's Web site at www.asu.edu/provost/articulation.

Courses transferred from community colleges are accepted as lower division only. Students are urged to choose the community college courses carefully, in view of the fact there is a minimum number of hours of work taken at the university that must be upper division credit (see "Credit Requirements," page 83).

Direct transfer of courses from other accredited institutions to the School of Social Work is subject to the existence of parallel and equal courses in the school's curriculum. Transfer credit is not given for courses in which the lowest passing grade ("D") or a failing grade ("E" or "F") was received.

Credit for "life experience" is not given in lieu of course requirements. A minimum of 30 semester hours earned in resident credit courses at ASU is required for graduation

ADVISING

Students are responsible for meeting the degree requirements and seeking advising regarding their program status and progress. Upon admission to the Social Work major, each student is assigned a faculty advisor who assists with career planning. The academic advisor assists students with program planning, registration, preparation of needed petitions, verification of graduation requirements, and referrals to university and/or community resources. Students must meet with an academic advisor before any registration transaction

DEGREES

The school's undergraduate curriculum leads to a Bachelor of Social Work (B.S.W.) degree. The B.S.W. degree program is accredited by the Council of Social Work Education (CSWE). The principal objective of the undergraduate curriculum is to prepare students for beginning level generalist practice in social work. The program is also designed to prepare students for culturally sensitive practice and to provide preparation for graduate training in social work. During the freshman and sophomore years, students concentrate on obtaining a strong background in liberal arts and sciences and are classified as premajors until they are officially admitted to the major. Entrance into the Social Work major from the premajor is not automatic (see "Admission," page 457).

Junior and senior Social Work majors focus on social work courses in research, social policy and services, social work practice, human behavior in the social environment, and field instruction in community agencies. In addition, majors take elective courses in related areas.

The B.S.W. level practitioner is seen as a generalist. The curriculum focuses on such roles as advocacy, case management, problem solving, and referral functions with individuals, groups, families, organizations, and the community.

GRADUATE PROGRAM

The faculty in the School of Social Work offer a Master of Social Work (M.S.W.) and a Ph.D. degree in Social Work. For more information on courses, faculty, and programs, see the *Graduate Catalog*.

UNIVERSITY GRADUATION REQUIREMENTS

In addition to fulfilling college and major requirements, students must meet all university graduation requirements. For more information, see "University Graduation Requirements," page 83.

General Studies Requirement

All students enrolled in a baccalaureate degree program must satisfy a university requirement for a minimum of 35 semester hours of approved course work in General Studies. See "General Studies," page 87.

Note that all three General Studies awareness areas are required. Consult your academic advisor for an approved list of courses

SCHOOL OF SOCIAL WORK DEGREE REQUIREMENTS

All students enrolled in a baccalaureate degree program must satisfy School of Social Work degree requirements with additional course work chosen from among those courses that satisfy the General Studies requirement. General Studies courses are listed in the "General Studies" section, page 87, in the course descriptions, in the *Schedule of Classes*, and in the *Summer Sessions Bulletin*.

A well planned program of study may enable students to complete many General Studies and School of Social Work degree requirements concurrently. Students are encouraged to consult with an academic advisor in planning a program to ensure that they comply with all necessary requirements.

Specific courses from the following areas must be taken to fulfill the college degree requirements.

Numeracy. School of Social Work students must complete a statistical analysis course (CS).

Humanities and Fine Arts. School of Social Work students must complete PHI 101 Introduction to Philosophy or PHI 306 Applied Ethics.

Social and Behavioral Sciences. The following courses are required:

ECN 111	Macroeconomic Principles SB	3
PGS 101	Introduction to Psychology SB	3
POS 110	Government and Politics SB	3
	or POS 310 American National Government SB (3)	
SOC 101	Introductory Sociology SB	3
	or SOC 301 Principles of Sociology SB (3)	
Total		12

Natural Sciences. School of Social Work students must complete a course in either human biology or anatomy and physiology.

MAJOR REQUIREMENTS

The School of Social Work awards a Bachelor of Social Work degree upon the successful completion of a curriculum consisting of a minimum of 120 semester hours. This curriculum includes all university requirements (see "University Graduation Requirements," page 83), including the General Studies requirements (see "General Studies," page 87), as well as the School of Social Work degree requirements.

Course Load. A normal course load per semester is 15-16 semester hours. The maximum number of hours for which a student can register is 18 semester hours, unless an overload petition has been filed with and approved by the B.S.W. program coordinator and the College of Public Programs Dean's Office.

Overload petitions are not ordinarily granted to students who have a cumulative GPA of less than 3.00 and who do not state valid reasons for the need to register for the credits. Students who register for semester hours, in excess of 18 and do not have an approved overload petition on file have courses randomly removed through an "administrative drop" action.

Social Work Core Requirement

SWU 271	Introduction to Social Work SB, H	3
SWU 291	Social Service Delivery Systems	3
SWU 301	Human Behavior in the Social Environment I L/SB	3
SWU 310	Social Work Practice I	3
SWU 320	Research Methods in Social Work	3
SWU 340	Human Behavior in the Social Environment II SB	3
SWU 374	Diversity and Oppression in a Social Work Context C	3
SWU 410	Social Work Practice II	3
SWU 411	Social Work Practice III	3
SWU 412	Field Instruction I	5
SWU 413	Field Instruction Seminar I	1
SWU 414	Field Instruction II	3
SWU 415	Integrative Field Seminar	3
SWU 432	Social Policy and Services	3
SWU 442	Introduction to Practice with Children and Families in Child Welfare	3
	or SWU 444 Issues in School Social Work (3)	
Total		45

SWU 412 and 414 each require 16 hours weekly per semester in the field. Students must file an application for field work before registering for the courses.

No credit is granted toward fulfilling major core requirements in any course in the student's major unless the grade in that course is at least a "C." If a grade of "D" or "E" is earned in a major core course, the student must see the faculty advisor to discuss continuance in the major. Most courses in the program are sequential; successful completion of each course in the sequence is required to enroll in the following course.

ELECTIVES

Students are required to take 37 semester hours of courses in areas related to social work. The practice model of the program is a social work generalist.

Each student is encouraged to consult with an academic advisor in selecting electives. Economics, education, psychology, and sociology are only a few of the academic units offering knowledge of value to the professional social work practitioner.

Undergraduate Student Enrollment in Graduate Classes.

Undergraduate students at ASU in their senior year may enroll in a maximum of nine graduate semester hours in the School of Social Work, providing they have an overall GPA of 3.00 or higher at the time of enrollment and have secured the required signatures for approval. If a course is not used to meet an undergraduate graduation requirement, it may be eligible for use in a future graduate program on the same basis as work taken by a nondegree graduate student (see the *Graduate Catalog*).

Field Instruction. Field instruction for the B.S.W. program is offered concurrently with classroom study. Students are assigned to a social service agency and work under the supervision of a School of Social Work approved social work professional. Field instruction permits testing theory in practice and provides a base of experience for class discussions. Qualified agencies in several Arizona communities are utilized for field instruction.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C and H) see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses," page 60.

B.S.W. students work in one placement for 16 hours a week, for a total of 480 hours over two semesters. In assigning the placement, the school takes into account the student's educational needs and career goals. Generalist social workers need to be familiar with the methods of working with individuals, families, and groups, as well as in organizations and communities and with all ages and ethnic groups. The faculty are committed to establishing the capabilities necessary for high quality, social work generalist practice.

B.S.W. field instruction agencies are located primarily in the Phoenix metropolitan area. Specially arranged, more distant placements may require up to a two hour drive. Although car pools are possible, personal transportation is strongly recommended while attending school.

ACADEMIC STANDARDS

Good Standing. To remain in good academic standing, a student must maintain a minimum overall GPA of 2.00 or higher at the end of each semester in all courses taken at ASU.

Probationary Status. Any student who does not maintain good standing status is placed on probation. Students are placed on probation automatically when the GPA is less than the minimum 2.00 at the end of any semester.

Disqualification. Any student who is on probation becomes disqualified if (1) the student has not returned to good standing or (2) the student has not met the required semester GPA.

See "Academic Standards and Retention," page 460, for more details on academic standards.

Termination from the Social Work Major. A student is terminated from the major under any one of the following circumstances:

1. A B.S.W. student receives an "E" grade (failure) in field practicum.
2. A B.S.W. student does not accept or is not accepted by three or more field agencies if, in the judgement of faculty and field staff, the placements can provide appropriate field experiences without undue inconvenience to the student.
3. The student does not adhere to professional expectations and standards (see the ASU Student Code of Conduct, National Association of Social Workers Code of Ethics, and CSWE Curriculum Policy Statement).
4. A student appears to lack the degree of mental health necessary to function successfully as a social worker. Such a student may be required to undergo a medical examination and make the results available to the Committee on Academic and Professional Standards of the School of Social Work. The responsibility for reviewing and determining the qualification of students whose behavior or performance are in question is vested in the committee. The committee's decision may require the termination of a student from the major.

Continuous Evaluation. While students are subject to the university's general retention policy, they are evaluated in

the school on a broader criteria than mere GPA. Students are reviewed for evidence of competency in social work and are continuously evaluated as they progress in the program. Prospective Social Work candidates who do not meet the established criteria are guided toward a program that is compatible with their interests and abilities.

Reinstatement. A disqualified student who desires to be reinstated may submit an application for reinstatement. A disqualified student normally is not reinstated until at least one semester has elapsed from the date of disqualification. The burden of establishing fitness is on the disqualified student, who may be required to take aptitude tests and submit to other examinations before being readmitted.

APPEAL PROCEDURES

Appeals involving the professional standards of the discipline are decided by the School of Social Work. Appeals involving grades for course work may be appealed to the College of Public Programs Academic and Student Affairs Committee.

STUDENT RESPONSIBILITIES

Students are expected to support and maintain the highest professional standards as spelled out in the *ASU Student Code of Conduct* and the *National Association of Social Workers Code of Ethics*.

Regular attendance is expected in all classes and in field education and is a critical factor in evaluation of performance.

Students' rights are protected through appeal to the Committee on Academic and Professional Standards or through consultation with the school's ombuds person.

SPECIAL PROGRAMS

Tucson Component. The School of Social Work offers a part time, cohort driven B.S.W. program in Tucson in conjunction with the College of Extended Education.

For more information about the B.S.W. program, contact the Tucson Component at 520 884 5507.

University Honors College. The School of Social Work participates with the University Honors College, which affords undergraduates opportunities for enhanced educational experiences. For a description of the requirements and the opportunities offered by the University Honors College, see "University Honors College," page 323.

SOCIAL WORK (SWG)

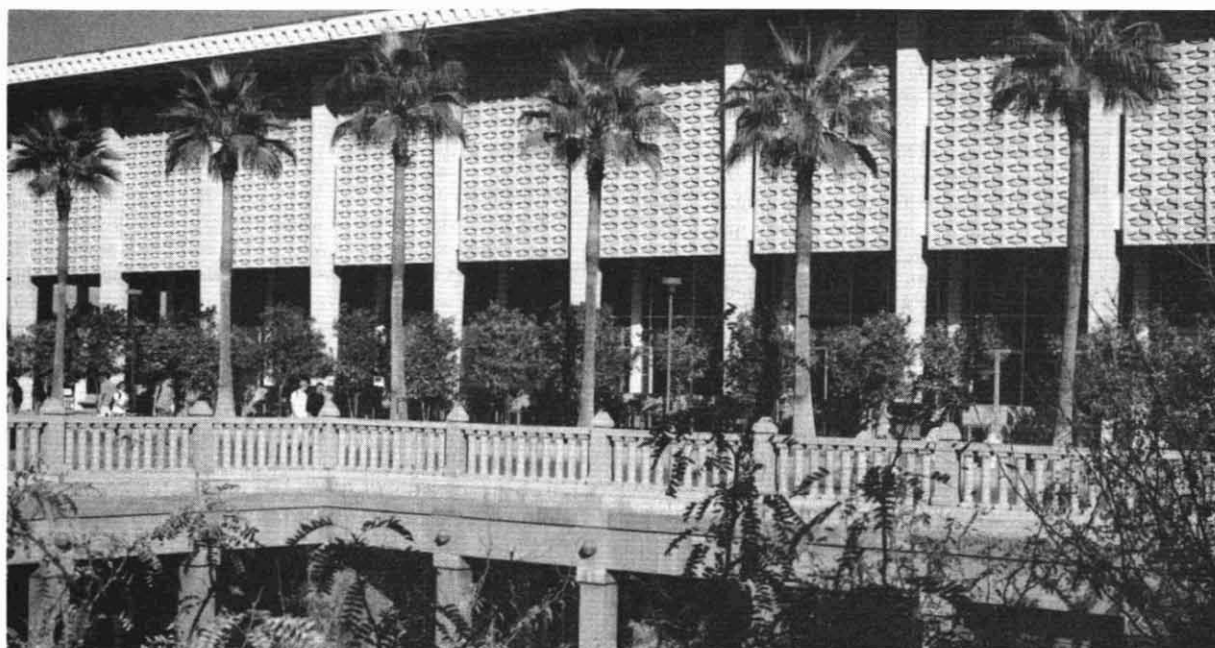
See the *Graduate Catalog* for the SWG courses.

SOCIAL WORK (SWU)

SWU 271 Introduction to Social Work. (3) F S
Descriptive and analytical historical perspective of the profession of social work, social problems, and the welfare system. Designed for freshmen and sophomores considering this major. Prerequisites: PGS 101, SOC 101. *General Studies SB H*

SWU 291 Social Service Delivery Systems. (3) F S
Knowledge and skills necessary to utilize community resources to be a competent case manager. Includes 40 hours of observational experience in local agencies. Prerequisite: SWU 271.

SWU 295 Foundations of Social Work Practice. (3) F S
Provides theoretical foundation and skill base necessary for social work interventions with individuals, small groups, and larger systems. Prerequisite: SWU 271, 291.



View of Hayden Library and Cady Mall

John MacIsaac photo

SWU 301 Human Behavior in the Social Environment I. (3) F, S
Impact of the social environment on the behavior of individuals, family systems, communities, and organizations. Prerequisites: PGS 101; SOC 101. Pre- or corequisites: SWU 271, 291, 295. *General Studies: L/SB*

SWU 302 Human Biology for Social Workers. (3) F, S
Overview of human anatomy and physiology, and the reciprocal relationship between physical and social environments. Lecture, discussion. Pre- or corequisites: SWU 271, 291.

SWU 310 Social Work Practice I. (3) F, S
Introduction to social work methods, emphasizing the following skills: cross-cultural interviewing, assessment, referrals, and process and psychological recording. Prerequisite: SWU 295. Pre- or corequisite: SWU 301.

SWU 320 Research Methods in Social Work. (3) F, S
Application of scientific principles to field practice, impact assessment, intervention procedures, and problem formulation in social work. Lecture, cooperative learning. Pre- or corequisite: SWU 310.

SWU 321 Statistics for Social Workers. (3) F, S
Teaches social work students how to use and interpret descriptive and inferential statistics in social work practice. Lecture, small group work. Prerequisites: MAT 114, 117. Pre- or corequisite: SWU 320. *General Studies: CS*.

SWU 340 Human Behavior in the Social Environment II. (3) F, S
Theories of human development across the life span. Emphasis is placed on individuals, families, and small groups. Lecture, discussion. Prerequisite: SWU 301. Pre- or corequisites: SWU 302, 310. *General Studies: SB*.

SWU 374 Diversity and Oppression in a Social Work Context. (3) F, S
Issues of social inequality related to race, ethnicity, gender, sexual orientation, and disability. Emphasis on populations of the Southwest. Prerequisite: SWU 310. *General Studies: C*.

SWU 410 Social Work Practice II. (3) F, S
Knowledge and skills in social work practice with individuals and families. Prerequisites: PHI 101 (or 306); SWU 310; Social Work major. Corequisites: SWU 412, 413.

SWU 411 Social Work Practice III. (3) F, S
Knowledge and skills in social work practice with groups, communities, and organizations. Prerequisites: SWU 410, 412, 413; Social Work major. Corequisites: SWU 414, 415.

SWU 412 Field Instruction I. (5) F, S
Sixteen hours a week of supervised practice in an approved placement. Prerequisite: Social Work major. Corequisites: SWU 410, 413.

SWU 413 Field Instruction Seminar I. (1) F, S
Field-focused seminar, including practice evaluation. 1.5 hours a week. Prerequisite: Social Work major. Corequisites: SWU 410, 412.

SWU 414 Field Instruction II. (3) F, S
Sixteen hours a week of supervised practice in an approved placement. Prerequisites: SWU 413; Social Work major. Corequisites: SWU 411, 415.

SWU 415 Integrative Field Seminar. (3) F, S
Field-focused seminar to help students integrate practice and theory. Prerequisite: Social Work major. Corequisites: SWU 411, 414.

SWU 432 Social Policy and Services. (3) F, S
Contemporary social, political, and economic issues. Special emphasis on poverty and inequality in the Southwest. Analysis and development of social welfare policies and programs. Prerequisites: ECN 111; POS 110 (or 310); Social Work major. Pre- or corequisites: SWU 410, 412, 413.

SWU 442 Introduction to Practice with Children and Families in Child Welfare. (3) F, S
Focuses on the characteristics, strengths, and service needs of families and children in the Child Welfare System. Lecture, cooperative learning. Prerequisites: SWU 410, 412, 413; Social Work major.

SWU 444 Issues in School Social Work. (3) F, S
Demonstrates how community, family, and school are interdependent using an ecological metaphor, and introduces school social work. Lecture, cooperative learning. Prerequisites: SWU 410, 412, 413; Social Work major.

NOTE: For the General Studies requirement, courses, and codes (such as L, SQ, C, and H), see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

Summer Sessions

Carol Switzer, M.S., Director

www.asu.edu/ssc

The summer sessions, offering more than 3,000 fully accredited courses, provide an opportunity for students to begin or continue academic work on a year round basis. Summer courses are equivalent to fall and spring courses in content, credit awarded, and expected standard of performance. All ASU Main courses (except some EPE courses) are held in air conditioned classrooms or laboratories. A limited number of courses are offered at off campus locations.

There are three regular sessions, one of eight weeks and two of five weeks. The eight week session and the first five week session begin the same date. See the "University Calendar," page 13, for specific dates.

During the summer, ASU also offers students the opportunity to earn graduate or undergraduate credit while studying in foreign countries through various Summer Study Programs. These programs are directed by ASU faculty and have been approved by the appropriate academic unit.

For more information, visit the Summer Sessions Web site at www.asu.edu/ssc.

Admission and Registration. The admission and registration process for summer sessions begins when the *Summer Sessions Bulletin* is distributed.

Admission. All students must be admitted to ASU for the summer as a nondegree student before enrolling, except for continuing students attending ASU during the spring semester preceding the current summer. New ASU students admitted for the fall semester following the current summer must process the summer nondegree admission form before enrolling.

Nondegree Graduate or Undergraduate. An application form is provided in the *Summer Sessions Bulletin*. The submission of transcripts or test scores is not required for this status.

Readmission. ASU students not enrolled during the spring semester preceding the current summer must be readmitted. See "Readmission to the University," page 73.

Conditional admission before graduation from high school may be granted. See "Admission Before Receipt of Final Transcript," page 63.

Advising. All students are strongly encouraged to seek academic advising before enrolling in summer courses. See "Academic Advising," page 73.

Bulletin. The *Summer Sessions Bulletin*, which contains the class schedule, the application form, and the registration procedure, is available the last week of January at the Office of Summer Sessions, ADM B167, and at all registrar sites.

To request the *Summer Sessions Bulletin*, summer study abroad brochures, or other summer information, phone 480 965 6611 or write

OFFICE OF SUMMER SESSIONS
ARIZONA STATE UNIVERSITY
PO BOX 873003
TEMPE AZ 85287-3003

Food Services. Meal plans are available. For more information, send e-mail to summersession@asu.edu, phone 480 965 3464, or write

SODEXHO MARRIOTT SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 870901
TEMPE AZ 85287-0901

Housing. Air conditioned dormitories are available for ASU Main students. For more information, phone 480 965-3515 or write

RESIDENTIAL LIFE
ARIZONA STATE UNIVERSITY
PO BOX 870801
TEMPE AZ 85287-0801

Immunization. Students born after December 31, 1956, are not permitted to register without proof of measles (rubeola) immunity or immunization given after January 1, 1980. See "Immunization Requirements," page 68.

Parking. A decal is required to park at ASU. For more information, phone 480 965 6124 or write

PARKING SERVICES
ARIZONA STATE UNIVERSITY
PO BOX 870704
TEMPE AZ 85287 0704

Registration. Registration may be completed in person or by using InTouch. See the *Summer Sessions Bulletin*.

A maximum of seven semester hours in each five week session or nine semester hours in the eight week session may be taken. Hours of enrollment in any other institution or independent learning course are included in the maximum allowable course load during any given session.

Tuition and Fees. Summer sessions students pay for the actual number of semester hours enrolled, plus the Associated Students' Association fee, the Financial Aid Trust Fee, and the Student Recreation Complex fee. See the *Summer Sessions Bulletin*.



Parents and students enjoy a concert by the Sun Devil Marching Band during Family Weekend.

Tom Trumble photo

International Programs

William G. Davey, Ph.D., Director

www.asu.edu/ipo

As an emerging world class institution, Arizona State University seeks to interact with intellectual and educational cultures throughout the world. International Programs endeavors to develop a global competence for students, faculty, and ASU as a whole. International Programs encourages students to study abroad, faculty to teach and conduct research in contact with scholars around the world, and academic units to develop fruitful forms of collaborative work with a variety of higher learning entities abroad.

The university, in its endeavors to fulfill these functions, takes notice of the rapidly changing conditions of the contemporary world. Canada and Mexico hold a special relationship as a result of proximity and membership in the North American Free Trade Agreement. Europe is developing as a supranational unit in the form of the European Community. The Pacific Rim constitutes one of the most dynamic economic regions of the world. All of these regions are interconnected through swiftly developing information channels, whose power is quickly changing the contours of higher education.

International Programs is administratively part of the Office of the Senior Vice President and Provost. Its functions include developing and administering university programs abroad, encouraging faculty participation in exchanges, and pursuing relationships with foundations and agencies intent on furthering the international character of ASU.

ACADEMIC PROGRAMS

ASU has a number of programs intended to enhance international perspectives in the student population. They are broadly of two kinds: study abroad programs and student exchange programs.

Study Abroad Programs. Study abroad programs are arrangements with educational institutions abroad such that ASU students can study in these institutions and, at the completion of their period of study—normally either a semester or a full academic year—earn ASU resident credit for the courses taken. Outgoing ASU students are charged a program fee, and arrangements are usually made for accommodations and other student needs. ASU registration fee and tuition waivers are not normally applicable toward the costs of study abroad programs. Financial aid such as scholarships, grants, and loans may, in most cases, be applied to program costs. Once on site, ASU students may be placed in special classes created for them, or they may study alongside students from other countries.

Study abroad programs generally fall into one of three categories: language immersion programs, “island” programs, and programs in which courses are offered in English. ASU immersion programs, in which students learn the language of the host country with little or no previous language knowledge, include programs in Germany, Israel, Italy, Mexico, and Portugal. “Island” programs are those in

which students take courses taught in the host country language and frequently live with host families. The courses are designed to be offered to foreign (not host country) students. ASU offers such programs in France and Spain. Programs in which students can take courses taught in English are offered in the United Kingdom but may also be offered in certain institutions in non-English speaking countries.

Exchange Programs. Exchange programs are those in which a small number of ASU students may study at a foreign institution, in return for which students from that institution have a reciprocal opportunity to study at ASU. ASU students pay their normal registration fees and tuition at ASU. In general, ASU registration fees and tuition may be paid by scholarships or waivers. Financial aid may, in most cases, be applied to the costs of exchange programs. As in the case of study abroad programs, ASU students earn ASU resident credit on these exchange programs. Exchange programs offer students the chance to enter the mainstream of university life in the country of their choice. Normally participation in an exchange program is dependent on prior attainment of an adequate level of language competence to be able to function in classes in the host country.

In several instances, students may have the opportunity to undergo advanced level intensive language instruction for approximately one month in the host country before the start of the academic year. The costs of these intensive language programs are not included in tuition and registration fees paid to ASU for an exchange.

ASU has exchange agreements in several countries in Latin America, Asia, Europe, Canada, and Australia. Program availability is under constant review.

Area Studies Programs. International Programs maintains close liaison with area studies programs, such as the Center for Asian Studies, the Latin American Studies Center, and the Program for Southeast Asian Studies, among others.

Related Programs. Close relationships are maintained with a number of academic units on campus. The University Honors College cooperates in the creation of special programs for the benefit of its students. The Department of Languages and Literatures assists in the staffing and management of a number of study abroad programs, especially those related to language acquisition. The College of Business maintains an advising service for College of Business students intending to study abroad.

Procedures. Students interested in participating in such programs should identify their interests as soon as possible in the freshman year if language learning is to be involved. Students should express their interests to the International Programs office in MOEUR 124, if need be; students are directed to other offices from there. It is essential to consult with a departmental program advisor, since the return of credits ultimately depends on the concurrence of

the faculty advisors. Students on an official study abroad or exchange program retain the catalog status they held at the time of their departure.

Information on the status of programs can be obtained from the International Programs office in MOEUR 124, from the International Programs Web page at www.asu.edu/ipo, or by phone at 480/965-5965.

Before participating in a study abroad or an exchange program, students are required to complete an information package. An interview is conducted, and students are also required to attend an orientation that may last more than one day. Program fees as applicable have to be paid and deadlines met. Students should keep themselves informed of any

applicable refund procedures, noting that, since study abroad and exchange arrangements sometimes commit the university, refunds are not always possible in full or in part.

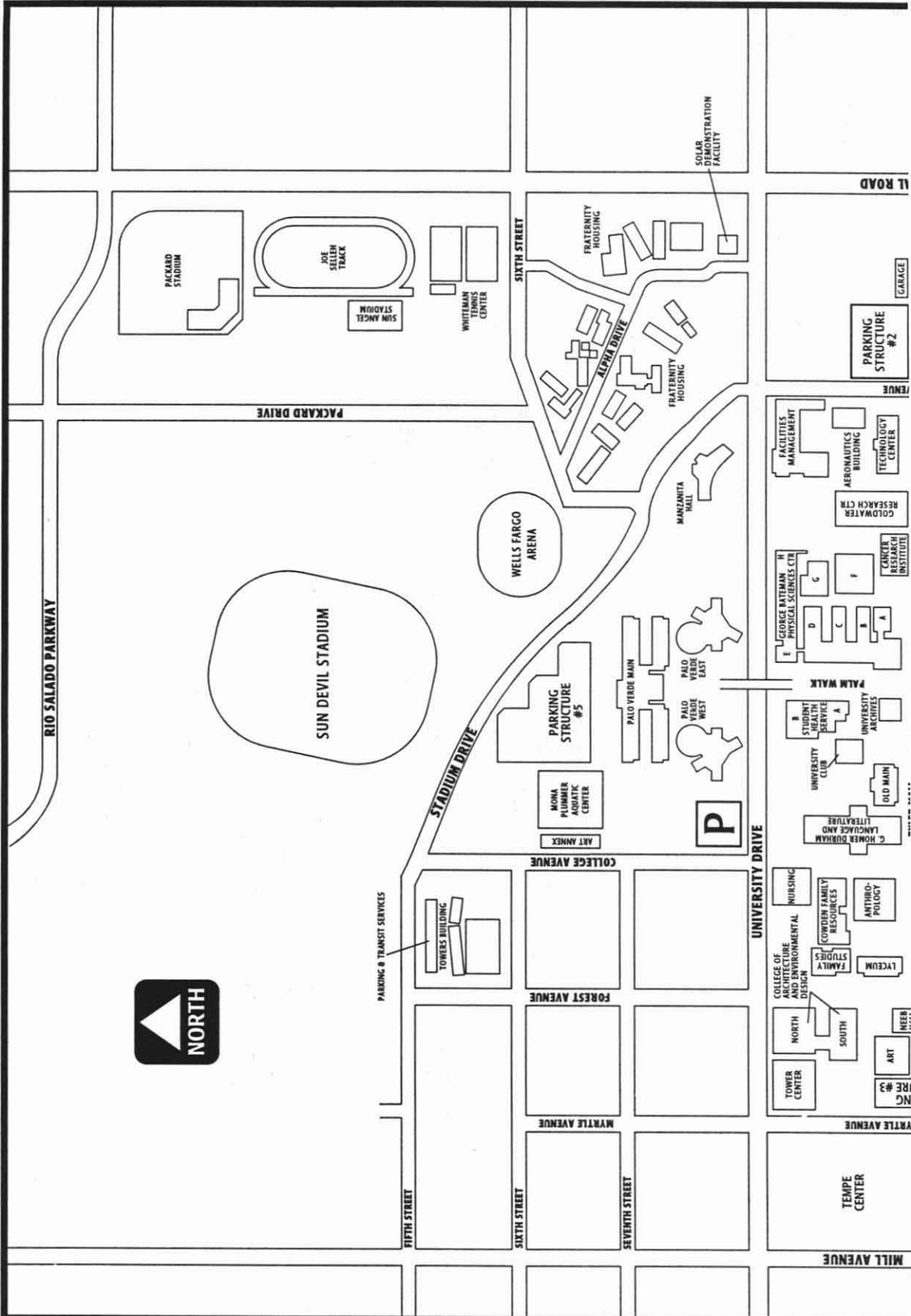
OTHER ACTIVITIES

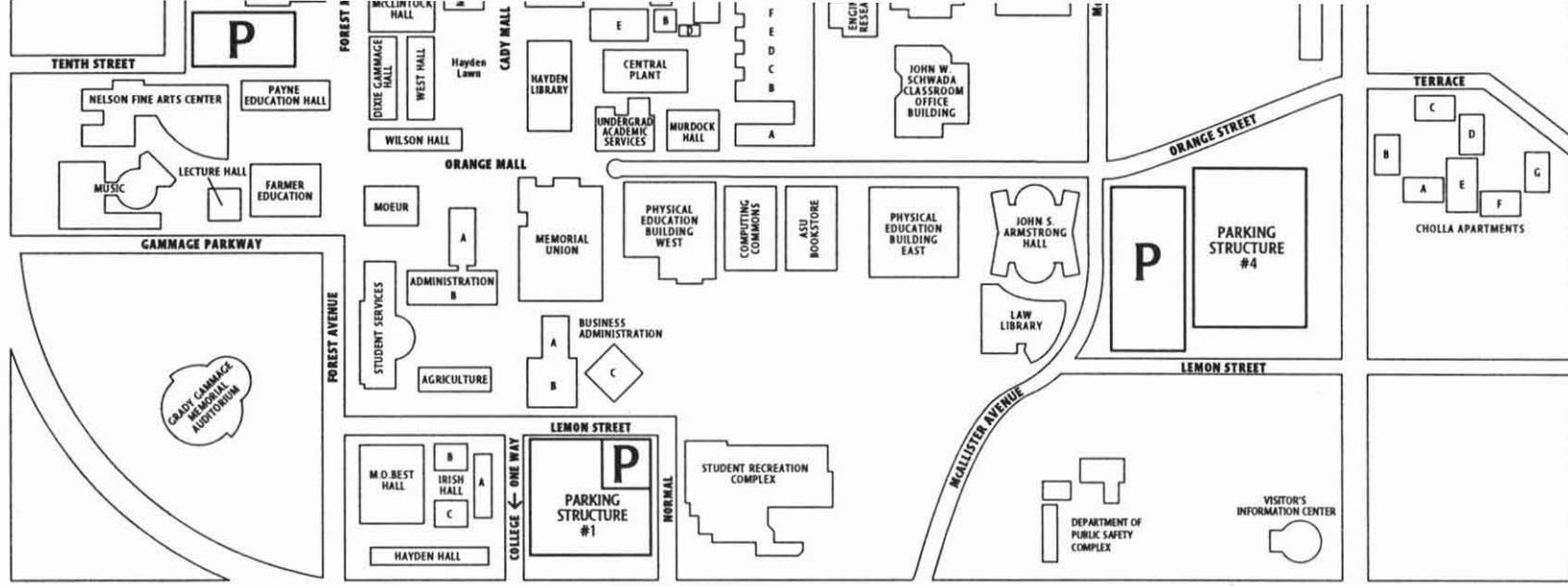
International Programs seeks to encourage a wide range of other academic activities. These activities include exchanges of faculty members and the development of institutional relationships with universities overseas to encourage joint research projects. The office also assumes responsibility for a considerable number of visitors who come from overseas to visit the ASU campus.



ASU student Sonnett Bingham (left) with Atsuko Hirose, during her exchange program studies at Nanzan University in Nagoya, Japan.

Sonnett Bingham photo

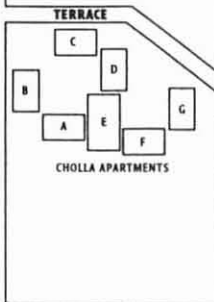
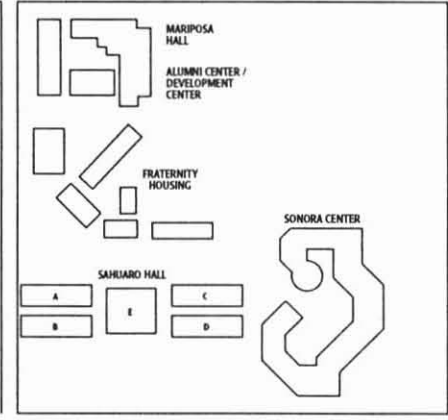




ASU ARIZONA STATE UNIVERSITY MAIN

P = Public Parking

MAP BY AL CAMASTO, ASU PDC, 1/00



ASU Main Directory

Academic Articulation, Office of	AG 272	480 965-8332
Admissions		
Adult Reentry	MU 14	480 965 2252
Graduate	WILSN 101	480 965 6113
Law	LAW 101	480 965 1474
Readmissions (Undergraduate)	SSV 142.....	480 965 7440
Undergraduate	SSV 112.....	480 965 7788
Architecture and Environmental Design, College of		
Architecture School of	AED 162	480 965 3536
Design, School of	AED 154	480 965-4135
Herberger Center for Design Excellence.....	ARCH 119	480 965-6693
Planning and Landscape Architecture, School of.....	AED 158	480 965-7167
Arizona Drug and Gang Prevention Resource Center		
ASUDC B2		480/727-5015
Arizona Prevention Resource Center		
ASUDC B2		480/727-2772
Associated Students of ASU (ASASU)		
MU 310		480 965-3161
ASU Alumni Association		
Alumni Advocacy Programs	VISIT	480/965-4078
Alumni Relations and Career Programs	VISIT	480 965-2133
Alumni Relations and Reunions	VISIT	480 965 5074
Alumni Relations, Eastern U.S.	VISIT	480 965 7754
Alumni Relations, Western U.S. and Scholarships	VISIT	480 965 5074
ASU West Alumni Programs	FAB S361.....	480 543 2586
Athletic Programs and Alumni Relations	MARIP	480 965 5357
Career Programs, College Associations, Continuing Communications	MARIP	480 965 2586
Education and Reunions	VISIT	480 965-2133
Homecoming, Founder's Day and Student Relations	VISIT	480 965-4282
Legislative Network	VISIT	480 965 4078
Membership Marketing	MARIP	480 965-8346
Nongeographic Chapters Recruiting, Scholarships, and Geographic Chapters	VISIT	480 965 5074
ASU East (See "ASU East Directory," page 602.)		
ASU Extended Campus (See "Extended Education, College of," in this section.)		
ASU West (See "ASU West Directory," page 614)		
Bookstore, ASU		
BKSTR		480 965-7928
Business, College of		
BA 123		480 965-4227
Accountancy and Information Management, School of	BA 223	480 965-3631
Economics, Department of.....	BAC 659.....	480 965-3531
Finance, Department of.....	BAC 519	480 965-3131
Health Administration and Policy, School of	BAC 554	480 965-7778
International Business Studies	BA 122	480 965 4066
Management, Department of	BA 323	480 965 3431
Marketing, Department of.....	BAC 460.....	480 965 3621
Small Business Programs	BAC 111.....	480 965-3962
Supply Chain Management, Department of.....	BA 318	480 965-6044
Campus Dining Services		
MU 138		480 965-3464
Career Services		
SSV 329		480 965-2350
Child and Family Services		
MU 14C		480 965-9515
Cocurricular Programs		
MCL 109B		480 965-9600
Community Service Program		
MU 14D		480 965-9843
Counseling and Consultation		
SSV 334		480 965-6146
Disability Resources for Students		
MCENT first floor		
TTY		480 965-9000
Voice		480 965-1234
Drop Add and Withdrawal Information		
SSV 140		480 965-3124
Education, College of		
EDB 104		480 965-3306
Center for Academic Proficiency	ED 416.....	480 965 4757
Center for Bilingual Education	ED 414.....	480 965 7134
Center for Individual Education	ED 415.....	480 965 6292

Computer Support.....	EDB 159	480 965 2126
Curriculum and Instruction, Division of	ED 409..	480 965 1644
Curriculum and Instruction, Graduate Program Office (Advising).....	ED 412.....	480 965-4602
Educational Leadership and Policy Studies, Division of	ED 108...	480 965-6357
Office of Student Affairs (Academic Advising and Certification)	EDB 7	480 965-5555
Office of Student Affairs (Recruitment and Support Programs) (Tutoring Scholarships)	EDB 42	480 965-5555
Professional Field Experiences (Student Teaching).....	EDB 2	480 965 6255
Psychology in Education Admissions Information (Recording; Voice Mail)		480 965 6420
Psychology in Education, Division of	EDB 301	480 965 3384
Educational Opportunity Center		480/894-8451
Engineering and Applied Sciences, College of	ECG 100	480/965-3421
Biomechanical Engineering, Department of	ECG 202	480/965-3313
Chemical and Materials Engineering, Department of	ECG 202	480 965 3313
Civil and Environmental Engineering, Department of	ECG 252	480/965 3589
Computer Science and Engineering, Department of.....	GWC 206	480/965 3190
Construction, Del E Webb School of	SCOB 241	480 965-3615
Electrical Engineering Department of	ENGR 552.....	480/965-3424
Engineering, School of	ECG 104	480/965-1726
Industrial Engineering, Department of	GWC 502	480 965-3185
Mechanical and Aerospace Engineering, Department of.....	ECG 346	480/965-3291
Equal Opportunity/ Affirmative Action	ADM B171	480/965-5057
TTY.....		480 965-0471
Extended Education, College of.....	ASUDC C319.....	480/965-9696
Academic and Professional Programs	RITT B132	480 965-9797
	ASUDC	480 965-9200
American English and Culture Program.....	MAR P	480/965-2376
ASU Downtown Center	ASUDC	480/965 3046
Communications and Marketing.....	ASUDC C319.....	480 965 9696
Development and Outreach.....	ASUDC C319.....	480/727 5330
Distance Learning Technology	R TT A129	480/965 6738
Extended Campus Programs	ASUDC C250	480/965 3046
Independent Learning	R TT B132	480 965-6563
		or 1-800-533-4806
Operations and Finance.....	ASUDC C319.....	480/965-9696
FASTT (Financial Aid Services Through Technology).....		480/968-4400
Fine Arts, College of.....	GHALL 132.....	480/965-6536
Art, School of.....	ART 102	480 965-3468
Dance, Department of	PEBE 107B	480 965-5029
Music, School of	MUSIC E183.....	480/965-3371
Theatre, Department of	GHALL 232	480/965 5359
Graduate College.....	WILSN lobby.....	480/965-3521
Admissions.....	WILSN 101	480 965-6113
Advising Office	WILSN lobby	480 965-3521
Financial Assistance.....	WILSN 120	480 965 3521
Graduation Section		
Commencement Office.....	ADM B167	480/965-6611
Graduate Division	SSV 140.....	480/965 6980
Undergraduate Division	SSV 140	480 965-3256
Greek Life	MU 340	480/965-2249
Honors College, Craig and Barbara Barrett.....	IRISH A121	480/965-2359
Information Technology		
Computer Accounts Office	CPCOM 105	480/965 1211
Computing Site Hours		480/965 6500
Computing Sites.....	CPCOM atrium	480 965 4459
	BAC 16.....	480 965 3074
	ECG 150	480/965-6280
	ED 214 (self service)	
	GWC 185	480/965 4307
Customer Assistance Center	CPCOM 202	480 965-5939
Geographic Information Systems Lab.....	CPCOM 235	480/965 4007
Help Desk.....	CPCOM 202	480 965-6500
Instruction Support Lab	CPCOM 213	480 965 6739
Virtualization Center	CPCOM 235	480 965 9699

Interdisciplinary Programs

Bachelor of Interdisciplinary Studies (B.I.S.)	UASB 200	480 965 1970
Creative Writing (M.F.A.)	LL 307C	480 965 7454
Curriculum and Instruction (Ph.D.)	ED 305	480 965 1644
Exercise Science (Ph.D.)	PEBW M201	480 965 7906
Gerontology (Certificate)	WHALL 116	480 965-3225
Justice Studies (Ph.D.)	WLSN 316	480 965 7682
Public Administration (D.P.A.)	WLSN 208	480 965-3926
Science and Engineering of Materials (Ph.D.)	PS B135	480 965 2460
Speech and Hearing Science (Ph.D.)	CSB 146	480 965 2373
Statistics (M.S.)	BAC 570	480/965 2671
International Programs	MOEUR 124	480/965-5965
International Student Programs	SSV 265	480/965-7451
International Undergraduate Admissions	SSV 101	480/965-2688
InTouch		480/350-1500
Law, College of	LAW 101	480/965-6181
TTY		480 965 2048
Learning Resource Center	SSV 394	480/965-6254
Liberal Arts and Sciences, College of	SS 111	480/965-6506
Aerospace Studies, Department of	TC 324	480 965 3181
African American Studies	AG 201	480 965 4399
Anthropology, Department of	ANTH A124	480 965 6213
Biology, Department of	LS C226	480 965 3571
Chemistry and Biochemistry, Department of	PS D102	480 965-3461
Chicana and Chicano Studies, Department of	GHALL 212	480 965-5091
English Department of	LL 542	480 965-3168
Exercise Science and Physical Education, Department of	PEBW M212	480 965-3875
Family Resources and Human Development, Department of	COWDN 106	480 965-6978
Geography, Department of	SCOB 340H1	480 965 7533
Geology, Department of	PS F686	480 965 5081
History, Department of	SS 204	480/965 5778
Interdisciplinary Humanities Program	LL 641	480 965 6747
Languages and Literatures, Department of	LL 440	480 965 6281
Mathematics, Department of	PS A216	480 965 7195
Microbiology, Department of	LS E210	480 965-1457
Military Science Department of	TC B100	480 965-3318
Philosophy, Department of	PS A524	480 965-3394
Physics and Astronomy Department of	PS F470	480 965 3561
Plant Biology, Department of	LS E218	480 965 3414
Political Science, Department of	SS 410	480 965 6551
Psychology, Department of	PSY 237	480 965 3326
Religious Studies, Department of	ECA 377	480 965-7145
Sociology, Department of	SS 321	480 965-3546
Speech and Hearing Science, Department of	LL 173A	480 965-2374
Women's Studies Program	ECA 209	480 965-2358
Memorial Union		
Activities and Student Programming Board	MU third level	480 965-6822
Administration	MU first level	480 965-5310
Event Meeting Services	MU first level	480 965 3406
Information Desk	MU first level	480 965 5728
Lost and Found	MU first level	480 965 5728
Multicultural Advancement Program	SSV 394	480/965-6060
New Student Programs	SSV 110	480/965-2880
Nursing, College of	NUR 344	480/965-3244
Community Health Services Clinic		480 941-9283
Continuing and Extended Education	CSB third floor	480 965-7431
Student Service Office	NUR 108	480 965 2987
Operator, University	480/965-9011	
Parents Association	SSV 110	480/965-2602
Public Programs, College of	WILSN 234	480/965-1034
Advanced Public Executive Program (APEP)	ASUDC C110	480 965-4006
American Indian Studies	MHALL 220	480 965-3634
Asian Pacific American Studies Program	GHALL 2	480 965-9711
Human Communication Hugh Downs School of	STAUF A412	480 965-5095
Journalism and Telecommunication, Walter Cronkite School of	STAUF A231	480 965-5011
Justice Studies, School of	WILSN 331	480 965-7682

Morrison Institute for Public Policy	UVCMN 203	480 965 4525
Nonprofit Leadership and Management Center for.....	MOEUR 131	480 965 0607
Public Affairs, School of.....	WILSN 208	480 965 3926
Recreation Management and Tourism, Department of.....	MOEUR 131	480/965 7291
Social Work, School of.....	WHALL 135	480/965 3304
Urban Inquiry, Center for.....	AG 320B	480/965 9216
Readmissions (Undergraduate).....	SSV 142	480/965-7440
Registrar.....	SSV 140	
Expedite		480 968-5988
InTouch		480 350-1500
TTY		480 965-3236
Voice		480 965-3124
Residency Classification	SSV 170	480/965-7712
Residential Life.....	SSV 170	480/965-3515
Student and Organization Resource Center (SOURCE)	MU 340	480/965-2249
Student Development.....	SSV 180	480/965-7313
Student Employment, Off-Campus	SSV 202	480/965-6318
Student Employment, On-Campus	SSV 202	480/965-5186
Student Financial Assistance	SSV 216A	480/965-3355
Student Health	SHS	480/965-3346
Appointments		480/965 3349
Fax		480 965 8914
Measles Information.....		480 965 1358
Student ID	UASB 140	480/965-2273
Student Leadership Programs	MU 340	480/965-2249
Student Life.....	SSV 263	480/965-6547
Student Media.....	MCENT 2	480/965-7572
State Press Advertising.....		480 965 6555
State Press Information.....		480/965 7572
State Press Newsroom.....		480/965 2292
Web Devil.....		480/727 6941
Student Recreation Complex and Recreational Sports.....	SRC 220	480/965-8900
Summer Sessions, Office of.....	ADM B167	480/965-6611
Summer International Programs	ADM B167	480/965-6611
Testing Support Services	SSV 322	480/965-6777
Transcripts (Outgoing).....	SSV 140B	480/965-7276
Undergraduate Academic Services, Division of.....	UASB	
Bachelor of Interdisciplinary Studies (B. S.).....	UASB 200	480/965 1970
Campus Match	ED 403	480/965 3097
Cross-Career Advising Services (CAS).....	UASB 131	480/965 4464
Degree Audit Reporting System (DARS)	UASB 100	480/965 8012
General Studies.....	UASB 230	480/965 5657
Service Learning	UASB 200	480/727 6657
Summer Bridge	ED 403	480/965 3097
Supplemental Instruction	ED 403	480/965-3097
University Success Courses (UN 100)	ED 403	480/965-3097
Writing Across the Curriculum Support and Development.....	ED 403	480/965 3097
Writing Centers.....	LL 340	480/965-4272
University Evaluation, Office of.....	AG 281	480/965-9291
University Libraries	LIB	
Circulation		480 965-3605
Hours		480/965-3415
Information		480 965-6164
Renewal by Telephone		480 965-2595
University Testing Services	EDB 302	480/965-7146
Upward Bound	SSV 279	480/965-6483
Veterans Services Section.....	SSV 148	480/965-7723
Veterans Upward Bound	IRISH 7	480/965-3944
Winter Session		480/965-9797

ASU Main Faculty and Academic Professionals

The faculty and academic professionals listed are involved in undergraduate and graduate instruction and research.
The year of first appointment follows the name. Emeriti are included.

A

- Aannestad, Per** (1975) Associate Professor of Physics and Astronomy, B.S., University of Oslo (Norway); Ph.D., University of California, Berkeley
- Abbaszadegan, Morteza** (1999), Associate Professor of Civil and Environmental Engineering, B.S., University of Montana, M.S., Northern Arizona University, Ph.D., University of Arizona
- Abele, Deborah** (1990), Faculty Associate of Planning and Landscape Architecture, B.A., Vassar College
- Aberle, James T.** (1989), Associate Professor of Electrical Engineering; B.S., M.S., Polytechnic Institute of New York; Ph.D., University of Massachusetts, Boston
- Abramson, Jay** (1999), Lecturer of Mathematics, B.S., University of New Mexico, M.S., University of New Hampshire
- Abston, Deborah** (1990), Associate Librarian, Access Services, Hayden Reference Services, B.S., M.S.L.S., Wayne State University
- Acereda, Alberto** (1998), Assistant Professor of Latin American Literature, Licenciado, University of Barcelona Spain; M.A., Ph.D., University of Georgia
- Acevedo, Roberto M.** (1964), Professor Emeritus of Spanish; B.A., University of California, Berkeley, M.A., Ph.D., University of Arizona
- Acharya, Raghunath** (1976), Associate Professor of Physics and Astronomy, B.Sc., M.Sc., University of Delhi (India); Ph.D., University of Rochester
- Acker, Barbara** (1991), Associate Professor of Theatre; B.F.A., University of Texas, Austin; M.A., Case Western Reserve University, Ph.D., Wayne State University
- Adams, Donna** (1983), Associate Professor of Nursing, B.S.N., University of Missouri, Columbia; M.S., Arizona State University; D.N.Sc., University of San Diego
- Adams, James B.** (1996), Professor of Materials Engineering; Interim Codirector, Science and Engineering of Materials, B.S., Duke University, M.S., Ph.D., University of Wisconsin, Madison
- Adams, Karen L.** (1984), Professor of English; Director, Program for Southeast Asian Studies, B.A., M.A., Ph.D., University of Michigan
- Adelman, Madelaine** (1998), Assistant Professor of Justice Studies; A.B., Ph.D., Duke University
- Adelson, Roger D.** (1974), Professor of History; B.A., George Washington University, B.Litt., University of Oxford (United Kingdom), M.A., Ph.D., Washington University
- Aerni, Wayne** (1991), Faculty Associate of Public Affairs, B.A., University of Oregon; M.P.A., D.P.A., Arizona State University
- Agadjanian, Victor** (1995), Assistant Professor of Sociology; B.A., Moscow State University (Russia); M.S., Ph.D., University of Southern California
- Aguilar, John L.** (1976), Professor Emeritus of Anthropology, B.A., University of California, Los Angeles, M.A., California State University, Los Angeles, Ph.D., University of California, San Diego
- Ahn, Seung C.** (1990), Associate Professor of Economics; B.A., Sogang University (Korea); M.A., Ph.D., Michigan State University
- Aiken, Leona S.** (1985), Professor of Psychology, B.S., Virginia Commonwealth University, M.S., Ph.D., Purdue University
- Akins, William H.** (1975), Professor Emeritus of Theatre; B.A., Duke University, M.A., Ph.D., University of Denver
- Alarcon, Ricardo O.** (1989), Associate Professor of Physics and Astronomy, B.S., M.S., University of Chile Chile, Ph.D., Ohio University
- Alberts, Jess K.** (1989), Associate Professor of Communication; Director, Hugh Downs School of Human Communication, B.S. Ed., M.A., Abilene Christian University; Ph.D., University of Texas, Austin
- Alcock, John** (1972), Regents' Professor of Biology; B.A., Amherst College; Ph.D., Harvard University
- Alcorn, Marianne** (1981), Law Librarian, Reference, B.A., University of Washington; M.L.S., University of Southern California
- Aldama, Arturo** (1996), Assistant Professor of Chicana and Chicano Studies, B.A., Evergreen State University, M.A., Ph.D., University of California, Berkeley
- Aldrich, Frank T.** (1969), Associate Professor of Geography, B.A., University of Texas, Austin; M.S., Ph.D., Oregon State University
- Alexander, Robert J.** (1975), Professor of German, B.A., Macalester College, M.A., Ph.D., University of Wisconsin, Madison
- Alford, Terry L.** (1993), Associate Professor of Materials Engineering; B.S., M.S., North Carolina State University, Raleigh, Ph.D., Cornell University
- Alisky, Marvin** (1957), Professor Emeritus of Political Science; B.A., M.A., Ph.D., University of Texas, Austin
- Allee, David R.** (1991), Associate Professor of Electrical Engineering, B.S., University of Cincinnati; M.S., Ph.D., Stanford University
- Allen, Craig M.** (1991), Associate Professor of Journalism and Telecommunication, B.A., Linfield College; M.S., University of Oregon, Ph.D., Ohio University
- Allen, James P.** (1989), Professor of Chemistry and Biochemistry; B.S., Saint Joseph's University, M.S., Ph.D., University of Illinois
- Allison, Maria T.** (1984), Professor of Recreation Management and Tourism, B.S., M.S., University of New Mexico, Ph.D., University of Illinois
- Allstot, David J.** (1998), Adjunct Professor of Electrical Engineering, B.S.E.S., University of Portland, M.S.E.E., Oregon State University; Ph.D., University of California, Berkeley
- Alozie, Nicholas O.** (1991), Associate Professor of Public Affairs, B.A., M.P.A., Texas Southern University, M.A., Ph.D., University of Texas, Dallas
- Alpers, Rojann** (1995), Assistant Professor of Nursing; B.S.N., M.S., Arizona State University; Ph.D., University of Iowa

- Alquist, Lewis R.** 1984 , Professor of Art; B F A., Florida Atlantic University, M F A , Cranbrook Academy of Art
- Altheide, David L.** (1973 , Regents' Professor of Justice Studies; B A , Central Washington State College, M A , University of Washington, Ph D , University of California, San Diego
- Alvarado, Ronald H.** (1974), Professor Emeritus of Biology; B A , University of California, Riverside, M.S., Ph.D., Washington State University
- Alvarez, Robert R. Jr.** (1989), Professor of Anthropology; B.A. , Northern Arizona University, M.A., San Diego State University; M A , Ph D , Stanford University
- Amazeen, Eric P.** (1999), Assistant Professor of Psychology, B A , Franklin and Marshall College; M A , Ph D , University of Connecticut
- Amazeen, Polemnia G.** 1999 , Assistant Professor of Psychology; B A , Franklin and Marshall College, M A., Ph D., University of Connecticut
- Ames, James G.** 1985 , Senior Research Associate, Manufacturing Institute. B.S., San Diego State University
- Amundson, Susan** (1995), Assistant Professor of Supply Chain Management, B S , Moorhead State University; M.B A., College of St Thomas, Ph D , University of Minnesota
- Anderson, Edward F.** 1993 , Adjunct Professor of Plant Biology; B A , Pomona College, M A , Ph.D., Claremont Graduate School and Rancho Santa Ana Botanic Garden
- Anderson, Gary** (1975), Associate Professor of Reading and Library Science, B S , M Ed , Edinboro State College; Ph D., University of Pittsburgh
- Anderson, Karen** (1987 , Faculty Associate of Nursing, B.S., M S , Arizona State University
- Anderson, Marcia L.** (1986 , Librarian, Collection Development, B.A , University of Michigan; M L S , Wayne State University
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- Anderson-Rowland, Mary R.** 1974 , Associate Professor of Industrial Engineering, Associate Dean, Student Affairs and Special Programs, B A , Hope College, M.S., Ph D., University of Iowa
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Youn, Kyu Ho (1991), Professor of Journalism and Telecommunication; B A , Konkuk University (South Korea), M.A., Ph.D., Southern Illinois University, Carbondale

Young, Bernard (1988), Professor of Art; B.F.A., Temple University; M.F.A., Ph.D., Cornell University

Young, Dennis L. (1975), Professor of Mathematics; B.S., Saint Louis University; M S., Ph D., Purdue University

Young, Hewitt H. (1967), Professor Emeritus of Industrial Engineering, B.S.M.E., M S I E , Case Institute of Technology, Ph D , Arizona State University

Young, Joseph E. (1979), Professor Emeritus of Art; B.A., California State University at Los Angeles; M A , University of California, Los Angeles

Young, Josephine Peyton (1998), Assistant Professor of Reading Education; M.A., University of West Florida, Ph.D., University of Georgia

Young, Michael Cochise (1990), Associate Administrative Professional, University Honors College; Director, Office of National Scholarship Advisement, B.A., St. Joseph's University; M.A., Ph.D., University of Pennsylvania

Young, Otis E. Jr. (1963), Professor Emeritus of History; A.B., A M., Ph.D., Indiana University

Youngblood, Robert L. (1973), Professor of Political Science; Chair, Department of Political Science, B.A., Willamette University; M.A., University of Hawaii, Manoa, Ph.D., University of Michigan

Z

Zandieh, Michelle (1997), Assistant Professor of Mathematics, B A., Northwestern University; M.S., Ph.D., Oregon State University

Zaslow, Bertram (1956), Professor Emeritus of Chemistry and Biochemistry; B.A., Cornell University; M.S., University of Minnesota, Twin Cities; Ph D , Iowa State University

Zatz, Marjorie S. (1982), Professor of Justice Studies, Director, Interdisciplinary Ph D Program in Justice Studies; B.A., University of Massachusetts, Amherst; M.A., Ph.D , Indiana University, Bloomington

Zautra, Alex (1976), Professor of Psychology; Director, Clinical Program in Psychology; B.A., Antioch College; M.S., Ph.D., University of Utah

Zeitlin, Marilyn A. (1992), Director, ASU Art Museum; A.B., M.A., Harvard University

Zellmer, Linda R. (1997), Assistant Librarian, Map Collection; B.S., University of Wisconsin, Oshkosh; M.A., College of William and Mary; M L.S., University of Wisconsin, Milwaukee

Zhang, Yong-Hang (1997), Associate Professor of Electrical Engineering; Nanjing Normal University (China); M.Sc., Institute of Semiconductors, Chinese Science and Technology University (China), Ph D , Max Planck Institut fur Festkorperforschung University of Stuttgart (Germany)

Zhu, Anmin (1997), Senior Lecturer of Mathematics, B.S., Anhui University (China), M S., Milin University (China); Ph.D., Arizona State University

Zhu, Han (1997), Assistant Professor of Civil and Environmental Engineering, B S , M S , Fudan University (China); Ph.D., Northwestern University

Zhu, Yingxian (1996), Lecturer of Mathematics, B.S., Anhui University (China), M.S., Dalian University of Science and Technology (China); Ph.D., Arizona State University

Zimiles, Herbert (1988), Professor of Educational Psychology; B.A., New York University; Ph D., University of Rochester

Zimmer, Carl R. (1959), Professor Emeritus of Engineering; B.S.E.E., Cornell University, M.S.E.E., Ph.D., Syracuse University

Zimmerman, Pamela (1997), Lecturer of Mathematics, B S , University of Nebraska, Omaha; M.A., Arizona State University

Zucker, Stanley H. (1975), Professor of Special Education, B A., State University of New York, Stony Brook, M.S., Hofstra University; Ph.D , University of Missouri, Columbia

Zunkel, Gretchen M. (1998), Assistant Professor of Nursing, B S N., University of Colorado; M.N., University of California, Los Angeles; M.N., Ph.D., University of Washington

Zuo, Jian-Min (1989), Associate Research Scientist of Physics and Astronomy; B.S., Nanjing University (China), Ph.D. Arizona State University

Zuo, Yijun (1998), Assistant Professor of Mathematics; B.S., Zhenjiang Teachers University (China); M.S., Lanzhou University (China); M S , Ph D., University of Texas, Dallas

Zwiebel, Imre (1979), Professor Emeritus of Engineering; B S , University of Michigan, M.S., Ph.D., Yale University

Zygas, K. Paul (1984), Associate Professor of Architecture; A.B., M.Arch., Harvard University; Ph.D., Cornell University

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 Director, School of Music *To Be Announced*
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 Director, Institute for Studies in the Arts. *To Be Appointed*
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 Associate Dean, Administration and Personnel. Linell E. Cady
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 Chair, Department of Anthropology John K. Chance
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 Chair, Chicana and Chicano Studies Vicki L. Ruiz
 Chair, Department of English *To Be Announced*
 Chair, Department of Exercise Science and Physical Education. William J. Stone
 Chair, Department of Family Resources and Human Development Richard Fabes

Chair, Department of Geography	Breandán Ó hUallacháin
Chair, Department of Geology	Simon Peacock
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Chair, Department of Philosophy	Brad Armendt
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Chair, Department of Plant Biology	J. Kenneth Hooper
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Chair, Department of Religious Studies	Joel Gereboff
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Chair, Department of Speech and Hearing Science	David Ingram
Director, African American Studies	Leonor Boulin Johnson
Director, Center for Asian Studies	Timothy Wong
Director, Cancer Research Institute	G. Robert Pettit
Director, Center for the Study of Early Events in Photosynthesis	Willem Vermaas
Director, Climatology Laboratory	Robert C. Balling
Interim Director, Hispanic Research Center	Gary Keller
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Director, Interdisciplinary Committee for Molecular and Cellular Biology	Bertram L. Jacobs
Director, Institute of Human Origins	Donald C. Johanson
Director, Latin American Studies Center	Tod Swanson
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Director, Center for Meteorite Studies	Carleton B. Moore
Director, Center for Solid State Science	Paul McMillan
Director, Program for Southeast Asian Studies	Karen Adams
Director, Women's Studies Program	Mary Logan Rothschild

College of Nursing

Dean, College of Nursing	Barbara A. Durand
Interim Associate Dean for Graduate Programs and Research	<i>To Be Announced</i>
Associate Dean for Undergraduate Programs and Extended Education	Mary L. Killeen
Director, Continuing and Extended Education	David Hrabec
Director, Student Services	Jean Craig Stengel
Chair, Division of Adult Health/Parent-Child Nursing	Frances Thurber
Chair, Division of Community Health/Psychosocial Nursing Systems	Pauline Kommenich
Manager, Community Health Services Clinic	Elizabeth Holman

College of Public Programs

Dean, College of Public Programs	Anne L. Schneider
Associate Dean, College of Public Programs	Frederick C. Corey
Director, Student Services	Cheryl Herrera
Director, Hugh Downs School of Human Communication	Jess K. Alberts
Director, Walter Cronkite School of Journalism and Telecommunication	<i>To Be Appointed</i>
Director, School of Justice Studies	David Theo Goldberg
Director, School of Public Affairs	Jeffrey Chapman
Director, School of Social Work	<i>To Be Appointed</i>
Chair, Department of Recreation Management and Tourism	Carlton F. Yoshioka
Director, Advanced Public Executive Program	Peggy O'Sullivan Kachel
Director, American Indian Studies Program	Carol Lujan
Director, Asian Pacific American Studies Program	Tom Nakayama
Director, Morrison Institute for Public Policy	Robert Melnick
Director, Center for Nonprofit Leadership and Management	Robert Ashcraft
Director, Center for Urban Inquiry	<i>To Be Appointed</i>

Division of Undergraduate Academic Services

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Associate Director, Education Services	Gay W. Brack
Associate Director, Advising Services	Stephanie Jacobson
Assistant Director, Student Success Programs	Stephen Rippon
Assistant Director, University Academic Advising Center	Casey Self
Assistant Director, Bachelor of Interdisciplinary Studies	Christina Stage

General Studies Program Coordinator *To Be Appointed*
 Business Manager Kathleen Renshaw

University Libraries

Dean, University Libraries Sherrie Schmidt
 Associate Dean, Continuous Improvement/Total Quality Service Dora Biblarz
 Associate Dean, Library Services Jane Conrow
 Acting Associate Dean, Video Resources Dora Biblarz
 Assistant Dean, Personnel Kurt Murphy
 Head, Access Services Virginia Sylvester
 Head, Acquisitions and Bibliographic Records *To Be Appointed*
 Interim Head, Architecture and Environmental Design Library Dennis Madden
 Head, Department of Archives and Manuscripts Rob Spindler
 Head, Government Documents/Map Collection Rebecca Burke
 Interim Head, Interlibrary Loan and Document Delivery Virginia Sylvester
 Head, Library Instruction, Systems, and Technology (LIST) Scott Herrington
 Head, Music Library Robert Follet
 Head, Preservation Lois Schneberger
 Head, Special Collections Marilyn Wurzburger
 Acting Head, Original Cataloging Ronda Ridenour
 Interim Head, Noble Science and Engineering Library Reference Services Tom Turner
 Team Leader, Collection Development Jeanne Richardson
 Team Leader, Reference Services Lydia LaFaro

Administrative Services, ASU Main

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 Senior Executive Assistant, Administrative Services Sheila Woods Stokes
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See "College of Extended Education," page 553.

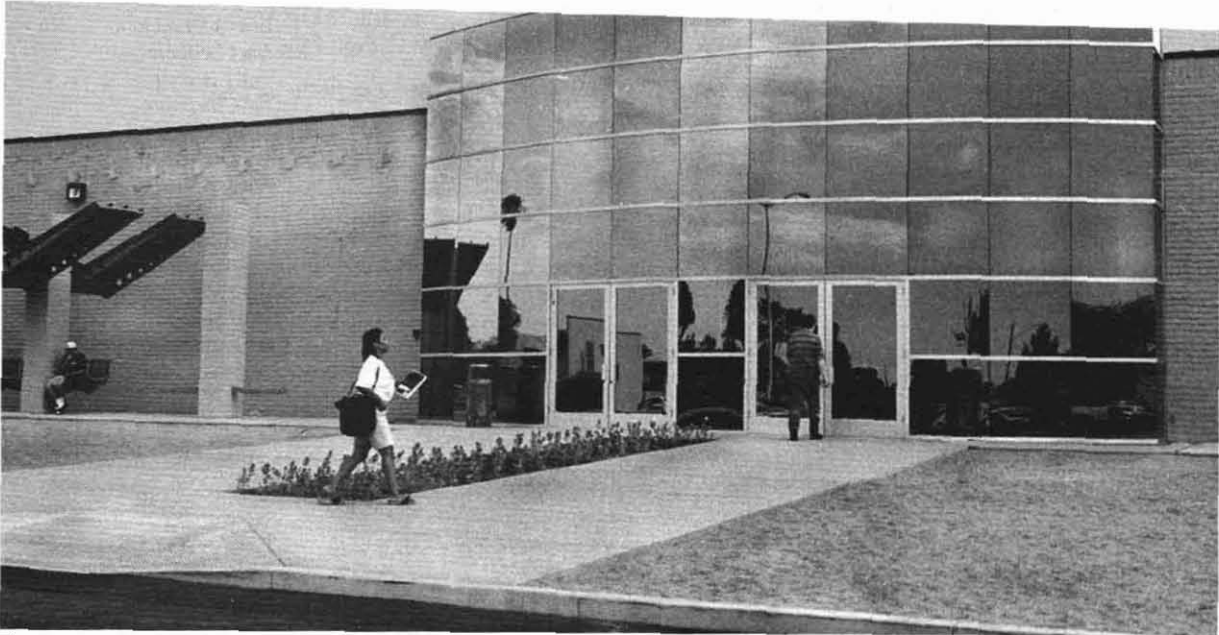
ASU West

See "ASU West Administrative Personnel," page 621.

ASU East

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The burgeoning ASU East campus offers a variety of programs, from agriculture to aeronautical engineering technology.

Tim Trumble photo

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East College	573	Department of Manufacturing and Aeronautical Engineering Technology	596
College of Technology and Applied Sciences	578	Map	601
Department of Aeronautical Management Technology	580	Directory	602
Department of Electronics and Computer Engineering Technology	584	Faculty and Academic Professionals	603
		Administrative Personnel	607

Arizona State University East was established in 1996 at the former Williams Air Force Base, 23 miles southeast of ASU Main. There, ASU East and its educational partners have created the Williams Campus—a residential academic community focused on meeting the needs of students, business, industry, and the larger community. The 600-acre Williams Campus offers a small college environment, with access to the amenities of a major metropolitan area and the resources of a major research university.

ASU East offers degree programs that help students develop knowledge and skills they need for success in their professional, civic, and personal lives in the 21st century. Fourteen baccalaureate degree programs, four master's degree programs, and one certificate program can be completed at ASU East, with additional programs in the planning stages. (See the "ASU East Baccalaureate Degrees and Majors" table, page 561.) The College of Technology and Applied Sciences offers a master's degree and a range of bachelor's programs in high demand areas of technology, the only programs of their kind in Arizona. The unique bachelor's and master's degrees in Agribusiness offered by the faculty in the Morrison School of Agribusiness and Resource Management lead to careers in one of the fastest growing sectors of global business. The Environmental Resources degrees offered through the Morrison School provide opportunities to study wilderness areas and urban habitats and how people's activities affect the regenerative ability of natural resources. East College offers a range of supporting courses for all ASU East programs and bachelor's degrees with majors in Business Administration, Applied Psychology, Family Resources and Human Development, Elementary Education, and Interdisciplinary Studies. Students who are uncertain of their major may start college at ASU East as East College/No Preference majors.

Although it is a young campus, ASU East has already developed significant student-centered innovations in higher education that have earned national recognition.

ASU East assumed leadership in Arizona in developing and offering the Bachelor of Applied Science (B.A.S.) degree, a program designed specifically as a career progression degree for students holding the Associate of Applied Science (A.A.S.) degree. The B.A.S. emphasizes management, leadership, and communication skills, along with additional technical course work.

ASU East has also developed an innovative academic partnership with Chandler Gilbert Community College (CGCC). This partnership combines the strengths of the two institutions to provide ASU students with high quality education in a cost-effective way. CGCC provides lower division general education and major prerequisite courses that are directly equivalent to ASU courses and transfer automatically. ASU East provides both lower and upper-division courses in the major and upper division general studies and general interest courses. Through the partnership, students can get at the Williams Campus all the courses needed to graduate in four years with an ASU baccalaureate degree, generally at some savings in tuition.

New facilities, new programs, and new opportunities are constantly emerging at ASU East. The campus is easily accessible via major interstate routes. See the map on page 601. For the latest information, call 480 727 EAST (3278) or check the Web site at www.east.asu.edu.

Accreditation

The North Central Association of Colleges and Schools accreditation of ASU Main includes ASU East. In addition, ASU East programs in Aeronautical Engineering Technology, Electronics Engineering Technology, and Manufacturing Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (TAC of ABET). For more information, call 410 347 7700 or write

TECHNOLOGY ACCREDITATION COMMISSION
OF THE ACCREDITATION BOARD FOR
ENGINEERING AND TECHNOLOGY INC
111 MARKET PLACE SUITE 1050
BALTIMORE MD 21202-7102

ACADEMIC ORGANIZATION AND ADMINISTRATION

The chief operating and academic officer of ASU East is the provost. There are two colleges and one school at ASU East administered by deans. These academic units develop and implement the teaching, research, and service programs of the institution. Additional support for the academic mission of the campus is provided by Library Services and Information Technology, each administered by a director. See "ASU East Faculty and Academic Professionals," page 603, and "Academic Organization," page 8.

ADMISSION

Nondegree Students. Nondegree students may take courses at ASU East according to the special provisions under "Admission of Undergraduate Nondegree Applicants," page 68.

Degree-Seeking Students. Degree seeking students must meet the university admissions standards set by the Arizona Board of Regents (ABOR). Any student admitted to ASU may take courses at ASU East. To be admitted to an ASU East degree program, the student must meet undergraduate admissions requirements and the specific admission requirements of the ASU East program. A student who is admitted to an ASU East degree program is defined as an ASU East student.

For more admissions information and applications to ASU East degree programs, call 480 727 EAST (3278) or visit or write

UNDERGRADUATE ADMISSIONS
ARIZONA STATE UNIVERSITY
PO BOX 870112
TEMPE AZ 85287-0112

Transfer Among ASU Campuses

Degree seeking students currently enrolled at either ASU Main or ASU West who want to relocate to an ASU East degree program should contact the OASIS at ASU East, the Office of the Registrar at ASU Main, or the Admissions and Records Office at ASU West for appropriate procedures. All credit earned at any ASU campus automatically transfers to ASU East. Students should consult with their ASU East major advisor to determine how this credit applies to their major and graduation requirements. Students should be aware that certain requirements (e.g., the minimum number

ASU East Baccalaureate Degrees and Majors

Major	Concentration	Degree	Administered By
Aeronautical Engineering Technology*		B.S.	Department of Manufacturing and Aeronautical Engineering Technology
Aeronautical Management Technology*	Airway science flight management, airway science management	B.S.	Department of Aeronautical Management Technology
Agribusiness	Agribusiness finance, food and agribusiness marketing, food science, general agribusiness, golf facilities management, international agribusiness, management of agribusiness, preveterinary medicine, professional golf management, resource management	B.S.	Morrison School of Agribusiness and Resource Management
Applied Psychology	—	B.S.	East College
Applied Science	Aviation maintenance management technology, aviation management technology, computer systems administration, consumer products technology, digital media management, digital publishing, emergency management, fire service management, food retailing, instrumentation, microcomputer systems, municipal operations management, operations management, production technology, resource team specialist, semiconductor technology, software technology applications, technical graphics	B.A.S.	Bachelor of Applied Science Advisory Committee
Business Administration	—	B.S.	East College
Computer Engineering Technology*	Computer engineering technology, software engineering technology, software technology	B.S.	Department of Electronics and Computer Engineering Technology
Electronics Engineering Technology*	Electronic systems, microelectronics, telecommunications	B.S.	Department of Electronics and Computer Engineering Technology
Elementary Education		B.A.E.	East College
Environmental Resources	Ecology, watershed ecology, wildlife habitat management	B.S.	Morrison School of Agribusiness and Resource Management
Family Resources and Human Development	Family resources and human development in business, human nutrition dietetics	B.S.	East College
Industrial Technology	Environmental technology management, industrial technology management, information technology	B.S.	Department of Information and Management Technology
Interdisciplinary Studies		B.I.S.	East College
Manufacturing Engineering Technology*	Manufacturing engineering technology, mechanical engineering technology	B.S.	Department of Manufacturing and Aeronautical Engineering Technology
Multimedia and Technical Communication		B.S.	East College

* This major requires more than 120 semester hours to complete

Academic Advising

College or School	Location	Telephone	Days	Hours ¹
College of Technology and Applied Sciences	CNTR 10	480 727 1252	Mon.-Fri.	8 A.M. 5 P.M.
East College	CNTR 92	480/727-1515	Mon.-Fri.	8 A.M. 5 P.M.
Morrison School of Agribusiness and Resource Management	CNTR 20	480 727 1585	Mon.-Fri.	8 A.M. 5 P.M.
University Honors College	IRISH A121 ²	480/965-2359	Mon.-Fri.	8 A.M. 5 P.M.

¹ Walk ins are welcome; appointments are recommended.

² The University Honors College is located at ASU Main

of upper division semester hours to graduate may differ among campuses.

TRANSFER CREDIT

Courses taken from Chandler Gilbert Community College through the Partnership in Baccalaureate Education are automatically transferred to ASU East each semester. These courses and courses taken at other Arizona public community colleges transfer according to equivalencies established in the current Arizona Higher Education Course Equivalence Guide (Transfer guides are available at www.asu.edu/provost/articulation.) The acceptability and applicability of courses transferred from other universities and community colleges is determined by ASU Main Undergraduate Admissions in consultation with the faculty or academic advisor of the student's choice of major.

JOINT ADMISSION CONTINUOUS ENROLLMENT (JAC)

JAC 001 Joint Admission Continuous Enrollment. (0–12) F, S, SS For use by ASU East to track undergraduate students admitted to East Campus degree programs who are concurrently enrolled or so enrolled in courses offered by Chandler Gilbert Community College.

ADVISING

Students are encouraged to take advantage of the skill and knowledge of the advising professionals available to them in the academic units and to seek academic advising early.

For more information or to schedule an advising session, contact an academic advisor (see the "Academic Advising" table on this page).

DEGREE PROGRAMS

See the "ASU East Baccalaureate Degrees and Majors" table, page 561. For graduate degrees, see the "ASU East Graduate Degrees and Majors" table, page 563.

CAMPUS AND STUDENT SERVICES

ASU East is a student centered campus that offers many of the features of a small college in a rural area while providing access to the resources of a major research university and the amenities of a large metropolitan area. The campus includes excellent educational facilities: modern classrooms and laboratories, a 21st century electronic library, and state of the art computer equipment. Other amenities include a learning center, child care services, campus union, bookstore, copy center, and free parking. A shuttle service provides transportation between ASU East, Mesa Community College, and ASU Main. An additional shuttle is available for transportation from ASU Main to ASU West.

Enrollment Services—OASIS

The OASIS provides one stop services for admission, financial aid, business services, and registration. Conveniently located in the Academic Center Building, students find personnel ready to assist them with registration processes, tuition payment, financial assistance information, student employment, ASU Sun Cards (photo IDs), and parking information.

Student Support Services

Staff provide new student advising orientation programs, workshops, academic advising for undeclared majors, support for clubs and organizations, international and multicultural students, students with disabilities, and tutoring services and referrals. Staff also provide career advising and assessment, career planning workshops, career exploration software programs, and internship information.

Williams Campus Housing and Residential Life

Campus housing is located in several academic villages designed to support and promote student academic success. Family resident assistants live and work in the homes and resident assistants live and work in the residence halls. There are many opportunities for students to be involved in leadership positions in residential life programs.

Residence Halls. Residence halls offer 160 large private rooms, which feature a private bath and a shared kitchenette that includes a microwave and a refrigerator. Students may elect to share a room with another student if they prefer.

Homes. More than 600 homes with two to five bedrooms are located on campus. Homes include all appliances, carpets, and storage. Single and married students, as well as faculty and staff living with their families make their home at the Williams Campus. For more information, call 480 727 1700.

Library Services

Strong resources and personal service define the ASU East Library. As a primarily electronic research library, it is designed to take maximum advantage of new technology. Electronic indexes, catalogs, and journals support study and research in many fields, with an emphasis on the majors offered at ASU East. While the library acquires materials in all formats, by intention it prefers electronic text. Thousands of periodicals are available digitally in all subjects, while those that remain in print form can be obtained by the library quickly. Documents in electronic form can be delivered directly to students' desks by e-mail or fax. Most publications not available on campus may be obtained overnight. While most come from the other campuses of ASU, the

ASU East Graduate Degrees and Majors

Major	Concentration	Degree	Administered By
Agribusiness	Agribusiness management and marketing, food quality assurance	M.S.	Morrison School of Agribusiness and Resource Management
Environmental Resources	GIS/remote sensing, natural resource management, and range ecology	M.S.	Morrison School of Agribusiness and Resource Management
Family Resources and Human Development	Human nutrition	M.S.	East College
Technology	Aeronautical engineering technology, aviation human factors, aviation management technology, computer systems engineering technology, electronic systems, engineering technology, environmental technology management, information technology, instrumentation and measurement technology, management of technology, manufacturing engineering technology, mechanical engineering technology, microelectronics engineering technology, security engineering technology	M.S.Tech.	College of Technology and Applied Sciences

library can obtain publications from anywhere in the world. The library's Web address is eastlib.east.asu.edu.

Computing Services

With more than 75 workstations, the Computing Commons at ASU East provides general computing access through the campus network to the Internet and ASU Main computer services, including e mail and general purpose computing. The IT East department provides specialized software and systems to meet the particular needs of the ASU East programs. In addition, IT East provides computer classrooms and audiovisual material to support the campus academic programs. IT East has a staff of support personnel to aid the campus community's computing needs, including Web development.

Williams Campus Union

The Campus Union is the center of the campus community, serving students, faculty, staff, and guests. Union facilities include meeting and study rooms, a ballroom, TV lounge, coffee bar, and a game room. Programs and services such as movie nights, ice cream socials, dances, and holiday parties complement the educational mission of the Williams Campus and enhance the quality of campus life. The union is staffed primarily by students, providing them the opportunity to develop leadership skills and a customer service orientation. For more information, call 480/727 1098.

Learning Center

In the Learning Center, undergraduate and graduate students can study, conduct research and access writing assistance, subject area tutoring, and computer-assisted instruction. Staff members also provide workshops and in class presentations on writing, presentation, and study skills. Located in the Academic Center Building, the Learning Center offers a convenient and quiet study location for indi-

vidual students and study groups. Leisure reading is encouraged by offering recycled paperback books and magazines to borrow and comfortable furnishings in which to relax. All Learning Center services are free to enrolled students. For more information or to schedule a tutoring appointment, call 480 727 1452.

Recreational Facilities and Services

The Williams Campus Fitness Center is equipped with state-of the art weight training and cardiovascular machines, racquetball courts, and a gymnasium. Trained exercise professionals are on hand daily to provide personal training assistance. A variety of health, fitness, and sports classes are also offered at the Fitness Center. For students who prefer outdoor sports activities, the campus has basketball and tennis courts, soccer/football fields, baseball fields, a running track, and swimming pool. For more information, call 480 988-8400.

Student Health Services

Health services for ASU East students are provided by the Veteran's Administration Medical Center located at the Williams Campus. Services include primary assessment and treatment of health problems and injuries, physical examinations and immunizations, women's health care, diagnostic tests, laboratory tests/X rays, and a pharmacy. Health education and counseling, smoking cessation counseling, and wellness and health assessments are also available. Student registration fees cover the cost of office visits for full time ASU East students. Part time students pay a nominal fee. Some office procedures and laboratory tests require additional charges. Health insurance is not required to use the health services; however, it is strongly advised for all students and is required for international students. For more information, call 602 222 6568.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog see "Classification of Courses" page 60

Morrison School of Agribusiness and Resource Management

Raymond A. Marquardt
Dean
(CNTR 20) 480/727-1585
www.east.asu.edu/msabr

PROFESSORS

BRADY, BROCK EDWARDS, KAGAN MARQUARDT,
SEPER CH SHULTZ, THOR

ASSOCIATE PROFESSOR

GREEN MILLER RACCACH RICHARDS, WHYSONG

ASSISTANT PROFESSORS

BURK NK, MANFREDO, PATTERSON,
SCHMITZ STANTON

PURPOSE

The Morrison School of Agribusiness and Resource Management provides academic programs in Agribusiness and in Environmental Resources. Agribusiness is the business of food and fiber production and the technology necessary to change a raw material (a commodity) or an idea into a new product or business for the world's consumers. Producing, financing, marketing, and providing food and fiber for the world amounts to more than one half of the earth's global economy.

Agribusiness courses in the Morrison School are designed to prepare students for a wide range of job opportunities in agribusiness and business. More than 20 percent of all jobs in the United States are agribusiness related, and the industry is even more important internationally, with more than half of all jobs in emerging countries related to food and fiber products. Population increases worldwide have led forecasters to predict that more than 11 billion food and fiber consumers will be part of the global agribusiness system by the year 2020. Forecasts also estimate that, at that time, more than 20,000 agribusiness jobs will go unfilled due to a lack of skilled professionals.

The academic programs in Agribusiness are especially designed to meet the needs of the urban student who has little or no previous agriculture experience. An interest in plants, animals, or food can be the starting point for career development in agricultural industries or resource management. The undergraduate programs also provide the necessary training for students preparing to enter graduate degree programs.

For students interested in natural resource management, the school offers degree programs in Environmental Resources. Environmental resources is a science that applies across the ecological continuum of wilderness areas and urban lands. Students learn not only about wildlands but also about urban habitats and how people's activities affect the regenerative ability of natural resources. The Environmental Resources curriculum provides the opportunity to develop technological skills such as remote sensing of data from aircraft or satellites, computer based Geographic

Information Systems, and techniques for ecological restoration.

Graduates of the Environmental Resources programs have employment opportunities in environmental resource management, applied ecology, wildlife biology, soil and water conservation, and land reclamation in both private firms and government agencies.

CENTER FOR AGRIBUSINESS POLICY STUDIES

The Center for Agribusiness Policy Studies (CAPS) carries out research and development relating to agribusiness, rural development, multiple use of scarce resources, and public policy. CAPS addresses regional, national, and international development in the context of global and competitive markets for agricultural products and inputs. For more information, contact the director at 480 727 1249.

NATIONAL FOOD AND AGRICULTURAL POLICY PROJECT

The National Food and Agricultural Policy Project (NFAPP) constructs a 10-year baseline forecast for the fruit and vegetable produce industry and specific commodities, responds to congressional inquiries concerning policies affecting the fruit and vegetable industry, and publishes a monthly newsletter highlighting research efforts. Areas of study include domestic and international promotion of fruits and vegetables, trade and the impact of trade agreements, crop insurance and risk management, and the use of neural network models in forecasting. For more information, contact the director at 480 727 1124.

DEGREES

The Morrison School of Agribusiness and Resource Management offers two B.S. degrees: Agribusiness and Environmental Resources. Students interested in the Agribusiness major may select from the following concentrations: agribusiness finance, food and agribusiness marketing, food science, general agribusiness, golf facilities management, international agribusiness, management of agribusiness, professional golf management, resource management, and preveterinary medicine. The Environmental Resources major offers concentrations in ecology, watershed ecology, and wildlife habitat management.

For students holding an A.A.S. degree, the school offers the Bachelor of Applied Science degree with concentrations in consumer products technology, food retailing, and resource team specialist.

The school offers the M.S. degree in Agribusiness and the M.S. degree in Environmental Resources. Agribusiness students may select either a research oriented program, which leads to the completion of a supervised thesis, or a program consisting of course work only (nonthesis option). All M.S. candidates in Agribusiness must complete a minimum of 36 semester hours. Students in the Environmental Resources degree program may study natural resource management, Geographic Information System/remote sensing, and animal plant ecology. All M.S. candidates in Environmental Resources must complete 30 semester hours of approved graduate work. See the *Graduate Catalog* for more information.

ADMISSION

The Morrison School of Agribusiness and Resource Management admits students to the B.S. degree programs who meet the undergraduate admission requirements of Arizona State University; see "Undergraduate Admission," page 62. Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and 2.50 for nonresident applicants.

GRADUATION REQUIREMENTS

Agribusiness—B.S.

The completion of a minimum of 120 semester hours including First-Year Composition, General Studies ("General Studies," page 87), and the school and concentration requirements leads to the B.S. degree. Note that all three General Studies awareness areas are required. An overall GPA of 2.00 is required for graduation and students must have completed a minimum of 45 semester hours of upper division credit. Also see special graduation requirements under "Preveterinary Medicine," page 567.

B.S. Agribusiness Prerequisite Courses

Students who select the concentrations in agribusiness finance, food and agribusiness marketing, food science, general agribusiness, golf facilities management, international agribusiness, management of agribusiness, or professional golf management must complete the following courses, some of which can also be used to meet university General Studies requirements.

ACC 230 Uses of Accounting Information I	3
ACC 240 Uses of Accounting Information II	3
BIO 100 The Living World SQ	4
CHM 101 Introductory Chemistry SQ*	4
ECN 111 Macroeconomic Principles SB	3
ECN 112 Microeconomic Principles SB	3
ENG 301 Writing for the Professions L	3
MAT 210 Brief Calculus MA	3
Total	26

* Not required for professional golf management and golf facilities management concentrations.

Core Requirements. Agribusiness employers require their employees to possess a greater range of skills and competencies than at any time in the past. Rapid changes in information technology and the increasingly competitive food production and distribution sector mean that agribusiness needs graduates adequately equipped to deal with the business applications of these changes. The agribusiness core, required of all the concentrations is designed to prepare students with a core set of skills that these firms demand. The core consists of courses in business principles management, marketing, and finance as well as in the fundamentals of agribusiness operations management.

AGB 100 Introduction to Agribusiness	3
AGB 310 Agribusiness Management I	3
AGB 320 Agribusiness Marketing I*	3

AGB 332 Agribusiness Finance I	3
AGB 333 Agribusiness Finance II	3
AGB 360 Agribusiness Statistics CS	3
AGB 364 Agribusiness Technologies I*	3
AGB 365 Agribusiness Technologies II	3
AGB 380 Applied Microeconomics	3
AGB 410 Agribusiness Management II	3
AGB 414 Agribusiness Analysis L	3
AGB 420 Food Marketing	3
Core total	36

* Not required for professional golf management or golf facilities management concentrations

Concentrations

After completing the required agribusiness core, students select a concentration in their area of interest. A concentration allows a student to select a series of courses that complement the agribusiness core, supplement the student's desire to master another area of interest, and broaden career opportunities.

Agribusiness Finance Concentration. Agribusiness finance concentration graduates are expected to possess a broad knowledge of financial theory and practice as it pertains to the agribusiness sector. This will involve applying quantitative and computer based analytical techniques to real world agribusiness problems. Specific course content includes topics in financial management, financial markets, risk management, and the evaluation of financial assets and business alternatives

Agribusiness Finance	
AGB 334 Agricultural Commodities	3
AGB 433 Intermediate Agribusiness Financial Markets	3
AGB 434 Agricultural Risk Management and Insurance	3
AGB electives	9
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	80

Management of Agribusiness Concentration. Agribusiness managers encounter many problems and opportunities on a daily basis that are unique to the agribusiness sector. Students choosing this concentration develop skills in managing people, internal resources, and external relationships in an increasingly dynamic environment.

Management of Agribusiness	
AGB 351 Management Science CS	3
AGB 411 Agricultural Cooperatives	3
AGB 480 Agribusiness Policy and Government Regulations	3
AGB electives	9
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	80

Food and Agribusiness Marketing Concentration. Students in the food and agribusiness marketing concentration develop critical skills relevant to firms involved in food manufacturing, and distribution and retailing, in addition to input suppliers, commodity associations, and primary producers. To this end, food and agribusiness marketing stu-

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduation requirements see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

dents are required to complete a series of courses that analyze the behavior and performance of both commodity and consumer food markets.

Food and Agribusiness Marketing

AGB 334 Agricultural Commodities	3
AGB 422 Consumer Behavior	3
AGB 429 Marketing Research	3
AGB electives	9
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	80

Food Science Concentration. The food science concentration focuses on both scientific and technical competency skills with an emphasis on food microbiology, food chemistry, biotechnology, mathematics, and statistics. This unique program prepares graduates for employment opportunities in the food, beverage, and dairy industries; regulatory agencies such as the FDA and USDA; international organizations such as FAO and WHO; and consumer organizations. In addition, graduates may choose to pursue advanced degrees.

Food Science

AGB 340 Food Processing	3
AGB 440 Food Safety	3
AGB 442 Food and Industrial Microbiology	3
MIC 205 Microbiology SG	3
MIC 206 Microbiology Laboratory SG	1
AGB upper division electives	6
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	81

General Agribusiness Concentration. The general agribusiness concentration offers students a chance to build a broad perspective in the field of agribusiness. In an age of specialization, there remains a growing need for generalists. These individuals have mastered finance, marketing, management, and other technologies such as computers and statistics and are capable of demonstrating this mastery.

General Agribusiness

AGB 334 Agricultural Commodities	3
AGB 410 Agribusiness Management II	3
AGB electives	12
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	80

International Agribusiness Concentration. A student studying international agribusiness is typically preparing for a career with

1. a U.S.-based international agribusiness firm;
2. a U.S. agribusiness firm affected significantly by trade;
3. programs of agribusiness for or in developing countries; or
4. government agencies oriented toward international issues

This concentration requires a mastery of subjects in international trade, agricultural development, international policy, and global marketing practices and institutions.

International Agribusiness

AGB 450 International Agricultural Development	3
AGB 452 International Agricultural Policy	3
AGB 454 International Trade	3
AGB electives	9
Agribusiness core	36
Agribusiness prerequisite courses	26
Total	80

Professional Golf Management Concentration. The professional golf management (PGM) concentration provides qualified students with the unique combination of knowledge and skills required to pursue management opportunities in the golf industry. This program, accredited by the Professional Golfer's Association of America, is specifically designed for the student who aspires to become a qualified golf professional; thus the student must meet a playing ability test (see "PGM Admission," on this page). PGM students must complete the agribusiness core, which helps them develop the critical business skills needed to manage complex organizations.

In addition, the PGM concentration requires a minimum of 14 semester hours of golf related courses in the following areas: golf course operations, turf grass management, club fitting and repair, pro shop merchandising, golf course mechanics, golf course shop management, and movement analysis. The concentration also requires the student to complete nine semester hours of internship experience at golf facilities, providing the student with valuable hands on experience. All golf related courses and internships are selected with the assistance of a PGM program coordinator.

PGM Admission. To be admitted into the PGM program, students must meet a playing ability test. Contact the PGM program coordinator at 480 727 1017 for more information

Professional Golf Management

Agribusiness core	30
Agribusiness prerequisite courses	22
Professional golf management courses	14
Professional golf management internship	9
Total	75

Golf Facilities Management Concentration. The golf facilities management concentration is designed to prepare students to pursue careers as golf course superintendents. Through the agribusiness core, students develop the critical business skills needed to manage complex organizations. In addition, the golf facilities management concentration requires a minimum of 22 semester hours of golf facilities management courses in the following areas: operations, plants, landscaping, soils, irrigation and water management, fertilizers, pest control, turf grass management, mechanics, and shop management. The golf facilities management concentration also requires the student to complete six semester hours of internship experience at golf facilities, providing valuable hands on experience. Contact an academic advisor for more information.

Golf Facilities Management

Agribusiness core	30
Agribusiness prerequisite courses	22
Golf facilities management courses	22
Internship	6
Total	80

CHM 235 Elementary Organic Chemistry Laboratory SQ	1
ERS 130 Introduction to Environmental Science SQ	4
ERS 207 Plant Taxonomy	4
ERS 225 Soils	3
ERS 226 Soils Laboratory	1
ERS 246 Environmental Conservation and Ecology G	3
ERS 301 Ecology	3
ERS 307 Plant Identification	4
ERS 311 Forest and Range and Ecosystems	4
ERS 350 Environmental Statistics CS	3
ERS 365 Watershed Management	3
ERS 402 Vegetation Measurement	4
ERS 460 Applied Systems Ecology	3
ERS 480 Ecosystem Management and Planning L	3
ERS 485 GIS in Natural Resources	3
ERS 490 Recent Advances in Environmental Resources	1
MAT 210 Brief Calculus MA	3
Core total	65

Ecology Concentration

The ecology concentration focuses on connections between basic ecological principles and their application to a broad array of environmental challenges across a wide range of ecosystems. Course work concentrates on the interrelationships of soil, water, and vegetation systems and the fauna that inhabit these systems. In addition to a strong foundation in these areas, students are provided with the analytical tools and skills to evaluate and apply ecological concepts to management issues. Potential employers of this field of study include federal resource management agencies, environmental protection agencies, departments of environmental quality, state land departments, and private environmental consulting firms.

This concentration is completed by taking the ERS core curriculum and 25 hours of courses listed below, with a minimum of 10 hours from each group.

<i>Group A: Introduction and Backdrop to Ecology</i>	
ERS 420 Ecological Restoration	3
ERS 425 Soil Classification and Management	3
ERS 433 Riparian Ecosystem Management	3
ERS 434 Wetland Ecosystems and Soils	3
ETM 301 Environmental Management	3
GLG 101 Introduction to Geology I (Physical) SQ	3
GLG 113 Introduction to Geology I Laboratory SQ	1
GPH 111 Introduction to Physical Geography SQ	3
GPH 210 Society and Environment G	3
PLB 308 Plant Physiology	4
<i>Group B: Focus Areas and Tools of Ecology</i>	
ERS 364 Surface Water Hydrology	3
ERS 448 Soil Ecology	3
ERS 449 Landscape Ecology	3
ERS 474 Wildlife Ecology	3
ERS 475 Wildlife Management	4
ERS 477 Environmental Risk Assessment and Management	3
ERS 486 Remote Sensing in Environmental Resources	4
GPH 314 Global Change G	3
GPH 381 Geography of Natural Resources G	3
GPH 418 Landforms of the Western United States L	3
GPH 481 Environmental Geography	3

Additional courses must be approved by an advisor

Watershed Ecology Concentration

The watershed ecology concentration underscores the importance of understanding and placing environmental processes and problems at the watershed or landscape level. Students completing this concentration have a solid back-

ground in physical and biological sciences. Upper-division course work focuses on providing the intellectual capability and tools to address water-related management issues. Graduates may pursue careers with federal and state agencies or in the private sector as resource managers, environmental health specialists, or consultants.

This concentration is completed by taking the ERS core curriculum and 25 hours of courses listed below, with a minimum of 10 hours from each group.

<i>Group A: Introduction and Backdrop to Watershed Ecology</i>	
CHM 302 Environmental Chemistry	3
ERS 333 Water Resources Management	3
ERS 364 Surface Water Hydrology	3
ERS 425 Soil Classification and Management	3
ERS 465 Surface Water Quality	3
ETM 302 Water and Wastewater Treatment Technology	3
GLG 101 Introduction to Geology I (Physical) SQ	3
GLG 103 Introduction to Geology I Laboratory SQ	1
GPH 212 Introduction to Meteorology I SG	3
GPH 214 Introduction to Meteorology Laboratory I SG	1
<i>Group B: Focus Areas and Tools of Watershed Ecology</i>	
ERS 420 Ecological Restoration	3
ERS 433 Riparian Ecosystem Management	3
ERS 477 Environmental Risk Assessment and Management	3
ERS 486 Remote Sensing in Environmental Resources	4

Additional courses must be approved by an advisor.

Wildlife Habitat Management Concentration

The wildlife habitat management concentration focuses on the connection between wildlife ecology and habitat management. The student completing this concentration gains a solid background in wildlife biology, coupled with a strong understanding of the physical and biological elements of vegetation ecology. Upper division course work provides those necessary tools to meet the challenges of maintaining a balance between biological diversity and social pressures on the wildland resources. Potential employers of graduates from this field of study include the U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, Department of Defense, state wildlife management departments, and private environmental consulting firms.

This option is completed by taking the ERS core curriculum and 25 hours of courses listed below, with a minimum of 10 hours from each group.

<i>Group A: Introduction and Backdrop to Wildlife Habitat Management</i>	
BIO 331 Animal Behavior	3
BIO 340 General Genetics	4
BIO 360 Animal Physiology	4
BIO 370 Vertebrate Zoology	4
BIO 385 Comparative Invertebrate Zoology	4
BIO 426 Limnology L	4
BIO 471 Ornithology	3
BIO 472 Mammalogy	4
BIO 474 Herpetology	3
<i>Group B: Focus Areas and Tools of Wildlife Habitat Management</i>	
ERS 353 Wildlife Nutrition	3
ERS 420 Ecological Restoration	3
ERS 433 Riparian Ecosystem Management	3
ERS 434 Wetland Ecosystems and Soils	3
ERS 474 Wildlife Ecology	3
ERS 475 Wildlife Management	4
ERS 486 Remote Sensing in Environmental Resources	4

Additional courses must be approved by an advisor.

Environmental Resources Minor

A minor in Environmental Resources is available to students who are interested in environmental courses but who wish to pursue other majors. A minimum of 27 semester hours of course work is required with 15 semester hours of upper-division courses in environmental resources. A grade of "C" or higher is required for all courses taken for the minor. Independent study and special topics courses may not be used to satisfy the minimum course requirements.

Required courses

BIO 181 General Biology SQ	4
BIO 182 General Biology SG	4
ERS 225 Soils	3
ERS 226 Soils Laboratory	1
ERS 301 Ecology	3
Additional upper division ERS courses	12
Total	27

Applied Science—B.A.S.

The Bachelor of Applied Science degree is a capstone degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills to prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and 2.50 for nonresident applicants.

B.A.S Degree Graduation Requirements. The B.A.S. degree program consists of 60 semester hours of upper division courses, with 30 hours in residence. An overall GPA of 2.00 or higher is required.

A.A.S degree transfer	60
Assignable credit	6
B.A.S core	16
Concentration	19
General Studies	19
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies courses are taken in the core or concentration. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses. The courses are determined by the student and advisor.

B.A.S. Core

AGB 310 Agribusiness Management I	3
AGB 320 Agribusiness Marketing I	3
AGB 360 Agribusiness Statistics CS	3
AGB 414 Agribusiness Analysis L	3
AGB 460 Agribusiness Management Systems	4
Total	16

Consumer Products Technology Concentration.

Students studying consumer products technology prepare for a career in the food and consumer products industries. Students learn to develop food, drug, cosmetic, and other consumer products and to ensure product safety and market ability by obtaining a thorough mastery of courses in product and package design, manufacturing, processing, and safety.

Consumer Products Technology

AGB 340 Food Processing	3
AGB 364 Agribusiness Technologies I	3
AGB 440 Food Safety	3
AGB 490 Recent Advances in Agribusiness	1
MET 341 Manufacturing Analysis	3
MET 494 ST Consumer Manufacturing	3
MET 494 ST Packaging Design	3
Total	19

Food Retailing Concentration. A student studying food retailing prepares for a career in the food marketing and distribution industries. Potential employers are food manufacturing and processing companies, distribution centers, wholesalers, and all types of food retailers, e.g., supermarkets, mass merchandisers, fast food outlets, restaurants, and direct marketers of food.

Food Retailing

AGB 330 Agribusiness Accounting	3
AGB 332 Agribusiness Finance I	3
AGB 340 Food Processing	3
AGB 420 Food Marketing	3
AGB 440 Food Safety	3
AGB 445 Food Retailing	3
AGB 484 Internship	1
Total	19

Resource Team Specialist Concentration. The resource team specialist concentration combines the technical preparation acquired in an A.A.S. program with a special orientation in environmental and resource management. This concentration prepares individuals to participate as an integral part of an environmental emergency response team as well as postemergency biological and environmental rehabilitation efforts.

Resource Team Specialist

AGB 332 Agribusiness Finance I	3
AGB 456 World Agricultural Resources G	3
AGB 457 Resource Policy and Sustainability	3

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see General Studies, page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60.

AGB 458 Bioremediation.	3
AGB 484 Internship	1
ETM 301 Environmental Management	3
ETM 303 Environmental Regulations	3
Total	19

AGRIBUSINESS (AGB)

AGB 100 Introduction to Agribusiness. (3) F
Overview of agribusiness industries and career opportunities

AGB 105 Global Resources. (3) F, S
Effect of quality, quantity, and cost of national food supplies on technology, marketing, and world agricultural policies

AGB 171 Animal Science. 3 S
Comparative growth, development, and propagation of domestic animals.

AGB 210 Livestock Management. (3) F, S
Methods of managing livestock enterprises, economics, loss prevention, and marketing

AGB 211 Crop Management. (3) F, S
Crop production, management principles, and their application to crop growth and development

AGB 250 World Food Dynamics. (3) S
Transition and development of raw agricultural commodities into nutritional food products. Emphasis given to food expansion in developing countries. *General Studies: G.*

AGB 251 Cultural Diversity in Agribusiness. 3) S
Promotes the awareness and appreciation of cultural diversity within the U.S. through the study of cultural and social contributions in agribusiness of women and minorities

AGB 258 International Agribusiness. (3) F
Identification and analysis of methods, problems, and future of international agribusiness operations. Emphasizes special problems associated with international agribusiness systems. *General Studies: G.*

AGB 271 Veterinary Medicine Today. (3) S
Introduction to the role of the veterinarian as related to the feeds of food supply and veterinary medicine

AGB 310 Agribusiness Management I. (3) F
Principles of management, including planning, organizing, measuring, and developing people in agribusiness organizations

AGB 311 Establishing an Agribusiness. (3) F
Opportunities and problems associated with new firm development in agribusiness. Business plan will be written and presented orally

AGB 320 Agribusiness Marketing I. (3) F, S
Examines the food marketing system with an emphasis on the marketing institutions, arrangements, and methods for basic commodities. Prerequisites: ACC 230, 240; AGB 360, ECN 111, 112

AGB 321 Agribusiness Marketing II. (3) F, S
Examines marketing strategy focusing on the marketing mix (product, price, promotion, place) in a dynamic socioeconomic environment. Prerequisites: ACC 230, 240, AGB 360, ECN 111, 112

AGB 330 Agribusiness Accounting. (3) F
Introduction to managerial accounting for agribusiness using computerized accounting systems.

AGB 332 Agribusiness Finance I. (3) F, S
Agribusiness investment management and financial institutions that serve agriculture. Prerequisites: ACC 230, 240.

AGB 333 Agribusiness Finance II. (3) S
Introduction to financial markets and institutions. Interest rate determination, money and banking, equity markets, farm credit system, vendor financing. Prerequisites: ECN 111 and 112 or equivalent; introductory accounting.

AGB 334 Agricultural Commodities. (3) F
Trading in futures markets. Emphasis on the hedging practices with grains and meats. Prerequisite: AGB 320

AGB 340 Food Processing. (3) F
An introduction to processed food quality assurance, statistical sampling, and inspection procedures. Prerequisite: AGB 364

AGB 341 Food Analysis. (3) N
Processing control and scientific instrumentation used in food quality assurance laboratories. Prerequisites: AGB 364, CHM 101

AGB 351 Management Science. 3) F
Focus on the construction, solution, and interpretation of quantitative models used for management decision making in agribusiness firms. Prerequisites: AGB 320, 360; ECN 112, MAT 117. *General Studies: CS*

AGB 355 Sustainable Agriculture Systems. (3) F, S
Innovative developments in precision farming, irrigation, soils, irrigation methods, machinery, and biotechnology in crop production. Prerequisite: AGB 211

AGB 360 Agribusiness Statistics. (3) F, S
Statistical methods with applications in agribusiness and resource management. Lecture, computer lab. Prerequisite: college algebra. *General Studies: CS*

AGB 364 Agribusiness Technologies I. 3 F
Examination of methods of managing diverse crop and livestock enterprises with emphasis on growth, development, marketing, and loss prevention. Prerequisite: B O 100

AGB 365 Agribusiness Technologies II. (3) F
Biotechnology and other methods used in the production, processing and distribution of food. Prerequisite: B O 100

AGB 370 Wildlife and Domestic Animal Nutrition. 3) S
Survey of nutritional needs of domestic and wild animals. Prerequisites: AGB 210, 211. *General Studies: SQ course*

AGB 371 Animal Genetics. 3) F
Principles of animal genetics, including heritable traits, chromosomal aberrations, population genetics, molecular genetics, and gene regulation. Prerequisites: B O 181, 182

AGB 380 Applied Microeconomics. (3) F, S
Emphasis on application of the theory of the firm, theory of exchange and consumer theory.

AGB 410 Agribusiness Management II. (3) S
Principles of human resource management in agribusiness firms. Prerequisite: AGB 310

AGB 411 Agricultural Cooperatives. 3) S
Organization, operation, and management of agricultural cooperatives

AGB 414 Agribusiness Analysis. (3) F, S
Analysis of agribusiness firm decisions in the economic, social, and political environments. Special emphasis on ethical issues surrounding food production and consumption. *General Studies: L*

AGB 420 Food Marketing. (3) S
Food processing, packaging, distribution, market research, new food research and development, and social implications. Prerequisite: AGB 320

AGB 422 Consumer Behavior. (3) F
Application of behavioral concepts in analyzing consumer food purchases and the implications for marketing strategies. Prerequisite: completion of Agribusiness core or equivalent

AGB 424 Sales and Merchandising in Agribusiness. (3) S
The principles and techniques of selling and merchandising in the agricultural and food industries

AGB 425 Agricultural Marketing Channels. (3) F
Operational stages of agricultural commodities in normal distribution systems and implementation of marketing strategies. Prerequisite: AGB 320.

AGB 429 Marketing Research. 3) F
Examines the marketing research process and its role in facilitating agribusiness decisions. Emphasizes problem identification, survey design, and data analysis. Prerequisite: completion of Agribusiness core or equivalent

AGB 433 Intermediate Agribusiness Financial Markets. (3) S
Role and function of agribusiness in U.S. financial system. Topics include rural banking, farm credit system, monetary policy, and federal reserve. Prerequisite: completion of Agribusiness core or equivalent.

AGB 434 Agricultural Risk Management and Insurance. (3) F
Strategies to manage agricultural price and business risk: derivatives, insurance, self-insurance, and public policy. Prerequisite: completion of Agribusiness core or equivalent

AGB 440 Food Safety. (3) S
Control, prevention, and prediction of microbial and chemical foodborne diseases. Prerequisite: AGB 442 or instructor approval.

AGB 441 Food Chemistry. (4) N
The biochemical and chemical interactions that occur in raw and processed foods. Lecture/lab. Prerequisites: CHM 115, 231

AGB 442 Food and Industrial Microbiology. (3) N

Food- and industrial-related microorganisms: deterioration and preservation of industrial commodities. Lecture, lab. Prerequisite: microbiology course with lecture and lab.

AGB 443 Food and Industrial Fermentations. (4) N

Management, manipulation, and metabolic activities of industrial microbial cultures and their processes. Lecture/lab. Prerequisite: AGB 442 or instructor approval.

AGB 445 Food Retailing. (3) F

Food retail management. Discusses trends, problems, and functions of food retail managers within various retail institutions. Lecture, case studies.

AGB 450 International Agricultural Development. (3) S

Transition of developing countries from subsistence to modern agriculture. Emphasis is placed on implications for U.S. agribusiness working abroad. *General Studies: G*

AGB 452 International Agricultural Policy. (3) F

Use of international trade theory to analyze the effects of government policies, trade agreements, and exchange rates on agribusiness. Prerequisite: ECN 112.

AGB 454 International Trade. (3) S

International practices in trading of agribusiness, technology, and resource products and services.

AGB 455 Resource Management. (3) S

Explores differences between societal and individual valuations of natural resources and considers public policy versus market-based solutions to environmental concerns. Prerequisite: ECN 112. *General Studies: SB*.

AGB 456 World Agricultural Resources. (3) F

World production and consumption of agricultural products: international relationships and agencies concerned with world agricultural development problems. *General Studies: G*

AGB 457 Resource Policy and Sustainability. (3) F

Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies. Prerequisite: ECN 112.

AGB 458 Bioremediation. (3) S

Technological and policy issues emanating from metal and animal waste. Lecture/case studies.

AGB 460 Agribusiness Management Systems. (4) S

The development and use of decision support systems for agribusiness management and marketing. Lecture, lab.

AGB 470 Comparative Nutrition. (3) N

Effects of nutrition on animal systems and metabolic functions. Prerequisite: CHM 231.

AGB 471 Diseases of Domestic Animals. (3) S

Control and prevention of infectious and noninfectious diseases of domestic animals. Prerequisite: AGB 442 or microbiology course with lecture and lab.

AGB 473 Animal Physiology I. (3) N

Control and function of the nervous, muscular, cardiovascular, respiratory and renal systems of domestic animals. Prerequisite: BIO 181, CHM 113.

AGB 479 Veterinary Practices. (3) F S

Observation of and participation in veterinary medicine and surgery supervised by local veterinarians. Prerequisite: advanced pre-veterinary student.

AGB 480 Agribusiness Policy and Government Regulations. (3) S

The development and implementation of government food, drug, pesticide, and farm policies and regulations that affect the management of agribusiness.

AGB 484 Internships. (2) F S**AGB 490 Recent Advances in Agribusiness.** (1) F S

Reports and discussions of current topics and problems associated with agribusiness. May be repeated for credit.

AGB 501 Master's Thesis Preparation. (1) F S

Step-by-step guidelines to major elements of a master's thesis along with practical guidelines for conduct on research.

AGB 510 Advanced Agribusiness Management I. (3) F

Managing and financing agribusiness, emphasizing environmental and economic sustainability in a global economy undergoing radical change. Prerequisite: AGB 310.

AGB 511 Advanced Agribusiness Management II. (3) S

Analysis of organization behavior, change, and resource requirements within agribusiness systems. Prerequisite: AGB 310.

AGB 512 Food Industry Management. (3) S

Operations and management of food-processing factories, food distribution centers, and retail food handling firms.

AGB 513 Advanced Cooperatives. (3) F

Advanced study of cooperatives and other nongovernmental organizations (NGO) focusing on management and proposal preparation for international agencies.

AGB 514 Advanced Agribusiness Analysis I. (3) S

Vertical integration and differentiation in food and agricultural industries. Prerequisite: AGB 510 or 528.

AGB 515 Agribusiness Coordination. (3) S

Organizational alternatives for agribusiness with emphasis on cooperatives and trading companies. Prerequisite: AGB 510 or 528.

AGB 528 Advanced Agribusiness Marketing. (3) F

Theory and analysis of marketing farm commodities risks and the effect of future trading on cash prices.

AGB 529 Advanced Agribusiness Marketing Channels. (3) S

Analysis of agribusiness market channel systems. Formulation of marketing strategies.

AGB 532 Advanced Agribusiness Finance. (3) F

Financial management of agribusiness firms; agribusiness financial analysis, investment analysis, agricultural risk management, and introduction to agricultural financial intermediaries. Prerequisites: computer literacy and 1 finance course or instructor approval.

AGB 535 Commodity Analysis. (3) F

Analysis of commodity markets.

AGB 540 Advanced Food Science. (3) N

Chemical and physical nature of processed foods. Emphasis on food product development.

AGB 550 International Agricultural Development. (3) F

Transition of developing countries from subsistence to modern agriculture. Emphasis is placed on implications for U.S. agribusiness working abroad.

AGB 551 Agribusiness in Developing Countries. (3) S

Factors influencing successful development of agribusiness enterprises in developing countries, including poverty, access to capital and technology, and trade opportunities.

AGB 552 International Agricultural Policy. (3) F

Use of international trade theory to analyze the effects of government policies, trade agreements, and exchange rates on agribusiness.

AGB 554 Advanced International Trade. (3) F

Advanced international practices in trading of agribusiness technology, and resource products and services.

AGB 557 Resource Policy and Sustainability. (3) F

Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies.

AGB 558 Advanced Bioremediation. (3) S

Management and policy issues related to bioremediation of metal and animal waste and replacement of chemical control with biological methods. Lecture, case studies.

AGB 560 Advanced Agribusiness Management Systems. (3) N

Development and use of decisions on support systems for agribusiness management decisions making. Prerequisite: AGB 510.

AGB 561 Agribusiness Research Methods. (3) F

The use of model building, hypothesis testing, and empirical analysis in solving agribusiness problems.

AGB 570 Managerial Economics for Agribusiness. (3) F

Concepts in micro and macroeconomics applied to agribusiness management environments: price formation, market structure, information economics, fiscal and monetary policy. Prerequisites: introductory micro and macroeconomics.

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C, and H) see "General Studies," page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional non-business courses offered but not listed in this catalog, see "Classification of Courses" page 60.

AGB 580 Advanced Agribusiness Policy. (3) F
Policy making history, structure, and process.

AGB 581 Advanced Agribusiness Policy. (3) N
Policy making history, structure, and process

AGB 587 Resource Policy and Sustainability. (3) F
Considers the evolution of policy design, focusing on how resource and environmental concerns have affected agricultural development and trade policies

ENVIRONMENTAL RESOURCES (ERS)

ERS 130 Introduction to Environmental Science. (4) F
Introduction to soil resources, their physical and chemical properties, classification, energy dynamics, and the role they play in environmental quality. Lecture, lab. *General Studies: SQ*

ERS 207 Plant Taxonomy. (4) S
Introduction to identification of vascular plants. Survey of plant families. 2 hours lecture, 2 hours lab. Prerequisite: BIO 182

ERS 225 Soils. (3) F
Fundamental properties of soils and their relation to plant growth and the nutrition of man and animals. Relation of soils to environmental quality. Prerequisite: CHM 101 or 113 or equivalent

ERS 226 Soils Laboratory. (1) F
Selected exercises to broaden the background and understanding of basic soil principles. Lab. Corequisite: ERS 225

ERS 246 Environmental Conservation and Ecology. (3) S
Principles of environmental conservation from global, historical, and ecological perspectives. Consideration of development/sustainability issues. *General Studies: G*

ERS 301 Ecology. (3) F
Introduction to basic principles of ecology including ecosystem structure and function, population dynamics, and community ecology. Prerequisite: BIO 182

ERS 307 Plant Identification. (4) F
Identification of key plants of western range lands and forests. Laboratory emphasis on grass identification. Lecture, lab. Prerequisite: ERS 207 or PLB 310 or equivalent.

ERS 311 Forest and Rangeland Ecosystems. (4) N
Ecology of forest and range and ecosystems. Emphasis on vegetation community structure and dynamics and impacts of management practices. 3 hours lecture, 1 hour lab. Prerequisites: ERS 225, 301, 350.

ERS 333 Water Resources Management. (3) N
Sources, their development, and conservation in arid regions for agricultural, natural resources, and urban uses. Prerequisite: CHM 101 or 113

ERS 350 Environmental Statistics. (3) F
Statistical methods with applications in natural resource management and the environmental sciences. Use of computers and the Internet. Prerequisites: CSE 180; MAT 117. *General Studies: CS*

ERS 353 Wildlife Nutrition. (3) N
Principles of nutrient metabolism in wildlife species with emphasis on understanding the interaction of wildlife with their environment. Prerequisites: BIO 181 and 182 and CHM 101 or instructor approval

ERS 360 Range Ecosystem Management. (3) F
Ecosystem management principles applied to range lands. Herbivory as an ecological process. Evaluation of range and health, multiple use of rangelands. Lecture, recitation. Prerequisite: BIO 320 (or equivalent). ERS 246

ERS 364 Surface Water Hydrology. (3) F 2000
Hydrologic principles in an ecological context. Discharge measurements, open channel hydraulics, bed forms, sediment transport as applied to ecological problems. Lecture, lab, field trip. Prerequisite: ERS 350.

ERS 365 Watershed Management. (3) N
Hydrologic, physical, biological, and ecological principles applied to watershed management. Impact of ecosystem manipulations on water yield and quality. 1 weekend field trip. Prerequisites: ERS 225, 246

ERS 402 Vegetation Measurement. (4) S
Vegetation sampling and inventory as related to animal habitat requirements. Lecture, lab, 1 weekend field trip. Prerequisites: ERS 301 and 307 and 350 and program major or instructor approval.

ERS 415 Wildlife Life Histories. (4) S
Life histories of the major mammal, reptile, amphibian, and avian species found in the Southwest, with emphasis on management. Lecture, lab. Prerequisites: BIO 370 or 385 and ERS 360

ERS 420 Ecological Restoration. (3) S
Techniques of ecological restoration applied for the improvement of arid and semiarid and sensitive habitats. Weekend field trips. Prerequisite: ERS 360.

ERS 425 Soil Classification and Management. (3) N
Principles of soil genesis, morphology, and classification. Management and conservation practices will be presented. Prerequisite: ERS 225

ERS 433 Riparian Ecosystem Management. (3) N
Examination of the functions and components that make up riparian ecosystems and the management of these ecosystems. Lecture, field trip. Prerequisite: ERS 225 or instructor approval

ERS 434 Wetland Ecosystems and Soils. (3) N
Wetland ecosystems structure and function including hydrology and biogeochemistry with special emphasis on soils. Lecture, weekend field trip. Prerequisite: ERS 225 or instructor approval

ERS 448 Soil Ecology. (3) N
Soils viewed in an ecosystem context. Soil-plant relationships, nutrient budgets, and abiotic factors that influence soil processes. Prerequisites: BIO 320 and ERS 225 and 226 or instructor approval

ERS 449 Landscape Ecology. (3) N
Causes and ecological consequences of spatial and temporal patterns in the environment. Prerequisite: ERS 301

ERS 460 Applied Systems Ecology. (3) N
The systems approach applied to analysis and management of natural resource ecosystems. Use of simulation models. 2 hours lecture, 3 hours lab. Prerequisites: ERS 350 or equivalent; 1 course in ecology

ERS 465 Surface Water Quality. (3) S 2001
Examination of factors that impact water quality. Surface water sampling and analysis with interpretation for wildlife, humans, and other users. Prerequisites: ERS 364, 365

ERS 474 Wildlife Ecology. (3) N
Integration of ecological concepts as applied to wildlife populations and their interaction with the habitat and other species. Lecture, lab, 1 weekend field trip. Prerequisite: ERS 360

ERS 475 Wildlife Management. (4) S
Principles and techniques of applied ecology for the management and wildlife populations. Lecture, lab. Prerequisites: ERS 311 and 474 or equivalent.

ERS 477 Environmental Risk Assessment and Management. (3) N
Survey of methods related to identification, evaluation, comparison, and management of environmental risks. Prerequisite: senior standing

ERS 480 Ecosystem Management and Planning. (3) S
Planning for management and conservation of wildland ecosystems. Ecological, economic, and social constraints on long-term sustainable resource development. Computer tools for resource planning. Lecture, 1 weekend field trip. Prerequisites: ERS 402 or equivalent, senior standing. *General Studies: L*

ERS 485 GIS in Natural Resources. (3) F
Principles of Geographic Information Systems (GIS) utilized in natural resource management. Use of computers for spatial analysis of natural resources. Lecture, lab. Prerequisite: CSE 180 or equivalent

ERS 486 Remote Sensing in Environmental Resources. (4) S
Principles and application of remote sensing technologies in natural resource management. Integration of computerized data from aerial photography and Landsat imagery in resource management. Lecture, lab. Prerequisite: ERS 485 or equivalent

ERS 489 Undergraduate Research. (1-3) F, S
Undergraduate research under the supervision of an environmental resources faculty member. Prerequisite: junior or senior status.

ERS 490 Recent Advances in Environmental Resources. (1) F, S
Current literature and significant developments involving environmental resources. May be repeated for credit

ERS 533 Riparian Ecology. (3) N
Review of recent literature, developments, and methods related to riparian ecology. Applications of soil and landscape ecology to riparian systems. Lecture, discussion, field trips

ERS 540 Plant Responses to Environmental Stresses. (3) N
Reaction of plants to environmental stresses: aerobically and anaerobically, herbivores, mechanical treatments, pesticides, and soil amendments. 1 weekend field trip. Prerequisite: ERS 360 or instructor approval.

ERS 550 Vegetation Dynamics. (4) F

Dynamics of vegetation emphasizing ecological succession, applications of landscape ecology and GIS, and analysis of vegetation data. Field trips, studio. Prerequisite: introductory statistics course.

ERS 551 Advanced Environmental Statistics. (4) S

Advanced statistical procedures for environmental resources. Techniques for analyzing research data that do not meet assumptions. Studio. Prerequisite: ERS 350 or equivalent.

ERS 553 Advanced Animal Nutrition. (4) N

Metabolic and physiological interactions of nutrients in wild and domesticated animals consuming natural feeds. Lecture, lab.

ERS 560 Systems Ecology. (3) N

Quantitative description and mathematical modeling of ecosystem structure and function. Techniques for model construction and simulation. Lecture, lab. Prerequisites: ERS 350 or equivalent; computer programming, 6 hours in ecological studies.

ERS 561 Spatial Statistics and GIS. (3) F

Dependent spatial data analysis and description, semivariograms, variograms, kriging, and GIS analysis. Lecture, lab. Prerequisites: ERS 350 and 485 or equivalents.

ERS 585 Spatial Modeling with GIS. (3) F

GIS technology for spatial modeling of natural resources. Practical application of GIS technology for problem solving. Lecture, lab. Prerequisite: ERS 485 or equivalent or instructor approval.

ERS 591 Environmental Resources Seminar. (1-12) N

East College

David E. Schwalm
Dean

(CNTR 92) 480/727-1515
www.east.asu.edu/ecollege

PROFESSORS

BALCAZAR, BERGERON, JOHNSTON, MAID,
MANORE, SCHVANEVELDT, VAUGHAN

ASSOCIATE PROFESSORS

BARCHILON, MONTE

ASSISTANT PROFESSOR

HAMPL

SENIOR LECTURER

MARTIN

LECTURER

WENHART

PURPOSE

East College was created by the Arizona Board of Regents in February 1997 to serve four purposes:

1. to offer an array of upper division General Studies and general interest courses for students enrolled in ASU East degree programs;
2. to coordinate the Partnership in Baccalaureate Education with Chandler Gilbert Community College through which ASU East students are provided with lower division General Studies and major prerequisite courses;

3. to offer an academic home for students who choose the unique environment of ASU East but do not wish to declare a major immediately; and
4. to develop new degree programs for ASU East

General Studies/General Interest. Each semester, East College offers a selection of popular upper division ASU General Studies and general interest courses, primarily for support of ASU East students but open to all ASU students who might find the time or location convenient. East College typically offers courses in anthropology, art, communication, economics, English, history, mathematics, music, philosophy, political science, psychology, religious studies, sociology, and women's studies. All credit earned at ASU East automatically transfers to ASU Main or ASU West.

Partnership in Baccalaureate Education. Through the Partnership with Chandler-Gilbert Community College, ASU East students take first-year composition courses and courses that meet lower division ASU General Studies requirements listed in the "General Studies," page 87. These courses are available in an innovative integrated first year curriculum designed to foster academic success. Students can also take major prerequisite courses, introductory language courses, and other lower division courses of general interest through the partnership.

East College/No Preference Majors. Students who would like to start their college careers at ASU East to benefit from the unique campus environment or the Partnership can declare "East College/No Preference" as an interim major while completing the General Studies requirement and searching for an ASU major that serves their personal and career objectives. East College provides advising for No Preference majors.

Degree Programs. East College also offers five bachelor's degree programs, each of which requires 120 semester hours to graduate:

1. the B.S. degree in Applied Psychology;
2. the B.S. degree in Business Administration;
3. the B.A.E. degree in Elementary Education;
4. the B.S. degree in Family Resources and Human Development with concentrations in family resources and human development in business and human nutrition/dietetics; and
5. the B.I.S. (Bachelor of Interdisciplinary Studies)

APPLIED PSYCHOLOGY—B.S.

This program offers a traditional psychology core curriculum leading to applied courses in the areas of human factors and organizational psychology. The program serves students who wish to pursue these special applications of psychological concepts either as preparation for careers in business and industry or for graduate study. New students, continuing ASU students in good standing, or transfer students eligible for admission to ASU may declare Applied Psychology as their major at ASU East. To graduate with a B.S. degree in Applied Psychology, a student must complete a minimum of 120 hours, including university graduation

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requirements and the following major requirements 31 semester hours in psychology (19 hour core and a 12 hour concentration) and 18 hours of related course work. Because the program is new and the curriculum is under development, interested students should contact an East College advisor to determine their current status and work out a provisional plan for completing the degree program. For the latest information about program requirements and courses, access www.east.asu.edu/ecollege on the Web or contact an East College advisor at 480 727 1042.

BUSINESS ADMINISTRATION—B.S.

The B.S. degree in Business Administration is a general business program, offering a survey of contemporary business disciplines and additional depth in at least three disciplines. The curriculum enables students to gain essential business competencies, knowledge of business disciplines and methods, and appreciation for contemporary business environments and cultures. Students prepare for careers in business, industry, or government, as well as for career advancement and entrepreneurial enterprises. This program operates under the umbrella of the ASU Main College of Business AACSB accreditation, but it is offered through East College. Students seeking admission to the professional program must have completed 56 semester hours in good standing, including 30 hours of skill courses (see “Business Core Requirements,” page 152). The major requires an additional 33 hours, including a 15 hour core, seven hours of professional proficiency courses, and 11 hours of general business advanced electives. Students may choose to take additional business courses, related courses in industry specific business programs at ASU East (e.g. agribusiness, information and management technology, and aeronautical management technology), or a special optional 12 hour extension of the basic major in industry specific programs. For the latest information about application, admissions, and program requirements and courses, access www.east.asu.edu/ecollege on the Web or call an East College advisor at 480 727 1042.

ELEMENTARY EDUCATION—B.A.E.

Students who wish to prepare for certification in Elementary Education can complete the B.A.E. degree in Elementary Education in East College. It is a “cohort” program. Groups of students move through the entire professional curriculum together. Methods courses are taught on site in the schools, and students do field work in the schools every semester leading up to their student teaching experience. Admissions and major requirements for the program at ASU East are identical to admissions and major requirements for the program at ASU Main. See “College of Education,” page 174, for details. For the latest information about application, admissions, program requirements, and courses in the East College program, access www.east.asu.edu/ecollege on the Web, or call the East College advisor at 480 727 1042.

Course Listings

<i>Bilingual Education (BLE)</i>	
BLE 498 Pro Seminar	1 7
<i>Curriculum and Instruction (DCI)</i>	
DCI 396 Field Experience I	0

Elementary Education (EED)

EED 420 Science Methods, Management, and Assessment in the Elementary School	3
EED 433 Language Arts Methods, Management, and Assessment in the Elementary School	3
EED 444 Organizing the Classroom Culture	1
EED 455 Social Studies Methods, Management, and Assessment in the Elementary School	3
EED 478 Student Teaching in the Elementary School	3–15
EED 480 Mathematics Methods, Management, and Assessment in the Elementary School	3
EED 496 Field Experience	0
EED 578 Student Teaching in the Elementary School	9 15

Educational Psychology (EDP)

EDP 310 Educational Psychology SB	1 10
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Educational Media and Computers (EMC)

EMC 300 Computers in Education	1
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Reading Education (RDG)

RDG 414 Teaching Reading Decoding	3
RDG 481 Reading Practicum	3

Special Education (SPE)

SPE 311 Orientation to Education of Exceptional Children SB	3
SPE 394 Special Topics	3

Educational Policy Studies (SPF)

SPF 301 Culture and Schooling L	3
SPF 401 Theory and Practice in Education	1 2

Theatre Performance and Production (THP)

THP 311 Improvisation with Youth	3
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FAMILY RESOURCES AND HUMAN DEVELOPMENT—B.S.

Options are available under concentrations under the major in Family Resources and Human Development, as shown in the “Concentrations and Options” table, below.

Concentrations and Options

Concentration	Option
Family resources and human development in business	Food service management
Human nutrition dietetics	General dietetics, human nutrition

Family Resources and Human Development in Business Concentration

Food Service Management Option. The food service management option consists of the following required course:

FON 100 Introductory Nutrition	3
FON 142 Applied Food Principles	3
FON 344 Nutrition Services Management L	3
FON 442 Experimental Foods	3
FON 445 Quantity Food Production	3
MGT 301 Management and Organization Behavior or MGT 394 Special Topics (3)	3
MKT 300 Principles of Marketing or MKT 394 Special Topics (3)	3
Two AGB or business courses.	6
Total	27

The students work with their advisor to select an additional 15 hours of course work to complete the major.

In addition, the following related courses are required:

CHM 101 Introductory Chemistry SQ	4
CHM 231 Elementary Organic Chemistry SQ ¹	3
CHM 235 Elementary Organic Chemistry Laboratory SQ ¹	1
MIC 205 Microbiology SG ²	3
MIC 206 Microbiology Laboratory SG ²	1
Total	12

Both CHM 231 and 235 must be taken to secure SQ credit

² Both MIC 205 and 206 must be taken to secure SG credit

Human Nutrition—Dietetics Concentration

General Dietetics Option. The American Dietetic Association (ADA) has approved the general dietetics option in the human nutrition dietetics concentration as a Didactic Program in Dietetics (DPD). Graduates of a DPD program may apply for dietetic internships or preprofessional practice programs to establish eligibility to write the Dietetic Registration examination.

The following FON courses are required of all students in the general dietetics option:

FON 142 Applied Food Principles	3
FON 241 Human Nutrition	3
FON 341 Introduction to Planning Therapeutic Diets	3
FON 344 Nutrition Services Management L	3
FON 440 Advanced Human Nutrition I	3
FON 441 Advanced Human Nutrition II	3
FON 444 Diet Therapy	3
FON 445 Quantity Food Production	3
FON 446 Human Nutrition Assessment Lecture/Laboratory	3
FON 448 Community Nutrition L	3
FON 494 ST: Nutrition and Health Promotion	3
Total	33

In addition to the required FON courses, the following related courses are required by the program to comply with ADA standards:

BCH 361 Principles of Biochemistry	3
BCH 367 Elementary Biochemistry Laboratory	1
BIO 201 Human Anatomy and Physiology I SG	4
BIO 202 Human Anatomy and Physiology II	4
CHM 113 General Chemistry SQ	4
CHM 116 General Chemistry SQ	4
CHM 231 Elementary Organic Chemistry SQ ¹	3
CHM 235 Elementary Organic Chemistry Laboratory SQ ³	1
ENG 301 Writing for the Professions L	3
MIC 205 Microbiology SG ²	3
Statistics course	3
Total	33

¹ Both CHM 231 and 235 must be taken to secure SQ credit.

² Both MIC 205 and 206 must be taken to secure SG credit

Additional supporting courses in social sciences required by the American Dietetic Association for completion of DPD requirements must be selected in consultation with an advisor.

Human Nutrition Option. This option is not an ADA approved curriculum. The following FON courses are required:

FON 142 Applied Food Principles	3
FON 241 Human Nutrition	3
FON 440 Advanced Human Nutrition I	3
FON 441 Advanced Human Nutrition II	3
FON 444 Diet Therapy	3
FON 446 Human Nutrition Assessment Lecture/Laboratory	3
Total	18

An additional 15 hours of FON or closely related courses must be taken to complete this option. Students will select courses in consultation with an advisor.

In addition to FON courses, the following related courses are required in the option:

BCH 361 Principles of Biochemistry	3
BIO 201 Human Anatomy and Physiology I SG	4
BIO 202 Human Anatomy and Physiology II	4
CHM 113 General Chemistry SQ	4
CHM 231 Elementary Organic Chemistry SQ*	3
Total	18

* Both CHM 231 and 235 must be taken to secure SQ credit.

MINOR

The faculty of nutrition also offer a minor in Family Resources and Human Development with two emphases, each requiring 18 hours: (1) foods and nutrition in business; and (2) nutrition. At least 12 of the 18 hours must be in upper-division courses.

Foods and Nutrition in Business. The foods and nutrition in business emphasis requires that students take the following courses:

FON 100 Introductory Nutrition	3
or FON 241 Human Nutrition (3)	
FON 142 Applied Food Principles	3
FON 344 Nutrition Services Management L	3
FON 394 ST Computers in Nutrition and Foods	3
FON 442 Experimental Foods	3
FON 445 Quantity Food Production	3
Total	18

Nutrition. The nutrition emphasis requires the following courses:

FON 241 Human Nutrition	3
FON 341 Introduction to Planning Therapeutic Diets	3
FON 440 Advanced Human Nutrition I	3
FON 441 Advanced Human Nutrition II	3
FON 444 Diet Therapy	3
Total	15

One additional upper division (or graduate) course must be selected from among the following:

FON 446 Human Nutrition Assessment Lecture/Laboratory	3
FON 448 Community Nutrition L	3

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see "General Studies," page 87 For graduation requirements see "University Graduation Requirements," page 83 For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60

FON 450 Nutrition in the Life Cycle	3
FON 531 Recent Developments in Nutrition	3
FON 532 Current Research in Nutrition.	3

GRADUATE PROGRAMS

The faculty of nutrition offer programs leading to the M.S. degree. See the *Graduate Catalog* for requirements.

INTERDISCIPLINARY STUDIES—B.I.S.

The Bachelor of Interdisciplinary Studies (B.I.S.) is a university wide program intended for the student who has academic interests that might not be satisfied with existing majors. Building on two academic concentrations and on an interdisciplinary core, students in the B I S. are expected to take an active role in creating their educational plan and defining their career goals. The B.I.S. emphasizes written communication, versatility, and critical thinking, skills desired in an information age that requires lifelong learning. Self assessment, active engagement in learning, and appraisal of opportunities to support academic and career goals are key elements in the core courses. The concentrations are based on approved academic minors, certificate programs, or special coherent clusters of course work. The student should be able to integrate these into a meaningful program

The combination of areas of concentration gives students great flexibility in creating unique programs to accomplish individual academic goals. Students who declare the B.I.S as their major in East College at ASU East take their core courses and at least one concentration through ASU East. The second concentration may be taken at ASU Main, ASU West, or ASU East. The B.I.S. core courses are offered by East College. Concentrations at ASU East are offered by East College, the College of Technology and Applied Sciences, and the Morrison School of Agribusiness and Resource Management

Students interested in the B.I.S. should arrange an appointment with an East College advisor at 480 727 1042 before declaring the B.I.S. major.

Basic Requirements

The B.I.S. requires 120 semester hours. The major is composed of a 12 hour core and a minimum of 36 hours in two concentrations (usually 18 hours each) Throughout the core sequence, the student assembles a portfolio including self-assessment of progress toward career goals and an evaluation of key educational and personal activities that may apply. The core courses must be taken in sequence. These courses may not be transferred from other institutions BIS 302 and 401 may be taken concurrently. All core courses must be completed with a grade of "C" or higher.

Core Courses

BIS 301 Foundations of Interdisciplinary Studies L	3
BIS 302 Interdisciplinary Principles	3
BIS 401 Applied Interdisciplinary Studies	3
BIS 402 Senior Seminar L	3
Total	12

Other Requirements

In addition to the basic requirements, students must complete all university requirements, including First Year Composition and General Studies. Early advising is recom-

mended to ensure that students meet requirements efficiently and optimize their choices.

Declaring the B.I.S. Major. Students must receive approval from an East College advisor before declaring the B.I.S. major. In addition, the following requirements must be met

1. 45 semester hours of college credit completed;
2. cumulative GPA of 2.00 for continuing ASU students or in-state transfer students (2.50 for out of state transfers), and
3. selection of two concentrations with at least one course completed in each with a grade of "C" or higher.

Approved Concentrations

Each concentration generally requires 18 semester hours, with each course completed with a grade of "C" or higher. Twelve of the hours must be in upper division courses. As this program is new to ASU East, students should check for new information about concentrations on the Web at www.east.asu.edu/ecollege or contact an East College advisor at 480 727 1042. Other concentrations may be formed from existing minors and certificates, with the approval of an advisor. See the "ASU Minors" table, page 111, and the "ASU Certificates" table, page 113, for more information.

OTHER NEW PROGRAMS

East College has been authorized to plan a B.S. degree in Multimedia Writing and Technical Communication and a B.S. degree in Human Health. These programs are under development, and the latest information about them is available on the East College Web site, www.east.asu.edu/ecollege.

APPLIED SCIENCE CORE (ASC)

- ASC 301 Contextual Uses of Algebra in Technology.** (1) F, S
Using algebra to solve real-world technological problems using current and available computer software. Prerequisite: B.A.S. major.
- ASC 302 Contextual Uses of Geometry in Technology.** (1) F, S
Using geometric concepts to solve real-world technological problems using current and available computer software. Prerequisite: B.A.S. major.
- ASC 303 Contextual Uses of Trigonometry in Technology.** (1) F, S
Using trigonometry to solve real-world technological problems using current and available computer software. Prerequisite: B.A.S. major.
- ASC 315 Numeracy in Technology.** (3) F, S
Contextual uses of mathematics in applied sciences. Emphasis on using mathematical methods to solve technology-related problems. Prerequisite: B.A.S. major.
- ASC 325 Physical Sciences in Technology.** (4) F, S
Physical systems and their interrelationships on technology systems. Real world applications of physical systems. Lecture/lab. Prerequisite: B.A.S. major.

BACHELOR OF INTERDISCIPLINARY STUDIES (BIS)

- BIS 301 Foundations of Interdisciplinary Studies.** (3) F, S, SS
Introduces concepts and methods of interdisciplinary study by critically examining anticipated 21st century workplace and civic trends. Lecture, seminar, discussion. Prerequisites: B.S. major, 2.00 GPA. *General Studies L*.
- BIS 302 Interdisciplinary Principles.** (3) F, S, SS
Demonstrates interdisciplinary principles as applied to progressively more complex problems. Students choose among course topics that address both the concentrations. Lecture/seminar/discussion. Prerequisite: BIS 301.

BIS 401 Applied Interdisciplinary Studies. (3) F S SS

Applies interdisciplinary problem-solving skills in internship service learning, or research may involve individual or group projects combining both concentrations Prerequisites: BIS 301.

BIS 402 Senior Seminar. (3) F, S, SS

Capstone course where students integrate the classroom and experiential learning. Lecture seminar, discussion. Prerequisites: BIS 301, 302, 401 *General Studies L*

FOOD AND NUTRITION (FON)**FON 100 Introductory Nutrition.** (3) F S, SS

Basic concepts of human nutrition. Alternative diets and how food choices affect personal health. Prerequisite: nonmajor.

FON 142 Applied Food Principles. (3) F, S

Applied scientific principles of food preparation and production. 2 hours lecture 3 hours lab

FON 241 Human Nutrition. (3) F S, SS

Principles of human nutrition relative to health. Emphasis on nutrients and the factors affecting the utilization in the human body. Prerequisite: CHM 101 or equivalent

FON 341 Introduction to Planning Therapeutic Diets. (3) S

Cultural, health, and economic aspects of diet planning. Computer and manual assessment of food composition. Review of common therapeutic diets. Prerequisites: FON 142 and 241 (or equivalent)

FON 344 Nutrition Services Management. (3) S

Organization, administration, and management of food and nutrition services in hospitals and other institutions. Field trips may be included. *General Studies: L*

FON 394 Special Topics. (3) N

(a) Computers in Nutrition and Foods

FON 440 Advanced Human Nutrition I. (3) F

Metabolic reactions and interrelationships of vitamins, minerals, and water. CHM 332 recommended. Prerequisites: BCH 361 BIO 202 FON 241 (or equivalent)

FON 441 Advanced Human Nutrition II. (3) S

Metabolic reactions and interrelationships of carbohydrate, lipid, and protein. CHM 331 and 332 recommended. Prerequisites: BCH 361 BIO 202 FON 241 (or equivalent)

FON 442 Experimental Foods. (3) F

Food product development techniques, food evaluation and testing and investigation of current research into food composition. 2 hours lecture, 3 hours lab. Prerequisites: CHM 231 FON 142

FON 444 Diet Therapy. (3) S

Principles of nutritional support for prevention and treatment of disease. Prerequisites: BIO 202 FON 241 (or equivalent)

FON 445 Quantity Food Production. (3) S

Standard methods of food preparation in quantity, operation of institutional equipment and menu planning for institutions. Experience in quantity food service. 1 hour lecture 6 hours lab. May require field trips. Prerequisites: FON 241 (or equivalent) and 344 or instructor approval

FON 446 Human Nutrition Assessment Lecture Laboratory. (3) S

Clinical and biochemical evaluation of nutritional status. 2 hours lecture 3 hours lab. Prerequisites: BCH 367 FON 440 or 441

FON 448 Community Nutrition. (3) F

Food-related behaviors; community organization and delivery of nutrition services; program design, implementation, and evaluation strategies. Nutritional assessment of population groups. PGS 101 and SOC 101 are recommended. Prerequisite: FON 241 or equivalent. *General Studies: L*

FON 450 Nutrition in the Life Cycle. (3) F

Emphasis on nutritional needs and problems during pregnancy, lactation, infancy, and childhood. Prerequisite: FON 241 or equivalent

FON 494 Special Topics. (3) N

(a) Nutrition and Health Promotion

FON 531 Recent Developments in Nutrition. (3) N

Survey of research. Prerequisites: 1 course each in advanced nutrition and biochemistry

FON 532 Current Research in Nutrition. (3) S

Vitamins and minerals. Prerequisites: 1 course each in advanced nutrition and biochemistry

FON 540 Advanced Micronutrient Metabolism. (3) F

The metabolism of vitamins and minerals, primarily as applied to humans with research literature emphasized. Prerequisites: 1 course each in basic nutrition and biochemistry

FON 541 Advanced Macronutrient Metabolism. (3) S

The metabolism of protein, fat, and carbohydrate primarily as applied to humans with research literature emphasized. Prerequisites: 1 course each in basic nutrition and biochemistry

FON 542 Experimental Foods. (3) F

Food product development techniques, food evaluation and testing, and investigation of current research into food composition. 2 hours lecture 3 hours lab. Prerequisites: CHM 231 FON 142

FON 544 Therapeutic Nutrition. (3) S

Current theories of the nutritional prevention or treatment of various diseases. Prerequisites: 1 course each in basic nutrition and physiology

FON 545 Recent Developments in Institutional Feeding. (3) S

Current practices in institutional feeding including supervised practice with occasional food operation. 1 hour lecture 6 hours lab. Prerequisites: FON 142 and 344 or instructor approval.

FON 548 Nutrition Program Development. (3) F

The planning, development, implementation, and evaluation of community nutrition programs including the process of grant applications. Prerequisites: 1 course each in basic nutrition and sociology

FON 550 Advanced Maternal and Child Nutrition. (3) F

Metabolic characteristics and nutritional needs of the pregnant woman, lactating woman, infant, and child are reviewed in depth. Prerequisites: 1 course each in basic nutrition, physiology, and biochemistry

FON 551 Advanced Geriatric Nutrition. (3) S

Metabolic characteristics and nutritional requirements of the elderly are reviewed in depth. Prerequisites: 1 course each in basic nutrition and physiology and biochemistry or instructor approval

FON 580 Dietetics Practicum. (3-9) F S SS

Structured practical experience in the Preprofessional Practice Program AP4 supervised by practitioners with whom the student works closely. Practicum. Prerequisite: acceptance into the AP4 program

FON 598 Special Topics. (1-4) N

(a) Research Methods in Nutrition

TECHNICAL WRITING AND COMMUNICATION (TWC)**TWC 200 Impact of Communications Technology on Society.** (3) F S

Organizational issues and development of technical communication. Activities include research, evaluations, and presentation of oral arguments in support of positions. Prerequisite: ENG 102 *General Studies: L*

TWC 351 Technical Writing and Editing. (3) F, S

Effective style, format, and organization of technical material. Editing principles and practices: copyediting versus substantive editing and document management. Prerequisite: ENG 102

TWC 400 Technical Communications. (3) F, S, SS

Planning and preparing technical publications and oral presentations based on directed library research related to current technical topics. Prerequisites: completion of first year English requirements; L course senior or standing as a CTAS major. *General Studies: L*

NOTE: For the General Studies requirement courses and codes such as L, SQ, C, and H, see General Studies page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional common bus courses offered but not listed in this catalog, see Classification of Courses, page 60.

College of Technology and Applied Sciences

Albert L. McHenry
Dean
(CNTR 10) 480/727-1874
www.asu.edu/east/tech

PURPOSE

The College of Technology and Applied Sciences (CTAS) helps students develop knowledge and skill in technological fields that qualify them for career positions and leadership responsibility in industry, government, and commercial enterprise. Each student is guided to select a major that addresses short term employment goals through state of the art technological preparation. Long term career aspirations are supported through the development of a strong base in mathematics, science, engineering, and technical principles, coupled with a solid foundation in liberal arts and a commitment to lifelong learning.

Engineering technology programs offer professional preparation through a B.S. degree that stresses state of the art technological applications. Special emphasis is placed on the development of knowledge and skill in applied mathematics, natural sciences, and engineering principles with formal laboratory experiences. This mixed educational approach provides the basis for both employment and a long term career evolution.

The other CTAS technology programs provide the opportunity for students to develop knowledge and skill in solving broad scale industrial problems, operating modern technological systems, and managing personnel in the implementation of processes and production. Programs of study focus on the latest technologies in areas such as aviation flight training and management, environmentally hazardous waste management, graphic communications, interactive computer graphics, and industrial management.

Each student is encouraged to participate in creative activities through a close relationship with a faculty mentor. Learning through execution of the scientific method, using both inductive and deductive processes in applied research activities, is essential for both faculty and students.

ORGANIZATION

The College of Technology and Applied Sciences is composed of the following four academic units:

- Department of Aeronautical Management Technology
- Department of Electronics and Computer Engineering Technology
- Department of Information and Management Technology
- Department of Manufacturing and Aeronautical Engineering Technology

DEGREES

The College of Technology and Applied Sciences offers programs leading to the B.S. degree and B.A.S. degree. The college also offers the Master of Science in Technology

(M.S.T.) degree. For more information on courses, faculty, and programs in the M.S.T. degree, see the *Graduate Catalog*.

ACCREDITATION

Undergraduate B.S. degree programs in Aeronautical Engineering Technology, Electronics Engineering Technology, and Manufacturing Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. For additional information, call 410-347-7700 or write

TECHNOLOGY ACCREDITATION COMMISSION OF
THE ACCREDITATION BOARD FOR
ENGINEERING AND TECHNOLOGY INC
111 MARKET PLACE SUITE 1050
BALTIMORE MD 21202-7102

ADMISSION—B.S. DEGREE

The College of Technology and Applied Sciences admits first year students who meet the undergraduate admission requirements of Arizona State University. See "Undergraduate Admission," page 62. High school precalculus, physics, and chemistry are recommended. Transfer applicants must meet the university requirements for transfer students as specified under "Transfer Credit," page 65, with the exception that Arizona resident transfer students must have a 2.25 GPA.

Students admitted to a B.S. degree program in CTAS begin study under one of two student classifications, professional or preprofessional.

Professional Status

First year students (new freshmen) are admitted to CTAS with professional status if they meet the general aptitude criteria for admission and have no deficiencies in the basic competency requirements for admission. First year students admitted upon completion of the GED are admitted with professional status if they have also achieved the minimum ACT or SAT scores required for undergraduate admission to the university.

Students transferring from other ASU colleges are admitted to CTAS with professional status if they have no remaining admissions deficiencies and meet the required GPA.

Transfer students from other institutions must meet the minimum admission requirements for college transfer students as described under "Transfer Credit," page 65. The CTAS also requires resident transfer students to have a cumulative GPA of 2.25.

All international students must have a minimum 500 TOEFL score to be admitted with professional status.

Preprofessional Status

All other students are admitted with preprofessional status and may apply for professional status after they have removed the deficiency that disallows awarding professional status. Students with preprofessional status may not register for 300- and 400-level courses in the college until they have been awarded professional status. See an advisor for details.

Transfer Credit

Credit for courses taken at a community college or another four-year institution is awarded according to the guidelines under "Transfer Credit," page 65. Students who

are transferring from an Arizona community college and have been in continuous residence may continue under the catalog in effect at the time of their entrance into the community college. Students should be aware that some course work that transfers to ASU may not be applicable toward CTAS degree requirements. Students should confer with an advisor. The College of Technology and Applied Sciences maintains a cooperative agreement with most Arizona community colleges and with selected out of state colleges and universities to structure programs that are directly transferable into the technology programs at ASU East. For assistance in the transfer from Arizona community colleges, transfer guides are available at www.asu.edu/provost/articulation.

Courses taken more than five years before admission to a CTAS degree program are not normally accepted for transfer credit at the option of the department in which the applicant wishes to enroll. Courses completed within the five years preceding admission are judged as to their applicability to the student's curriculum.

ADMISSION—B.A.S. DEGREE

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

ADVISING

New incoming and transfer students should seek initial advising from the academic advisor in the Dean's Office. CTAS students are then assigned faculty advisors who assist them with planning a program of study in the department of their major. The college requires that students consult with advisors before registering each semester. Advisors should be made aware of any employment obligations or special circumstances that may affect a student's ability to successfully handle a full course load. CTAS students may register for a maximum of 19 semester hours per semester. Any student wishing to take more than the maximum must petition the CTAS Standards Committee and have an approval on file before registering for an overload.

GRADUATION REQUIREMENTS

Students must meet all university graduation requirements given in "University Graduation Requirements," page 83, as well as degree requirements of their major in the College of Technology and Applied Sciences. For detailed information on the degree requirements of a major in CTAS, refer to that department's individual description.

COLLEGE STANDARDS

Pass/Fail Grades

The College of Technology and Applied Sciences does not offer pass fail grades. Courses graded on a pass fail basis do not count toward degree credit in CTAS. Students may request credit for pass fail courses by petitioning the CTAS Standards Committee.

Entry into Upper-Division Courses (B.S. Degree)

Before enrolling in courses at the 300 level and above, CTAS students must be in the professional status within the college. Students who are not in good academic standing must petition the CTAS Standards Committee. Students enrolled in another ASU college may not register for any 300 and 400-level CTAS courses unless those courses are required in the degree program and the students have the proper course prerequisites.

ACADEMIC STANDARDS

Retention. A student is expected to make satisfactory progress toward completion of degree requirements to continue enrollment in the College of Technology and Applied Sciences. Any one of the following conditions is considered unsatisfactory progress and results in the student's being placed on probationary status:

1. a semester or summer session with a GPA less than or equal to 1.50;
2. two successive semesters with GPAs less than 2.00; or
3. an ASU cumulative GPA less than 2.00.

A student on probation is subject to disqualification if (1) a semester GPA of 2.25 is not attained and the cumulative GPA is below 2.00 at the end of the probationary semester or (2) the student is placed on probation for two consecutive semesters and is unable to achieve the standard GPAs stated in number one.

Students on academic probation are not allowed to register for more than 13 semester hours. Probationary students may not register for the semester following the semester in which they were declared probationary without a special permit from an advisor in the dean's office. Special permits are given only after the registrar records grades for the current semester.

Disqualification. During a semester on academic probation, a student who fails to meet the retention standards is disqualified. Students may request a review of their disqualification status by contacting the CTAS associate dean in the Academic Center Building (CNTR), room 10. Any disqualified student who is accepted by another college at ASU may not register for courses in CTAS unless the courses are required in the new major. Disqualified students who register for courses in CTAS may be withdrawn from these courses any time during the semester.

Reinstatement. The College of Technology and Applied Sciences does not accept an application for reinstatement until the disqualified student has remained out of the college for at least a 12 month period. Merely having remained in disqualified status for this period of time does not, in itself, constitute a basis for reinstatement. Proof of ability to do satisfactory college work in the chosen discipline is required; for example, completing pertinent courses in the discipline at a community college with higher than average grades.

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

STUDENT RESPONSIBILITIES

Course Prerequisites. Students should consult the *Schedule of Classes* and the catalog for course prerequisites. Students who register for courses without the designated prerequisites may be withdrawn without their consent at any time before the final examination. The instructor, the chair of the department, or the dean of the college may initiate such withdrawals. In such cases, students do not receive monetary reimbursement. Such withdrawals are considered to be unrestricted as described under "Unrestricted Course Withdrawal," page 77, and do not count against the number of restricted withdrawals allowed.

SPECIAL PROGRAMS

Academic Recognition. Students completing baccalaureate degree requirements receive the appropriate honors designations on their diplomas consistent with the requirements specified by the university.

Students in the College of Technology and Applied Sciences are encouraged to seek information concerning entry into honor societies that enhance their professional stature. Tau Alpha Pi is the engineering technology honor society, and Alpha Eta Rho is available for aeronautical management technology students.

University Honors College. The College of Technology and Applied Sciences participates in the programs of the University Honors College, which provides enhanced educational experiences to academically superior undergraduate students. Participating students can major in any academic program. A description and the opportunities offered by the University Honors College can be found under "University Honors College," page 323.

Scholarships. Information and applications for academic scholarships for continuing students may be obtained by contacting departmental offices. Other scholarships may be available through the university Student Financial Assistance Office.

ROTC Students. Students pursuing a commission through either the Air Force or Army ROTC programs are required to take from 12 to 20 semester hours of courses in the Department of Aerospace Studies or Department of Military Science. To preclude excessive overloads, these students should plan on at least one additional semester to complete degree requirements. Because of accreditation requirements, aerospace studies (AES) or military science (MIS) courses are not accepted in the engineering technology majors.

ENGINEERING TECHNOLOGY CORE (ETC)

ETC 100 Languages of Technology. (4) F, S
Introduction to computer aided design, programming, modeling and technical documentation. Lecture/lab. *General Studies: CS*

ETC 201 Applied Electrical Science. (4) F, S, SS
Principles of electricity, passive elements and AC/DC circuit analysis. Laboratory exploration of circuits using instrumentation and the computer as tools. Lecture/lab. Prerequisites: ETC 100, MAT 170. PHY 112, 114.

ETC 211 Applied Engineering Mechanics: Statics. (3) F, S
Vectors, forces and moments, force systems, equilibrium analysis of basic structures and structural components, friction, centroids and moments of inertia. Prerequisites: MAT 260, PHY 111, 113.

ETC 340 Applied Thermodynamics and Heat Transfer. (3) F, S
Thermodynamic systems and processes, first and second laws of thermodynamics, properties of pure substances, and applications to heat engines and special systems. Fundamentals of conduction, radiation, and convection. Prerequisites: MAT 261, PHY 112, 114.

Department of Aeronautical Management Technology

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PURPOSE

Graduates are prepared for entry into the aviation and aerospace industry in productive, professional employment or, alternatively, for graduate study. Curricula emphasize principles underlying the application of technical knowledge as well as current technology, preparing the graduate to adapt to the rapid and continual changes in aviation and aerospace technology.

ADMISSION

New and transfer students who have been admitted to the university and who meet the requirements for admission to the College of Technology and Applied Sciences may be admitted without separate application to the Department of Aeronautical Management Technology. Students are cleared for enrollment in Airway Science Flight Management flight courses on a competitive basis. Transfer credits are reviewed by department faculty advisors. To be acceptable for department credit, transfer courses must be equivalent in both content and level of offering.

DEGREES

The faculty in the Department of Aeronautical Management Technology offer a B.S. degree in Aeronautical Management Technology with concentrations in airway science flight management and airway science management. A B.A.S. degree in Applied Science is also offered with concentrations in aviation maintenance management technology and aviation management technology.

A Master of Science in Technology degree is offered for graduate study. For more information, see the *Graduate Catalog*.

**AERONAUTICAL MANAGEMENT TECHNOLOGY—
B.S.**

The Aeronautical Management Technology curricula are designed to provide a thorough technical background combined with an interdisciplinary general university education. The graduate is prepared to assume responsibilities in a wide area of managerial and technically related areas of aviation. The student gains a background in aircraft structures, reciprocating and turbine engines, aircraft performance and design, management skills, business principles, systems analysis, and a variety of course work specific to aircraft flight, airport operations, and air transportation systems. The degree offers two concentrations, airway science flight management and airway science management, both of which have the approval of the Federal Aviation Administration as Airway Science programs. The concentrations are described separately on the following pages.

All degree requirements are shown on curriculum check sheets for the concentrations that are available through the department. Requirements include First Year Composition, university General Studies (see "General Studies," page 87), and the Aeronautical Management Technology Core. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. Refer to individual concentration degree requirements for additional required courses. Students must complete each Aeronautical Management Technology course with a grade of "C" or higher.

Aeronautical Management Technology Core

AMT 101 Introduction to Aeronautical Management Technology	1
AMT 182 Private Pilot Ground School	3
AMT 201 Air Traffic Control	3
AMT 220 Aviation Meteorology	3
AMT 280 Aerospace Structures, Materials, and Systems	4
AMT 287 Aircraft Powerplants	4
AMT 308 Air Transportation Ground School	3
AMT 396 Aviation Professionalism	1
AMT 410 Aviation Safety and Human Factors	3
AMT 442 Aviation Law/Regulations	3
ETC 100 Languages of Technology CS	4
ETC 201 Applied Electrical Science	4
Total	36

Airway Science Flight Management Concentration

Flight training is certified by the Federal Aviation Administration. Students in the airway science flight management concentration must pass an FAA medical examination before flying solo. While this physical examination is not required for admission to the program, it must be completed before flying solo as the medical certificate becomes the student pilot certificate. An FAA Class II medical examination is required to complete the certificates and ratings necessary to meet graduation requirements. It is recommended that a Class I FAA medical examination be completed by an aviation medical examiner of the student's choice before the start of classes.

Airway science flight management combines academic studies and flight training to prepare graduates for a wide variety of positions within the air transportation industry,

including general, airline, and military aviation. Ground school and flight training are available, allowing the student to obtain private pilot, commercial pilot, and flight instructor certificates and also the instrument pilot, instrument instructor, and multiengine pilot ratings. Type rating in the Boeing 737 airliner is an available option.

This curriculum concentrates on flying plus the technical management and computer related applications necessary to operate in the high density environment of modern airspace. The program also emphasizes critical thinking, analytical skills, and oral and written communication skills. A career in airway science flight management leads to the development, administration, and enforcement of safety regulations, including airworthiness and operational standards in civil aviation. The airway science flight management concentration is approved by the Federal Aviation Administration as an airway science program.

While enrolled at ASU, students do not receive college credit for flight activity or instruction received at flight schools other than those entities with which the university has currently contracted for such instruction. Consideration is given for flight experience received before enrollment at the university through the private pilot certificate only.

Flight instruction costs are not included in university tuition and fees. The estimated cost of flight training is \$35,000 in addition to normal university costs.

Degree Requirements

Airway science flight management students are required to complete 128 semester hours with a 2.00 cumulative GPA, including a minimum of 50 semester hours of upper-division courses. All degree requirements are shown on the student's curriculum check sheet.

Course Requirements

In addition to the required courses for First Year Composition, university General Studies (see "General Studies," page 87), and the Aeronautical Management Technology core, the following additional courses are required for the airway science flight management concentration:

AET 300 Aircraft Design I	3
AMT 100 Flight Safety I	1
AMT 200 Flight Safety II	2
AMT 214 Commercial/Instrument Ground School I	3
AMT 300 Flight Safety III	2
AMT 322 Commercial Instrument Ground School II	3
AMT 382 Air Navigation	3
AMT 385 Flight Instructor Ground School	3
AMT 387 Multiengine Pilot Ground School	1
AMT 392 Flight Instructor Instrument Ground School	2
AMT 400 Flight Safety IV	1
AMT 408 National Aviation Policy	3
AMT 444 Airport Management and Planning	3
AMT 482 Airline Instrument Procedures	3
AMT 489 Airline Administration	3
AMT 496 Airline Aircraft Systems Capstone	3
IMC 346 Management Dynamics	3
Technical electives	6
Total	48

NOTE: For the General Studies requirement courses and codes such as L, SQ, C, and H, see "General Studies" page 87. For graduation requirements, see University Graduation Requirements, page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see Classification of Courses, page 60.

Suggested Course Pattern for Freshmen

First Semester

AMT 101 Introduction to Aeronautical Management Technology	1
AMT 182 Private Pilot Ground School	3
AMT 220 Aviation Meteorology	3
ENG 101 First Year Composition	3
MAT 170 Precalculus MA	3
Total	13

Second Semester

AMT 100 Flight Safety I	1
AMT 214 Commercial/Instrument Ground School I	3
ENG 102 First Year Composition	3
ETC 100 Languages of Technology CS	4
MAT 260 Technical Calculus I MA	3
PHY 111 General Physics SQ*	3
PHY 113 General Physics Laboratory SQ*	1
Total	18

* Both PHY 111 and 113 must be taken to secure SQ credit

Airway Science Management Concentration

The airway science management concentration is designed to prepare graduates for managerial and supervisory positions throughout the air transportation industry. An in-depth technical education is included along with broad exposure to business and management courses. This program of study is interdisciplinary in nature and prepares the aeronautical career-oriented student for positions such as air traffic control specialist, air carrier manager, airport manager, and general aviation operations manager.

Degree Requirements

Airway science management students are required to complete 128 semester hours with a 2.00 cumulative GPA, including a minimum of 50 semester hours of upper division courses. All degree requirements are shown on the student's curriculum check sheet.

Course Requirements

In addition to the required courses for First Year Composition, university General Studies (see "General Studies," page 87), and the Aeronautical Management Technology core, the following additional courses are required in the airway science management concentration

ACC 230 Uses of Accounting Information I	3
AMT 408 National Aviation Policy	3
AMT 444 Airport Management and Planning	3
AMT 489 Airline Administration	3
AMT 491 Aviation Management Capstone	3
IMC 346 Management Dynamics	3
ITM 343 Occupational Safety and Ergonomics	3
ITM 430 Ethical Issues in Technology	3
ITM 452 Industrial Human Resource Management	3
ITM 456 Introduction to Organized Labor	3
ITM 480 Organizational Effectiveness	3
Technical electives	15
Total	48

Suggested Course Pattern for Freshmen

First Semester

AMT 101 Introduction to Aeronautical Management Technology	1
AMT 182 Private Pilot Ground School	3
AMT 220 Aviation Meteorology	3

ENG 101 First Year Composition	3
MAT 170 Precalculus MA	3
Total	13

Second Semester

ENG 102 First Year Composition	3
ETC 100 Languages of Technology CS	4
MAT 260 Technical Calculus I MA	3
PHY 111 General Physics SQ*	3
PHY 113 General Physics Laboratory SQ*	1
General Studies elective	3
Total	17

* Both PHY 111 and 113 must be taken to secure SQ credit.

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a "capstone" degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare students for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper division (300 level and above) courses, with 30 hours in residence

A.A.S. degree transfer	60
Assignable credit	6
B.A.S. core	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (LCS and awareness areas) are met with courses in the core or specialization. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core is focused on management and organization, professional communication, quantitative analysis, and computer competency.

CGC 494 ST. Computer Systems Applications	3
IMC 346 Management Dynamics	3
or ITM 344 Industrial Organization (3	
or ITM 452 Industrial Human Resource	
Management (3)	
IMC 470 Project Management	3
STP 420 Introductory Applied Statistics CS.....	3
TWC 400 Technical Communications L.....	3
Total	15

Technical Concentrations

Aviation Maintenance Management Technology. This concentration is for those students who have completed an airframe and powerplant certification as part of their A.A.S. degree. Students receive an orientation in management practices that prepares them for progressively more responsible positions in the field of aviation maintenance management.

Aviation Management Technology. This concentration is for those students who have received training and education in some aspect of the air transportation industry (other than aviation maintenance), such as flight certificates and ratings as part of their A.A.S. degree. Students receive an orientation in management practices that prepares them for progressively more responsible positions in the field of aviation management.

STUDENT ORGANIZATIONS

The department hosts the local chapter of Alpha Eta Rho, an international professional aviation fraternity open to all students with an interest in aviation. The American Association for Airport Executives is open to all students with an interest in airport management. The Student Advisory Council is a leadership organization that facilitates student communication with faculty, departmental leaders, and university administrative personnel. The Precision Flight Team competes in regional and national flying safety competitions.

AERONAUTICAL MANAGEMENT TECHNOLOGY (AMT)

Flight instruction costs are not included in university tuition and fees

- AMT 100 Flight Safety I.** (1) F, S, SS
Supervised private pilot flight training and flight safety briefings. Continuous enrollment until completion of the FAA Private Pilot Certificate. Lecture, lab. Corequisite: AMT 182 or 220 or equivalent
- AMT 101 Introduction to Aeronautical Management Technology.** (1) F, S
Facilitates entry into Aeronautical Management Technology programs. Emphasizes *General Catalog* and concentration requirements, registration, careers, and ASU East facilities.
- AMT 182 Private Pilot Ground School.** (3) F, S
Ground school preparation for Private Pilot Certificate. Aerodynamics, navigation, performance, and regulations. Lecture, lab. Corequisite: AMT 220.
- AMT 200 Flight Safety II.** (2) F, S, SS
Supervised commercial instrument flight training and safety briefings. Continuous enrollment required until completion of FAA Commercial Pilot Certificate with Instrument Rating. Lecture, lab. Prerequisites: AMT 100; Private Pilot Certificate. Pre- or corequisite: AMT 214 or 322

- AMT 201 Air Traffic Control.** (3) F
Ground and air operations; weather services communications and routing, flight plans, IFR operations, departures and arrivals and airport conditions and emergencies. Prerequisite: AMT 182
- AMT 214 Commercial Instrument Ground School I.** (3) S
Ground school leading to FAA Instrument Pilot Rating/Commercial Pilot Certificate (part 1 of 2). 10 hours ground training included. Lecture, lab. Pre- or corequisites: AMT 182, 220.
- AMT 220 Aviation Meteorology.** (3) F, S
Evaluation, analysis, and interpretation of atmospheric phenomena. Low and high-altitude weather from the pilot's viewpoint. Corequisite: AMT 182
- AMT 280 Aerospace Structures, Materials, and Systems.** (4) F
Basic aerodynamics, aerospace vehicle structures, materials, and systems inspection requirements and methods. Lecture, lab. Prerequisite: PHY 111, 113.
- AMT 287 Aircraft Powerplants.** (4) S
Theory and performance analysis of gas turbine and reciprocating aircraft engines. Engine accessories, systems, and environmental control. Lecture, lab. Prerequisite: AMT 280
- AMT 300 Flight Safety III.** (2) F, S, SS
Supervised instructor flight training and safety briefings. Continuous enrollment required until completion of FAA Flight Instructor Certificate with Instrument Instructor Rating. Lecture, lab. Prerequisite: AMT 200. Pre- or corequisite: AMT 385
- AMT 308 Air Transportation.** (3) F
Study of the historical and international development of air transportation and its social, political, and economic impact upon global interrelationships. Prerequisite: junior standing. *General Studies: G.*
- AMT 322 Commercial Instrument Ground School II.** (3) F
Ground school leading to FAA Instrument Pilot Rating/Commercial Pilot Certificate (part 2 of 2). 10 hours ground training included. Lecture, lab. Prerequisite: Private Pilot Certificate. Pre- or corequisite: AMT 214
- AMT 360 Introduction to Helicopter Technology.** (3) N
Introduction to the working functions of modern rotary wing aircraft. Rotary wing flight theory, aerodynamics, controls, flight and power requirements. Prerequisites: PHY 111, 113
- AMT 370 Air Freight Operations.** (3) F
Air freight operations in National Aviation System: ramp operations, loading, weight and balance, and administration of airside and ground side operations. Prerequisite: junior standing
- AMT 382 Air Navigation.** (3) S
Theory and application of modern advanced navigation and flight instrument systems. Introduction to crew resource management in multiplace cockpits. Lecture, lab. Prerequisite: AMT 322
- AMT 385 Flight Instructor Ground School.** (3) S
Ground school preparation for the FAA Flight Instructor Certificate. Lecture, lab. Pre- or corequisite: AMT 300
- AMT 387 Multiengine Pilot Ground School.** (1) S
Ground school preparation for the FAA Multiengine Rating. Lecture, lab. Pre- or corequisite: AMT 200 or instructor approval
- AMT 391 Multiengine Instructor Ground School.** (2) N
Ground school preparation for the FAA Multiengine Flight Instructor Rating. Lecture, lab. Prerequisites: AMT 300, 387, 400
- AMT 392 Flight Instructor Instrument Ground School.** (2) F
Ground school preparation for the FAA Instrument Flight Instructor Rating. Prerequisite: AMT 300
- AMT 395 Multiengine Land, Airplane Flight Instructor Rating.** (1) N
Norma and emergency flight operations, instruction techniques and procedures for multiengine and airplane. CFIAME Rating required for course completion. Lecture, lab. Prerequisite: AMT 391
- AMT 396 Aviation Professional.** (1) F
Career focus for management and flight students, including internship, resume writing, interviews, and employment search in aviation industry. Prerequisite: junior standing

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see *General Studies*, page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

AMT 400 Flight Safety IV. (1) F S, SS

Multitasking and crew training and safety briefings. Continuous enrollment requirement. Competency on of rating and multicrew training. Lecture/lab. Prerequisite: AMT 300. Pre- or corequisite: AMT 387.

AMT 408 National Aviation Policy. (3) F

Examination of aviation and aerospace policies and policy process, including agencies involved in formulation, implementation, and evaluation of aviation policy. Prerequisite: AMT 308.

AMT 409 Nondestructive Testing and Quality Assurance. (1) N

Purpose of inspection and quality assurance. Theory and application of nondestructive inspection methods. Application of pertinent standards, specifications, and codes. Lecture, lab. Cross-listed as AET 409. Credit is awarded for only AET 409 or AMT 409. Prerequisite: AMT 280 or MET 230.

AMT 410 Aviation Safety and Human Factors. (3) F

Aviation accident prevention: human factors, life support, fire prevention, accident investigation, and crash survivability. Development and analysis of aviation safety programs. Prerequisite: junior or standing; completion of 1 semester of L1 requirement.

AMT 412 Air Transportation Research. (1) F

Survey of practical research methodology in use in the air transportation industry. Topics include production and design considerations.

AMT 419 Aviation Logistical Management. (3) S

Survey of FAA requirements for personnel and facilities. Topics include parts supply, quality control, product ability, pricing, profitability, and administration. Lecture, lab. Prerequisite: junior standing.

AMT 442 Aviation Law Regulations. (3) F

Aviation within context of U.S. Common Law system. Public law, administrative rule making, sovereignty, enforcement, and case analysis. Prerequisite: junior or standing.

AMT 444 Airport Management and Planning. (3) S

Orientation to administration and management of modern public airports. Including overview of planning, funding, and development of airport facilities. Prerequisite: AMT 308.

AMT 482 Airline Instrument Procedures. (3) F

Advanced instrument flight using a airline instrument procedures and airline crew and cockpit resource management. Lecture, lab. Prerequisites: AMT 322, 382.

AMT 484 Aeronautical Internship. (1-12) F S, SS

Work experience assignment with aerospace industry commensurate with student's program. Specific project guidance by industry with university supervision. Prerequisites: advisor approval, junior or standing.

AMT 489 Airline Administration. (3) S

Administrative organizations, economics of airline administration, operational structure, and relationship with federal government agencies. Prerequisites: AMT 308, instructor approval.

AMT 491 Aviation Management Capstone. (3) S

Integration and overview of management topics, current business problems and topics related to aviation industry. Group project with industry and government and business partners. Prerequisite: senior or standing.

AMT 496 Airline Aircraft Systems Capstone. (3) S

Commercial airline aircraft systems and flight procedures. Includes theoretical education for large commercial passenger aircraft. Lecture/lab. Prerequisite: senior or standing.

AMT 521 Air Transportation Regulation. (3) N

Reviews evolutionary history of government regulations. Explores alternatives for economic, safety, social, and administrative regulatory reform in air transportation. Prerequisite: AMT 444 or 489 or equivalent.

AMT 523 Aviation Systems Management. (3) N

Systems theory applied to intermodal transportation networks. Survey of air and ground transportation infrastructure, institutional frameworks, and intermediaries promoting connections between modes. Prerequisite: AMT 444 or 489 or equivalent.

AMT 525 Airport Planning and Design. (3) N

Students complete various phases of airport master planning process. Provide guidance for log cabin and timely development of reports. Project work groups assigned. Prerequisite: AMT 444 or 489 or equivalent.

AMT 527 Airline Management Strategies. (3) N

Recent deregulation in airlines have undergone profound changes through mergers, consolidation, and acquisition. In-depth look at airline management strategies for the 21st century. Prerequisite: AMT 444 or 489 or equivalent.

AMT 528 International Aviation. (3) N

Major issues of international aviation. Historical review of institutional framework. Bilateral route agreements, freedom versus sovereignty, current legal and political arrangements. Prerequisite: AMT 444 or 489 or equivalent.

AMT 529 Fixed-Base Operations Management. (3) N

Examination of FBO role in the national aviation system. Organization of flight operations, aircraft maintenance, and administration for multiple aircraft types. Prerequisite: AMT 444 or 489 or equivalent.

AMT 541 Aviation Physiology. (3) N

Survey of human physiology and human performance principles related to modern aircraft and aircraft systems operating in multiple environments. Prerequisite: AMT 410 or equivalent.

AMT 543 Ergonomics in High-Technology Environments. (3) N

Examination of ergonomic design principles regarding man-machine interface requirements of high technology workstations. Emphasis on computer workstation design issues. Prerequisite: AMT 410 or equivalent.

AMT 545 Human Factors in Aviation. (3) N

Overview of human role in aviation issues, problems of unsafe acts and attitudes in human behavior. Human engineering capabilities and limitations. Prerequisite: AMT 410 or equivalent.

AMT 546 Crew Resource Management Line-Oriented Flight Training. (3) N

Evaluation of in-depth multicrew coordination issues for commercial aviation pilots. Stresses importance of critical thinking decision-making, integrated resource utilization. Prerequisite: AMT 410 or equivalent.

AMT 547 Modern Human Factors Design Issues. (3) N

Research and discussion of current human factors issues. State of the art analyses of information regarding rapidly evolving designs and applications. Prerequisite: AMT 410 or equivalent.

AMT 549 Human Factors Research. (3) N

Aviation human factors research principles applied and tested in operational settings. Group projects assigned in conjunction with industry partners. Prerequisite: AMT 410 or equivalent.

Department of Electronics and Computer Engineering Technology

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PURPOSE

The Department of Electronics and Computer Engineering Technology prepares graduates to apply scientific and engineering knowledge, methods, and techniques in support of technological applications in electronics and computer engineering activities and processes.

The engineering technology curriculum is applications oriented and builds upon a background of applied science and mathematics, including the concepts and applications of calculus. Graduates are prepared to produce practical, workable, and safe solutions to technologically challenging problems. Graduates are employed in the electronics and com

puter industries with responsibilities such as designing, installing and operating technical systems, configuring hardware and software systems for unique applications, developing and producing products, managing manufacturing processes, and providing customer support for technical products and systems.

DEGREES

The faculty in the Department of Electronics and Computer Engineering Technology offer the B.S. degree in Electronics Engineering Technology (B.S./EET) and the B.S. degree in Computer Engineering Technology (B.S. CET).

Electronics Engineering Technology—B.S.

For students holding an A.A.S. degree, the department offers the B.A.S. degree with a major in Applied Science Five concentrations are available: computer systems administration, instrumentation, microcomputer systems, semiconductor technology, and software technology applications.

A Master of Science in Technology degree program with concentrations in electronics engineering technology, computer systems engineering technology, instrumentation and measurement technology, and microelectronics engineering technology is available for qualified B.S. graduates. See the *Graduate Catalog* for more information

Three concentrations are available in electronics engineering technology: electronic systems, microelectronics, and telecommunications.

The *electronic systems* concentration is aimed at preparing persons for careers in control, electronics, instrumentation, and power systems applications. This concentration allows a student to develop a broad based knowledge of electrical/electronic fundamentals with an applications perspective.

The *microelectronics (UET)* concentration combines applied electronics, monolithic and hybrid integrated circuit processing and applications, device and component fabrication, and manufacturing. The objective of this concentration is to prepare persons to assume positions in the area of microelectronics manufacturing with immediately applicable knowledge as well as to develop a strong foundation of electronic fundamentals and methods. Graduates of this concentration secure positions in processing, manufacturing operations, and applications areas in industry as members of the diverse scientific engineering team.

The *telecommunications* concentration encompasses the fundamentals of information and signal processing, modern bandwidth efficient digital radio analysis with RF and microwave circuits and systems. Applications include telephone pulse code modulation, cable TV, fiber optic links, and satellite transmission circuits and systems.

The departmental curriculum is organized into two categories, technical studies and General Studies. Technical studies consist of core areas and the concentration specialty area. General Studies consist of courses selected to meet the university General Studies requirement (see "General Studies," page 87) as well as the math/science requirement of TAC of ABET. Note that all three General Studies

awareness areas are required. Consult your advisor for an approved list of courses

A minimum of 50 upper-division hours is required, including at least 24 semester hours of EET, CET, or UET upper division hours to be taken at ASU. A minimum of 128 semester hours with a 2.00 cumulative GPA is required for graduation. Complete program of study guides with typical four year patterns are available from the department.

The General Studies portion of the B.S./EET curriculum has been carefully structured to meet the specific requirements of the university and to include the content required by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, the professional accrediting agency for such curricula.

ELECTRONICS ENGINEERING TECHNOLOGY—B.S. DEGREE REQUIREMENTS

In addition to the courses listed for First Year Composition and university General Studies, the following courses are required.

ENGINEERING TECHNOLOGY CORE

The following courses are required as part of the engineering technology core:

ETC 100	Languages of Technology CS	4
ETC 211	Applied Engineering Mechanics: Statics	3
ETC 340	Applied Thermodynamics and Heat Transfer	3

Total10

Electronics Engineering Technology Core Requirements

CET 150	Digital Systems I CS	4
CET 256	C Programming for Engineering Technology	3
CET 350	Digital Systems II	4
CET 354	Microcomputer Architecture and Programming	4
EET 208	Electric Circuit Analysis I	4
EET 301	Electric Circuit Analysis II	4
EET 310	Electronic Circuits I	4
EET 372	Communication Systems	4
EET 396	Professional Orientation*	1
EET 407	Energy Conversion and Applications	4
EET 410	Electronic Circuits II	3
UET 331	Electronic Materials	3
UET 415	Electronic Manufacturing Engineering Principles	3

Total45

* Students must take EET 396 the semester in which they are enrolled in the 87th hour of credit (ASU plus transfer hours). If this occurs in summer session, students should take EET 396 the prior spring semester

Electronics Engineering Technology Concentrations

Electronic Systems		
CET 483	UNIX with C Applications	3
EET 406	Control System Technology	4
EET 430	Instrumentation Systems	4
EET 460	Power Electronics	4
Approved technical electives		8
Total		23

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C and H) see "General Studies" page 87 For graduation requirements, see "University Graduation Requirements" page 83 For an explanation of additional courses offered but not listed in this catalog, see "Classification of Courses," page 60.

Microelectronics

CHM 116 General Chemistry SQ	4
UET 416 Monolithic Integrated Circuit Devices	3
UET 417 Monolithic Integrated Circuit Laboratory	2
UET 418 Hybrid Integrated Circuit Technology	4
UET 421 Applied Device Physics	3
UET 432 Semiconductor Packaging and Heat Transfer	3
Approved technical electives	4
Total	23

Telecommunications

CET 473 Digital/Data Communications	4
EET 304 Microwave Technology	4
EET 401 Digital Filters and Applications	3
EET 470 Communication Circuits	4
Approved technical electives	8
Total	23

**Electronics Engineering Technology
Program of Study
Typical First- and Second-Year Sequence**

First Year

First Semester

CET 150 Digital Systems I CS	4
ENG 101 First Year Composition	3
MAT 170 Precalculus MA	3
PHY 111 General Physics SQ ¹	3
PHY 113 General Physics Laboratory SQ ¹	1
Total	14

Second Semester

ENG 102 First Year Composition	3
ETC 100 Languages of Technology CS	4
MAT 260 Technical Calculus I MA	3
PHY 112 General Physics SQ ²	3
PHY 114 General Physics Laboratory SQ ²	1
HU, SB, or awareness area course	3
Total	17

Second Year

First Semester

CET 256 C Programming for Engineering Technology	3
CHM 113 General Chemistry SQ	4
ECN 111 Macroeconomic Principles SB	3
EET 208 Electric Circuit Analysis I	4
MAT 261 Technical Calculus II MA	3
Total	17

Second Semester

EET 301 Electric Circuit Analysis II	4
ETC 211 Applied Engineering Mechanics: Statics	3
MAT 262 Technical Calculus III MA	3
L1 course	3
HU, SB, or awareness area course	3
Total	16

¹ Both PHY 111 and 113 must be taken to secure SQ credit.

² Both PHY 112 and 114 must be taken to secure SQ credit.

**COMPUTER ENGINEERING TECHNOLOGY—
B.S. DEGREE REQUIREMENTS**

Students interested in the B.S. degree in Computer Engineering Technology (B.S. CET) may choose to specialize in one of the following three concentrations: computer engineering technology, software engineering technology, and software technology.

The *computer engineering technology* concentration is designed to provide students with an opportunity to develop a broad based knowledge and skills in digital systems, interfacing techniques and computer hardware applications.

The *software engineering technology* concentration is intended to prepare students for the application, interconnection and use of computer hardware systems and the implementation of hardware software solutions.

The *software technology* concentration prepares students for careers in software applications using object oriented programming techniques and languages to design programs and to modify and adapt programs for existing systems.

Each student must satisfy the courses listed for First Year Composition and the university General Studies requirement. In addition, the following courses are required.

Lower-Division Core

CET 100 Object Oriented Software Development I	3
CET 150 Digital Systems I CS	4
CET 230 Applied Data Structures	3
CET 256 C Programming for Engineering Technology	3
EET 208 Electric Circuit Analysis I	4
ETC 100 Languages of Technology CS	4
Core total	21

Major

CET 350 Digital Systems II	4
CET 354 Microcomputer Architecture and Programming	4
CET 456 Assembly Language Applications	3
CET 483 UNIX with C Applications	3
CET 486 Hardware Description Languages VHDL	3
CET 494 ST: Computer Project	3
EET 396 Professional Orientation	1
Total	21

Computer Engineering Technology Concentration

CET 452 Digital Logic Applications	4
CET 454 Microcontrollers	3
CET 457 Microcomputer Systems Interfacing	4
CET 473 Digital/Data Communications	4
CHM 113 General Chemistry SQ	4
EET 301 Electric Circuit Analysis II	4
EET 310 Electronic Circuits I	4
EET 372 Communication Systems	4
UET 331 Electronic Materials	3
Technical electives	5
Total	39

Software Engineering Technology Concentration

CET 200 Object Oriented Software Development II	3
CET 300 Object Oriented Software Development III	3
CET 386 Operating Systems Principles	3
CET 452 Digital Logic Applications	4
CET 457 Microcomputer Systems Interfacing	4
CET 473 Digital/Data Communications	4
CET 488 UNIX Systems Administration	3
CHM 113 General Chemistry SQ	4
EET 301 Electric Circuit Analysis II	4
Technical electives	7
Total	39

Software Technology Concentration

CET 200 Object Oriented Software Development II	3
CET 236 Introduction to Visual BASIC	3
CET 300 Object Oriented Software Development III	3
CET 326 Modern Programming Languages	3
CET 386 Operating Systems Principles	3
CET 400 Software Engineering Technology	3

CET 425 Systems Programming	3
CET 488 UNIX Systems Administration	3
CET 489 Network Programming	3
Technical electives	12
Total	39

**Computer Engineering Technology
Program of Study
Typical First- and Second-Year Sequence**

First Year

First Semester

CET 100 Object Oriented Software Development I	3
ENG 101 First Year Composition	3
MAT 170 Precalculus MA	3
PHY 111 General Physics SQ ¹	3
PHY 113 General Physics Lab SQ ¹	1
Total	13

Second Semester

CET 200 Object Oriented Software Development II	3
ENG 102 First Year Composition	3
ETC 100 Languages of Technology CS	4
MAT 260 Technical Calculus I MA	3
PHY 112 General Physics SQ ²	3
PHY 114 General Physics Lab SQ ²	1
Total	17

Second Year

First Semester

CET 150 Digital Systems CS	4
CET 230 Applied Data Structures	3
CET 256 C Programming for Engineering Technology	3
CHM 113 General Chemistry SQ	4
MAT 261 Technical Calculus II	3
Total	17

Second Semester

CET 300 Object Oriented Software Development III	3
CET 350 Digital Systems II	4
ECN 111 Macroeconomic Principles SB	3
EET 208 Electric Circuit Analysis I	4
MAT 243 Discrete Mathematical Structures	3
or MAT 262 Technical Calculus III MA (3)	
Total	17

¹ Both PHY 111 and 113 must be taken to secure SQ credit.
² Both PHY 112 and 114 must be taken to secure SQ credit.

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper division (300-level and above) courses, with 30 hours in residence.

A.A.S. degree transfer	60
Assignable credit	6
B.A.S. core	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (L/CS and awareness areas) are met with courses in the core or specialization. General Studies courses focus on contextual learning

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

CET 300 Object Oriented Software Development III	3
CGC 352 Technical Presentations and Visual Literacy	3
EET 494 ST. Data Analysis	3
IMC 346 Management Dynamics	3
TWC 400 Technical Communication L	3
Total	15

Technical Concentrations

Computer Systems Administration. This concentration is designed to broaden and provide more in-depth knowledge in computer networks. Graduates from this concentration will be prepared to specify, install, maintain, and administer various computer networking systems.

Instrumentation. This concentration studies instrumentation, power systems, and computer systems. The curriculum prepares the graduate to specify and prepare solutions for a wide variety of electrical and electronic instrumentation systems. Graduates from this concentration are primed for technical leadership positions in the various segments of the electronics industry.

Microcomputer Systems. This concentration prepares graduates for product specification and marketing positions in microcomputer applications. The B.A.S. degree provides

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additional technical skills in microcomputer systems to prepare graduates for responsible and productive positions in the support of computer systems.

Semiconductor Technology. This concentration prepares graduates for careers in the semiconductor industry. The B.A.S. degree provides graduates with an understanding of integrated circuit processing, mask making, packaging, and the software tools used in this industry.

Software Technology Applications. This concentration prepares graduates for careers in the software industry. The B.A.S. degree furnishes additional technical expertise in software technology to prepare graduates to design, specify, and provide software solutions for industry and the consumer market. This concentration also prepares graduates for computer systems and network administration careers.

COMPUTER ENGINEERING TECHNOLOGY (CET)

CET 100 Object-Oriented Software Development I. 3 F
Basic concepts of OO analysis, design and programming using JAVA. Studies main features of software development in an OO framework. Prerequisite: freshman standing.

CET 150 Digital Systems I. 4 F S
Number systems, Boolean algebra, combinatorial logic, K maps, flip flops, sequential circuits, state machines, and minimization techniques. *General Studies CS*

CET 200 Object-Oriented Software Development II. (3 F
Continuation of CET 100. Object modeling, task scripts, and use cases; the dynamic model, interaction diagrams, and other OO concepts. Prerequisite: CET 100.

CET 230 Applied Data Structures. (3 F
Introduction to data structures: strings, stacks, queues, binary trees, recursion, searching, and sorting. Prerequisite: CET 100.

CET 236 Introduction to Visual BASIC. 3 F
Introduction to BASIC and programming in the Visual BASIC environment. Prerequisite: CET 100.

CET 256 C Programming for Engineering Technology. 3 F S SS
Applied and practical problem solving using the C programming language. Prerequisite: ETC 100.

CET 300 Object-Oriented Software Development III. (3 F
Increases skills in OO concepts and present C++. Covers JAVA concepts of threads, serialization, and JAVA Beans. C++ language concepts. Prerequisites: CET 200, 256.

CET 326 Modern Programming Languages. (3) F
Concepts and semantics and syntactical construction of modern programming languages. Prerequisite: CET 200.

CET 350 Digital Systems II. 4 F
Analysis and design of synchronous and asynchronous state machines. Introduction to VHDL. Lecture, lab. Prerequisite: CET 150.

CET 354 Microcomputer Architecture and Programming. 4) F S
Microcomputer architecture, assembly language programming, I/O considerations, exception and interrupt handling, introduction to interfacing. Prerequisite: CET 150.

CET 386 Operating Systems Principles. (3) S
Fundamentals of operating systems: process management, scheduling and synchronization, technical questions, memory and file management, protection and security issues. Prerequisite: CET 256.

CET 400 Software Engineering Technology. (3) S
Software life cycle models, project management, team development environments, software specification, design implementation, technical questions and tool validation, and maintenance. Ser documentation. Prerequisite: senior standing in Technology.

CET 425 Systems Programming. 3 F
Design and implementation of systems programs, including text editors, file utilities, monitors, assemblers, reocating linkers, loaders, O handlers, and schedulers. Prerequisite: CET 300.

CET 426 Software Tools for the Semiconductor Industry. 3 S
Introduction to software tools commonly used in the semiconductor industry, such as SUPREM V, PSP CE, V EWLOG C, and ICED. Cross-listed as UET 426. Credit is allowed for only CET 426 or UET 426. Prerequisite: UET 331.

CET 433 Database Technology. 3) F
Introduction to database technologies and DBMS: data models, and languages. Prerequisites: CET 230, 300.

CET 436 Applications of Visual Basic. 3 F
Applications of visual basic to graphics, graphical user interfaces, error handling, file processing, OO programming, DBMS, networking and multimedia. Prerequisite: CET 236.

CET 452 Digital Logic Applications. 4 S
Design of sequential machines using system design techniques and complex MSI/LS devices with lab. Prerequisite: CET 350.

CET 454 Microcontrollers. 3) S
Microcontroller input/output ports and advanced features. Microcontrollers as an embedded system and the interfacing considerations. Prerequisites: CET 350, 354.

CET 456 Assembly Language Applications. 3 F
Programming using BIOS and DOS routines. High-level language interfacing. Disk operations, TSR routines, and device drivers. Prerequisite: CET 354.

CET 457 Microcomputer Systems Interfacing. 4 S
Applications of microcomputer hardware and software. Specification, control, interface design. Lecture, lab. Prerequisites: CET 354, CSE 183, EET 310.

CET 458 Digital Computer Networks. (3 A
Network technology, topologies, protocols, control techniques, reliability, and security. Prerequisite: CET 354.

CET 473 Digital/Data Communications. 4 F
Signals, distortion, noise, and error detection/correction. Transmission and systems design, interface techniques and standards. Lecture, lab. Prerequisites: CET 354, EET 372.

CET 483 UNIX with C Applications. 3 F
Generate user proficiency in the use of the UNIX operating system, its shells, environment, and 4th generation language and tools. Prerequisite: senior standing in the ECET department or equivalent.

CET 485 Digital Testing Techniques I. 3 A
Hardware/software aspects of digital testing technology: systems board and on-circuit testing and equipment. Lecture, lab. Cross-listed as UET 485. Credit is allowed for only CET 485 or UET 485. Prerequisites: CET 350; EET 310.

CET 486 Hardware Description Languages: VHDL. 3 S
Introduction to hardware description languages using VHDL. Techniques for modeling and simulating digital systems using a VHDL simulator. Prerequisites: CET 350, 483.

CET 487 Hardware Description Languages: VERILOG. 3 F
Introduction to hardware description languages: digital modeling and simulation techniques using the VERILOG HDL. Prerequisites: CET 350, 354.

CET 488 UNIX Systems Administration. 3 F
Generate user proficiency in administration of UNIX operating system, its processes, system calls, kernel file structure, and interprocess communication tools. Prerequisites: CET 483 or equivalent; C or C++ language.

CET 489 Network Programming. 3 F
Generate user proficiency in writing C programs and scripts to control and administer a UNIX operating system network. Prerequisites: CET 473 and 488 or equivalent; C or C++ language.

CET 494 Special Topics. 1-4 N
a. Computer Project

CET 520 Computer Architecture. 3 F
The basics of computer architecture: RTN, RISC, CISC concepts, computer architecture, ALUs, memory systems, I/O. Prerequisite: CET 354.

CET 533 Database Management Systems. 3 F
Systems aspects of relational databases: relational database design, index and access structures, implementation and performance evaluation, query processing and optimization. Prerequisite: CET 433.

CET 546 Computer Vision. 3 S
Image segmentation and enhancement. Object recognition and modeling. Morphological operations for object recognition and measurement. Prerequisite: CET 300.

CET 552 Digital Systems Design. (3) S
Digital system design techniques and applications. Prerequisite: CET 452 or instructor approval.

CET 554 Distributed Computing. 3 S
Topics in distributed systems: networking communications, distributed operating systems, fault tolerance, and performance issues. Prerequisites: CET 354, 386.

CET 556 Windows Programming. 3 F
Programming techniques in the MS Windows and X Window environments. Prerequisite: CET 256 or equivalent

CET 557 Microcomputers and Applications. 3 F
Applications of small computer systems, main and microcomputer hardware and software. Prerequisites: CET 354 CSE 100 or 183 EET 310

CET 566 Principles and Practices of Operating Systems. 3) S
Principles and practices of operating systems: virtual memory systems, I/O devices and systems, file systems and organization and other topics. Prerequisite: CET 386

CET 576 Embedded Real-Time Programming. 3 F
Topics in real-time embedded operating systems such as synchronization, communications, file systems and memory sharing. Prerequisites: CET 300 386.

CET 583 Network Programming. (3) F
Generate user proficiency in writing C programs and scripts to control and administer a UNIX operating system network. Prerequisites: CET 473 and 488 or equivalents C or C++ language

CET 585 Digital Testing Techniques II. (3) F
Testing technology as applied to digital systems, boards, and chips. Lecture. Prerequisite: CET 354

CET 586 Digital Modeling Techniques. 3 S
Digital system modeling and simulation using hardware description languages. Prerequisites: CET 350, 354

ELECTRONICS ENGINEERING TECHNOLOGY (EET)

EET 208 Electric Circuit Analysis I. 4 F S
Electrical models: AC/DC steady state analysis of first and second order systems. Circuit theorems. Three phase circuits. Lecture/lab. Pre- or corequisite: MAT 261

EET 301 Electric Circuit Analysis II. 4 F, S
Analysis of continuous time signals and linear systems of using Laplace and Fourier response of circuits. Lecture/lab. Prerequisite: EET 208. Pre- or corequisite: MAT 262

EET 304 Microwave Technology. 4 A
Theory and applications of waveguide transmission lines, impedance measurements and matching microwave components: antennas, and fiber optics. Lecture/lab. Prerequisite: EET 301

EET 310 Electronic Circuits I. 4 F S
Multistage amplifier analysis, and design using modes and computer simulation. Lecture/lab. Prerequisite: EET 208

EET 372 Communication Systems. 4) F S
Systems analysis and design of AM, FM, PCM, and SSB communication systems. Noise and distortion on performance of communication systems. Lecture/lab. Pre- or corequisites: EET 301 310

EET 396 Professional Orientation. 1 F, S
Technical, professional, economic and ethical aspects of electronics/computer engineering technology practice and industry organization. Lecture/projects. Prerequisite: un or standing

EET 401 Digital Filters and Applications. 3 S
Analysis and design of digital filters. Time frequency and Z transform techniques and waveform analysis. Computer applications. Prerequisites: EET 301 MAT 262.

EET 406 Control System Technology. (4) S
Control system components, analysis of feedback control systems, stability, performance, and application. Lecture/lab. computer simulation. Prerequisites: EET 301; MAT 262

EET 407 Energy Conversion and Applications. 4 F
Electricity, magnetism, mechanics, heat and units, and three phase circuits. Electrical machines, transformers, generation, transmission, and distribution of electrical energy. Lecture/lab. Prerequisite: EET 208

EET 410 Electronic Circuits II. (3) F, S
Analysis and design of OP amps, power amplifiers, and digital logic families. Feedback design using frequency response. Computer analysis and design. Prerequisites: EET 301 310

EET 422 Electronic Switching Circuits. 4) A
Analysis and design of electronic circuits operating in a switching mode. Wave shaping, timing and logic. Computer simulation. Lecture/lab. Prerequisites: CET 350 EET 301 310

EET 430 Instrumentation Systems. 4 F
Measurement principles and instrumentation techniques. Signal and error analysis. Lecture/lab. Prerequisites: EET 3 1 310

EET 460 Power Electronics. (4) S
Analysis of circuits for control and conversion of electrical power and energy. Lecture/lab. Prerequisites: EET 301 310, 407.

EET 470 Communication Circuits. 4 S
Analysis and design of passive and active communication circuits. Coupling networks, filters and impedance matching. Modulation and demodulation techniques. Computer solutions. Lecture/lab. Prerequisites: EET 372 MAT 262

EET 478 Fiber Optic Communications. 3 S
Fiber optic communication systems analysis and design. Study of fiber optic waveguides, light sources, light detectors, non-synchronous detection. Prerequisites: EET 372 MAT 262

EET 482 Industrial Practice: Internship/Co-op. (1-4) F, S, SS
Specialty assigned or approved activities in electronics industries or institutions. Report required. May be repeated for up to a maximum of 10 credits. Prerequisites: Electronics Engineering Technology major, junior or senior standing.

EET 490 Electronics Project. 1-4) F, S, SS
Individual or small group projects in applied electronics with emphasis on laboratory practice or hardware solutions to practical problems. Prerequisite: instructor approval

EET 494 Special Topics. 3 F, S
a) Data Analysis

EET 500 Research/Writing. 2 F, S
Designed to help master's students develop their projects and write the first three chapters of their projects. Lecture, seminar. Prerequisite: instructor approval

EET 506 System Dynamics and Control. (3) S
Time frequency and transform domain analysis of physical systems. Transfer function analysis of feedback control systems performance and stability. Compensation. Prerequisite: EET 301 or MAT 262.

EET 508 Digital Real-Time Control. 3 A
Sample data control techniques and applications to process control. Prerequisites: CET 354 EET 406

EET 510 Linear Integrated Circuits and Applications. (3) F
Analysis, design and application of linear integrated circuits and systems. Prerequisites: CET 350, EET 301 310.

EET 522 Digital Integrated Circuits and Applications. (3) S
Analysis, design, and application of integrated circuits and systems. Prerequisites: CET 350 EET 301, 310

EET 530 Electronic Test Systems and Applications. 3) F
Analysis, design and application of electronic test equipment, test systems, specifications, and documentation. Prerequisites: CET 354 EET 301 310.

EET 560 Industrial Electronics and Applications. (3) S
Analysis, design and application of special electronic devices and systems to industry: control, power, communication and processes. Prerequisites: CET 350 EET 301 310 407

EET 574 Microwave Amplifier-Circuits Design. 3 F
Analysis and design of microwave amplifier-circuits using parameter theory and computer-aided design. Prerequisites: EET 304 470

EET 578 Digital Filter Hardware Design. 3) S
Hardware design of FIR and IIR filters including adaptive filters, based on DSP chips. Develop new applications using DSP microprocessor systems. Prerequisites: CET 354 EET 401

EET 579 Digital Image Communication. (3) S
Image capture, transform, compression, storage and transmission. Computer environment (software and hardware) is provided to emphasize the practical aspect. Prerequisite: EET 401 or instructor approval

EET 591 Graduate Seminar. 1 N

EET 593 Applied Project. 3) N

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**MICROELECTRONICS
ENGINEERING TECHNOLOGY (UET)**

- UET 331 Electronic Materials.** (3) F
Physical, chemical, electromagnetic, and mechanical properties of electronic materials. Solid-state device characteristics and the material properties. Prerequisites: CHM 113; EET 208 PHY 112, 114.
- UET 411 Applied Vacuum Technology.** (3) S
Fundamentals, applications, and practical aspects of vacuum systems and their uses in semiconductor fabrication. Prerequisite: UET 331
- UET 415 Electronic Manufacturing Engineering Principles.** (3) F, S
Electronic equipment design and fabrication principles and practice. Completion of electronics hardware design project and report. Lecture, lab. With lab fee. Prerequisite: EET senior standing (113 hours).
- UET 416 Monolithic Integrated Circuit Devices.** (3) F
Physics and electronics of bipolar and MOS devices used in integrated circuits. Prerequisite: UET 331. Corequisite: UET 417.
- UET 417 Monolithic Integrated Circuit Laboratory.** (2) F
Laboratory practice in the fabrication of integrated circuits. Lab. Prerequisite: UET 331. Corequisite: UET 416
- UET 418 Hybrid Integrated Circuit Technology.** (4) S
Layout, fabrication design, and manufacture of thin and thick film hybrid circuits. Lecture, lab. Prerequisites: EET 310, UET 331
- UET 421 Applied Device Physics.** (3) F
Band structures of solids; physics of current carriers in solids; pn junctions; MOS and bipolar transistors. Prerequisite: senior standing in the department
- UET 424 Integrated Circuit Mask Making Technology.** (3) F
Fundamentals, applications, and techniques for the fabrication of integrated circuit masks. Prerequisite: UET 331
- UET 426 Software Tools for the Semiconductor Industry.** (3) S
Introduction to software tools commonly used in the semiconductor industry such as SUPREM IV, PSPICE, VIEWLOGIC, and ICED. Cross-listed as CET 426. Credits allowed for only CET 426 or UET 426. Prerequisite: UET 331
- UET 432 Semiconductor Packaging and Heat Transfer.** (3) S
Packaging theory and techniques, hermetic and plastic assembly; thermal management; electrical characteristics and reliability. Prerequisites: ETC 340 and UET 331 or equivalents.
- UET 437 Integrated Circuit Testing.** (3) S
Principles, techniques, and strategies employed at wafer level and final product testing, both destructive and nondestructive. Prerequisite: UET 416
- UET 485 Digital Testing Techniques I.** (3) A
Hardware/software aspects of digital testing technology: systems, board and logic testing and equipment. Lecture, lab. Cross-listed as CET 485. Credit is allowed for only CET 485 or UET 485. Prerequisites: CET 350, EET 310.
- UET 513 VLSI Circuit Design and Layout.** (3) F
Techniques and practice for the design and layout of very large scale integrated (VLSI) circuits. Emphasis on "system on silicon" using tools for computer-aided design layout. Seminar. Prerequisite: UET 416.
- UET 516 Semiconductor Process Simulation and Integration.** (3) S
Modern IC processes and process integration; design of modern IC processes using SUPREM. Lecture. Lab. Prerequisite: UET 416
- UET 518 Hybrid IC Technology and Applications.** (3) S
Theory, processing, fabrication, and manufacturing of hybrid microelectronics devices and products. Applications. Prerequisite: UET 331 or equivalent or instructor approval
- UET 521 Device Physics.** (3) F
Band structure of solids; electron hole-pairs; mobility; lifetime; Fermi level; pn junctions, diodes and bipolar and MOS transistors. Prerequisite: graduate standing in the department
- UET 532 IC Packaging.** (3) S
IC packaging theory and techniques, assembly techniques, material issues, thermal management, electrical performance and reliability. Lecture, lab. Prerequisites: ETC 340 and UET 331 or equivalents

**Department of Information and
Management Technology**

Thomas E. Schildgen
Chair
(TECH 102) 480/727-1781
Fax 480/727-1684

PROFESSORS

DANEKE, DUFF, HILD, SADOWSKI, SCHLDGEN

ASSOCIATE PROFESSORS

GROSSMAN, HIRATA, HUMBLE, MATSON,
OLSON, PETERSON

SENIOR LECTURER

WILSON

LECTURER

DOLIN

PURPOSE

The mission of the department is to prepare graduates who are able to develop and communicate technological solutions to industrial problems, to manage systems operations, to improve and evaluate products, to provide customer support, and to facilitate technology transfer in industry and government. Increased complexity and sophistication have created great demand for those individuals who possess a working knowledge of the technical phases of planning, testing, production, and fabrication of consumer and industrial products and equipment. Technology includes the application of science, systematic methods, procedures, machines, communication protocols, and materials control for the development, improvement, and implementation of state-of-the-art solutions to industrial problems.

DEGREES

The faculty in the Department of Information and Management Technology offer the B.S. degree in Industrial Technology, with concentrations in the following areas: environmental technology management, industrial technology management, and information technology.

For students holding an A.A.S. degree the department offers the B.A.S. degree in Applied Science, with concentrations in digital media management, digital publishing, emergency management, fire service management, operations management technology, municipal operations management, and technical graphics.

A Master of Science in Technology degree is offered for graduate study. The department offers three concentrations for the graduate degree: environmental technology management, information technology, and management of technology. For more information about the graduate program, see the *Graduate Catalog*.

INDUSTRIAL TECHNOLOGY—B.S.

The curriculum consists of First Year Composition, university General Studies, and technical courses. Note that all three General Studies awareness areas are required. Consult

your advisor for an approved list of courses. The technical part of the curriculum includes a required Information and Management core, program concentration course work, and technical electives selected with approval of an advisor.

Information and Management Technology students are required to complete a minimum of 120 semester hours with a 2.00 cumulative GPA, including a minimum of 50 semester hours of upper division courses to graduate

Information and Management Core

ETC 100	Languages of Technology CS	4
IMC 233	Desktop Publishing and Infographics	3
IMC 331	Quality Assurance	3
IMC 346	Management Dynamics	3
IMC 396	Professional Orientation	1
IMC 470	Project Management	3
Total		17

Environmental Technology Management Concentration. The environmental technology management concentration provides graduates entering the field of industrial and hazardous waste management with the abilities and skills required to address environmental challenges. Graduates are prepared to conduct site assessments, select technologies for soil and ground water remediation, and design solutions to environmental problems for industries, regulatory agencies, and consulting firms.

Certificate Program in Hazardous Materials and Waste Management. The Certificate Program in Hazardous Materials and Waste Management is designed to provide current and prospective employees of industry and government with a comprehensive and practical curriculum of study in hazardous materials management. The certificate program features instruction by ASU faculty, attorneys, and professionals who work in the specific area in which they teach. Participation in the certificate program is available in three options: a certificate program for nondegree students, a B S degree in Industrial Technology with a Certificate in Hazardous Materials and Waste Management, and a Master of Science in Technology degree with a Certificate in Hazardous Materials and Waste Management. Students must complete seven selected courses (five required and two electives) and earn a grade of "C" or higher to receive the certificate. Except for the introductory course, ETM 501 Principles of Hazardous Materials and Waste Management, the remainder of the courses may be taken in any sequence.

Industrial Technology Management Concentration. The industrial technology management concentration prepares students for supervisory and administrative positions in industry, manufacturing, and public service organizations. Course work includes accounting, data analysis, economics, effective decision making, finance, international business, legal and ethical studies, marketing, operations management, and safety. Emphasis is placed on health and safety within the workplace.

The industrial technology management program may be articulated with a broad range of community college technical courses. Community college specializations in areas such as aeronautics, construction, electronics, fire science,

police science, graphic communications, hazardous materials and waste management, computer graphics, safety and health, human resource management, mortuary science, production management, and manufacturing may form a technical specialty area within the industrial technology management option. Consultation with an advisor is required to coordinate the course selection for transfer to this option.

Information Technology Concentration. The information technology concentration prepares students for positions in the communication and information technology industry. Students are prepared in technical digital media production; information management; printing and publishing; operations management; quality assurance, customer service and marketing; digital imaging; computer graphics; 3D modeling, technical graphics and illustration, rendering and animation special effects; Internet/Intranet operations, and computer based training. Graduates understand seamless communications from traditional print to digital/multimedia, Web design and development, database management, and corporate communications. The information technology concentration has two areas of study: graphic communications, and interactive computer graphics

Graphic Communications Area of Study. The purpose of the graphic communications area of study is to prepare students for a wide variety of professional positions in the printing and graphic communications industry. This area of study offers a blend of technological and managerial knowledge and skills. The program has been specifically designed to produce graduates with a complete understanding of graphic image processing, image presentation, and the use of electronic image manipulation and storage techniques. Graduates have the skills to address the requirements of the print and image manipulation environments. They also are prepared to exploit opportunities and competitive challenges taking place in the digital information industry. Each graduate is also prepared to manage the turbulent economic and human relations concerns associated with modern business. Each student is exposed to practical and effective problem solving techniques currently used in industry. As a prerequisite for graduation, students are expected to acquire job related industry experience. Typical career paths may include operations management, sales and marketing, and technology.

Interactive Computer Graphics Area of Study. The purpose of the interactive computer graphics area of study is to prepare students for entry into the diverse field of computer graphics. The area of study is focused on computer applications as a foundation in technological processing and dissemination of information. Modern information management includes discipline specific applications of graphic analysis, communication, databases, design, documentation, image generation, modeling, programming, visualization, and multimedia presentation. Graduates are qualified computer graphics technologists who have acquired extensive knowledge and technical competency, thereby preparing them to advance into professional positions in the industry. The courses are industry responsive and evolve at the fast

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pace of the technology. Typical career paths may include animation and multimedia creation; applications management and supervision; information process design (specialty areas such as electronics, advertising graphics design, process simulation, rendering and illustration, and computer aided design and drafting); graphics systems and database analysis; technical graphics and publication, and testing and implementation

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants.

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper division (300 level and above) courses, with 30 hours in residence.

A.A.S. degree transfer	60
Assignable credit	6
B.A.S. core	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (LCS and awareness areas) are met with courses in the core or specialization. General Studies courses focus on contextual learning.

L..	3
MA	3
HU..	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program. The courses are determined by the student and the advisor.

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

CGC 310 Computer Graphics Programming C++ CS	3
or CGC 494 ST Computer Systems Applications (3)	
IMC 346 Management Dynamics	3
ITM 452 Industrial Human Resource Management	3
or IMC 470 Project Management (3)	

MET 401 Quality Assurance	3
or STP 420 Introductory Applied Statistics CS (3)	
TWC 400 Technical Communications L	3
Total	15

Technical Concentrations

Operations Management Technology. The purpose of this technical concentration is to prepare supervisors for management functions in industry, manufacturing, and public service organizations. The B.A.S. degree provides the management and supervision content required for industry and governmental agencies.

Digital Media Management. This concentration prepares graduates for technical positions in industries implementing, planning, and producing interactive communications, integrated media, and multimedia for design, training, and marketing. Prospective students with A.A.S. degrees in areas such as: multimedia, printing and publishing, commercial graphics, desktop publishing, or computer illustration, may be interested in pursuing a digital media management concentration.

Technical Graphics. This concentration prepares graduates for positions in industries implementing technical and engineering graphics in computer aided design and computer integrated manufacturing. A.A.S. degrees in drafting and design, computer aided design, computer integrated manufacturing technology, mechanical technology, architectural technology, or construction technology may provide an excellent foundation for a technical graphics concentration.

Digital Publishing. This concentration prepares graduates for lead technical and entry-level management positions in the printing and publishing industry. A.A.S. degrees in multimedia, printing and publishing, commercial art, desktop publishing, or computer illustration may find that this technical concentration provides excellent opportunities.

Emergency Management. The concentration prepares graduates for positions in industry, municipal departments, and government agencies. The curriculum addresses the established Federal Emergency Management Administration (FEMA) guidelines, on site emergency response contingency planning, first responder scene management, logistical analysis, and communications protocol

Fire Service Management. This concentration prepares graduates for positions in industry, municipal departments, and governmental agencies. The curriculum addresses services delivered by fire departments, fire service personnel development, zoning, planning, inspections, and arson investigations.

Municipal Operations Management. This concentration prepares students for supervisory and management functions within municipalities, public service organizations, or businesses that provide services to the public sector. The curriculum addresses quality assurance, ethical issues, leadership practices, operations management, project management, marketing, finance, public sector management, and organizational effectiveness.

COMPUTER GRAPHIC COMMUNICATIONS (CGC)**CGC 135 Graphic Communications.** (3) F S

Introduction to the technologies involved in the design, image generation, transmission, and industrial production of multiple images for consumer utilization. Lecture, lab, field trips.

CGC 210 Creative Thinking and Design Visualization. (3) F

Fundamental methods, concepts, and techniques of creative thinking, design visualization, and problem solving. Also includes communication, culture, and societal influences. Lecture, lab. Prerequisite: ETC 100.

CGC 212 Computer-Aided Design and Drafting (CADD). (3) S

CADD for product design, representation, and documentation includes projection theory, descriptive geometry, graphics analysis, drafting standards, and precision drawing techniques. Lecture, lab. Prerequisite: ETC 100 or instructor approval. *General Studies: CS.*

CGC 215 Introduction to Graphics Programming. (3) F

Introduction to analyzing, planning, and executing graphic programs using industry standard programming tools. Lecture, lab. Prerequisite: ETC 100.

CGC 237 Design for Digital Imaging. (3) S

Introduction to design principles, typography, and document development of graphic images for printing, CD-ROM databases, and World Wide Web applications. Lecture, lab. Prerequisite: CGC 135 or equivalent.

CGC 310 Computer Graphics Programming (C++). (3) F, S

Computer graphics software programming techniques and Windows applications in C++ 2D and 3D graphics, object-oriented programming, transformations, scaling, and database concepts. Lecture, lab. Prerequisite: ETC 100 or equivalent C language programming course or instructor approval. *General Studies: CS.*

CGC 311 Communication and Media Ethics, Law, and Copyright. (3) F

Study and analysis of copyright and intellectual property laws, regulations, and ethical standards, including ownership, privacy, security, and distribution issues. Lecture, lab. Prerequisite: TWC 200.

CGC 312 3D Computer Graphics Modeling and Representation. (3) F

3D solid modeling applications, concepts, techniques, database structures, modeling strategies, assemblies, mass properties analysis, kinematics, data file exchange specifications, and representation. Lecture, lab. Prerequisite: CGC 212 or instructor approval. *General Studies: CS.*

CGC 313 Technical Illustration and Photorealistic Rendering. (3) F

Computer-generated graphics for technical illustration and design presentation: axonometric and perspective drawing; shading, shadowing, texture mapping, and photorealistic rendering. Lecture, lab. Prerequisite: CGC 312 or instructor approval.

CGC 314 Multimedia Design, Planning, and Storyboards. (3) S

Studying the creative and conceptual process of content selection, planning, design, flowcharting, storyboarding, proposing, configuring, prototyping, and presenting multimedia projects. Lecture, lab. Prerequisites: CGC 210 and 237 and 311 or instructor approval.

CGC 332 Image Assembly and Plate Preparation. (3) F

Composition of film or digital images for reproduction using various image carriers directed to press technology. Lecture, lab, field trips. Prerequisite: CGC 135.

CGC 333 Printing Technology. (3) S

Theory and application of sheet and web press technology for offset lithography, flexography, screen process, and digital printing. Lecture, lab. Prerequisite: CGC 135 or instructor approval.

CGC 334 Image Capture and Conversion. (3) F

Theory and application of image capture techniques used for all copy formats and conversion processes required for reproduction or dissemination. Lecture, lab. Prerequisite: CGC 135.

CGC 352 Technical Presentations and Visual Literacy. (3) S

Planning, technology, and delivery of individual and group presentations for impromptu, informative, and persuasive applications. Prerequisite: ENG 102.

CGC 410 Graphics User Interfaces and Database Programming (C++). (3) F S

GUI design and programming: Window standards, protocols, tools and files, use of project managers, database components, visual libraries, and OOPS. Lecture, lab. Prerequisites: CGC 310 or equivalent C++ language programming course and 314 or instructor approval.

CGC 411 Computer Animation and Special Effects (FX). (3) F

2D and 3D computer animation principles and methods, project planning, scripting, character generation; storyboards and modeling, lighting, rendering, special effects, and plug-in techniques. Lecture, lab. Prerequisites: CGC 313 and 314 or instructor approval.

CGC 412 Multimedia Authoring, Scripting, and Production. (3) F

Production of multimedia projects using authoring software applications, including project management, content considerations, interactive navigation, cross-platforming, testing, and documentation issues. Lecture, lab. Prerequisites: CGC 314 and 352 and 411 or instructor approval.

CGC 413 Professional Portfolio Design and Presentation. (3) S

Digital media portfolio planning (targeted audiences), design appearance, authoring, packaged media formats, media presentation for formats, production, marketing, and copyright considerations. Lecture, lab, field trips. Prerequisites: CGC 411 and 412 or instructor approval.

CGC 414 Web Site Design and Internet/Web Technologies. (3) S

Web site design, authoring, standards, protocols, tools, and development techniques, HTML, CGI and Perl coding, Web servers, browsers, interfaces and URLs. Lecture, lab. Prerequisites: CGC 311 and 314 or instructor approval.

CGC 415 Computer Graphics: Business Planning and Management Issues. (3) S

Implementation, planning, feasibility and application studies; needs assessment and operational analysis techniques; organization, managerial and technology considerations, business plan development. Lecture, lab, field trips. Prerequisite: CGC 412 or instructor approval.

CGC 417 JavaScript, VBScript, HTML, and ActiveX Programming. (3) S

Use of JavaScript, VBScript, HTML, and ActiveX software programs and standards to create customized interactive, Internet/Web site applications. Lecture, lab. Prerequisites: CGC 410 and 412 and 414 or instructor approval.

CGC 433 Graphic Production Processes. (3) N

Systematic production planning experience involving a mock enterprise and defined management responsibilities. Lecture, lab. Prerequisites: CGC 333, 334.

CGC 435 Web Management and E-Commerce. (3) N

Internet Web site management, security, online databases, and new E-commerce business models. Lecture, lab. Prerequisite: CGC 237. Corequisite: CGC 414.

CGC 436 Gravure Technology. (3) S

In-depth study of the market profile and production sequences related to the gravure method of printing. Prerequisite: CGC 135 or instructor approval.

CGC 437 Color Reproduction Systems. (3) F

Scientific analysis for the engineering of color reproduction systems and color models used in the graphics industry. Prerequisite: CGC 334 or instructor approval.

CGC 441 Graphic Information Systems. (3) N

Graphical information systems common to the workplace, includes graphic user interfaces for online databases, geographic information management information systems. Lecture, lab. Prerequisites: ETC 100, MC 233.

CGC 494 Special Topics. (3) F S

(a) Computer Systems Applications

CGC 510 Computer Graphics Programming: Design, Customization, and Development. (3) N

Advanced design, development, and documentation of Windows application programs including GUIs, OOP, RAD, AP, DLLs, and GDI in C++ and Java. Lecture, lab. Prerequisites: CGC 310 and 410 or equivalent GUI OOP course or instructor approval.

NOTE: For the General Studies requirement courses, and codes (such as L, SQ, C and H) see "General Studies" page 87. For graduation requirements, see "University Graduation Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see Classification of Courses, page 60.

CGC 511 Procedural and Physically Based Character Animation. (3) N

Creative and aesthetic design, storyboarding, planning, development, and documentation of constraint-based procedural, and interactive character, avatar actor, and product animations simulations. Lecture/lab. Prerequisites: CGC 411 and 510 (or equivalents) or instructor approval

CGC 512 Multimedia-Based Education and Training. (3) F SS

Creative design, planning, development, documentation, and production of technology-based learning and multimedia-based education and training materials and programs. Lecture/lab. Prerequisites: CGC 412 and 413 (or equivalents) or instructor approval

CGC 514 Interactive Virtual Reality Environments and Technologies. (3) N

Research and development of passive, exploratory, and interactive VR environments in education and training, information, internet/Web, and VRML programming and simulation arenas. Lecture/lab, field trips. Prerequisites: CGC 510 and 511 (or equivalents) or instructor approval

CGC 537 Current Issues in Quality Assurance. (3) N

Directed group study of selected issues relating to quality assurance in the printing, publishing, and information industry

CGC 538 Personnel Development for the Graphics Industry. (3) N

Employee training and development specific to production and management in the graphics industry

ENVIRONMENTAL TECHNOLOGY MANAGEMENT (ETM)**ETM 301 Environmental Management.** (3) F

Focuses on knowledge and skills necessary to manage environmental programs. Perspectives include regulatory, individual, corporate and consulting. Prerequisite: CHM 113; MAT 170.

ETM 302 Water and Wastewater Treatment Technology. (4) N

Explores the development of treatment technologies. Addresses regulatory standards. Emphasizes theory and practice of system design, laboratory analysis standards and procedures. Lecture/lab. Prerequisite: ETM 301

ETM 303 Environmental Regulations. (3) F S

Exploration of environmental laws, regulations, and directives. Air, land, and water are addressed. Prerequisite: ETM 301.

ETM 360 Introduction to Emergency Management. (3) F

Emergency management theories. Comprehensive emergency management. Mitigation, preparedness, response and recovery. Post disasters and policy format on. Current FEMA a hazards approach

ETM 362 Managing Natural and Technological Disasters. (3) S

Federal, state and local responses to emergencies. Management of mass casualties, evacuation, sheltering and terrorism; declaration of emergency procedures.

ETM 363 Computer Applications in Emergency Management. (3) S

Specific computer programs will be explored which are currently in use for contingency planning, tracking chemicals, inventories and response resources. Cross-listed as FSM 363. Credit allowed for only ETM 363 or FSM 363

ETM 364 Toxicology and Biohazards in Emergency Management. (3) F

Introduction to poisons. Dose response routes of exposure and toxicokinetics. Diseases associated with natural disasters. Clinical presentation of treatments

ETM 401 Hazardous Waste Management. (3) F S

Definition of hazardous waste. RCRA classification, and OSHA criteria. Overview of requirements and methods of waste management. Prerequisite: ETM 301

ETM 402 Unit Treatment Technologies. (3) S

Addresses various treatment technologies for contaminated air, water, and soil. Emphasizes design based upon medium type of contamination and concentration. Prerequisite: ETM 302

ETM 406 Environmental Chemistry. (3) F S

Examines reactions, transport and fates of hazardous chemicals in water, soil, and living organisms. Prerequisites: CHM 113 and 115 or CHM 114, MAT 170

ETM 407 Occupational Hygiene. (3) S

Overview of occupational health hazards, including recognition, evaluation and control. Includes regulatory status and health standards. Prerequisites: CHM 101 (or 113 or 114), MAT 170

ETM 424 Comprehensive Emergency Management. (3) SS

Addresses theory and management techniques for emergency preparedness, including mitigation, preparedness, response and recovery. Prerequisite: ETM 301.

ETM 426 Environmental Issues. (3) S

Exploration of the science and policy implications of contemporary problems that threaten the environment. Prerequisite: CHM 113; MAT 170

ETM 428 International Environmental Management. (3) SS

Emphasis on technology and economic pressures experienced by developing countries. Prerequisite: ETM 301

ETM 460 Incident Management Systems and Emergency Operations Center. (3) F

Covers MS, terminology, payers and management philosophy. EOC setup, activation, operation and termination. EOC funding and politics. Cross-listed as FSM 460. Credit allowed for only ETM 460 or FSM 460.

ETM 461 Contingency Planning. (3) N

Provides student with an understanding of techniques for on-house or on-site planning as well as community planning.

ETM 468 Simulation and Exercising. (3) N

Requirements, planning, conduct, and critique of exercises related to emergency planning. Emphasis on realism using moulage and props

ETM 494 Special Topics. (3) S

(a) Bioremediation
Technical regulatory and policy issues emanating from mining and animal waste. Lecture, case studies

ETM 501 Principles of Hazardous Materials and Waste Management. (3) F

Foundation for courses in curriculum. Topics include definitions of toxic and hazardous substances and wastes, RCRA classification, and OSHA criteria. Prerequisite: CHM 113 and 115 or CHM 114.

ETM 502 Regulatory Framework for Toxic and Hazardous Substances. (3) F

Examination of federal, state, and local regulations for hazardous materials and wastes. Includes history and trends in regulatory development. Prerequisite: ETM 501.

ETM 503 Principles of Toxicology. (3) S

Interaction of chemicals with life and environment. Mechanisms of toxic action, dose-response relationships, toxicity testing methods, predictive toxicology, and epidemiology. Prerequisites: CHM 113 and 115 or CHM 114

ETM 504 Technology for Storage, Treatment, and Disposal of Hazardous Materials. (3) F

Current and state of the art technologies and future trends for storage, treatment and disposal of hazardous materials and waste. Prerequisites: CHM 113 and 115 or CHM 114; ETM 501.

ETM 505 Quantitative Analysis and Practical Laboratory Techniques. (3) F S

EPA methodologies for sampling and analysis of soils and water. Includes quality assurance and regulatory requirements. Lab will be arranged off site. Prerequisites: CHM 113 and 115 (or CHM 114), 231; MAT 170

ETM 506 Chemistry of Hazardous Materials. (3) F

Chemistry and toxicology of hazardous chemicals. Topics include proper handling, storage, transportation and disposal. Prerequisite: CHM 113 and 115 (or CHM 114); MAT 170. Corequisite: CHM 231

ETM 507 Industrial Hygiene. (3) N

Emphasis on chemical hazards in industrial settings. Topics include recognition and measuring hazards, control techniques and regulatory standards. Prerequisites: CHM 113 and 115 (or CHM 114); MAT 170.

ETM 522 Air Pollution and Toxic Chemicals. (3) F

Examines issues in the measurement, analysis and control of toxic chemicals in air pollution. Prerequisites: CHM 113 and 115 (or CHM 114); ETM 501; MAT 170

ETM 523 Soils and Groundwater Contamination. (3) F

Theoretical and practical hydrogeology as it applies to cleaning up contamination. Investigative techniques, monitoring, risk assumptions, and assessment methodology. Prerequisites: CHM 113 and 115 (or CHM 114); ETM 501; MAT 170. Corequisite: CHM 231

ETM 524 Emergency Preparedness, Response, and Planning for Hazardous Materials. (3) SS

In-house or on site emergency response contingency planning. Pre-emergency assessment, resources for cooperation, equipment requirements and coordination with other agencies. Prerequisites: CHM 113 and 115 (or CHM 114) ETM 501, MAT 170

ETM 525 Risk Assessment for Hazardous Materials. (3) S

Application of the risk assessment process in situations ranging from hazardous facilities regulation to toxic substances in the environment. Prerequisites: CHM 113 and 115 (or CHM 114) ETM 501, MAT 170.

ETM 526 Current Environmental Technology Issues. (3) F

In depth study of current issues in environmental technology facing both the private and public sectors.

ETM 527 Environmental/Resources Regulations Concepts. (3) S

Development of environmental regulations from common law to statutory requirements. Emphasis on Superfund, hazardous materials, toxics and liability contracts. Pre- or corequisite: ETM 501.

ETM 591 Graduate Seminar. (1) N**ETM 592 Research.** (1-12) N**ETM 598 Special Topics.** (3) S

- (a) **Advanced Bioremediation Management and policy issues related to bioremediation of metal mining and animal waste and replacement of chemical controls with biological methods. Lecture, case studies**

FIRE SERVICE MANAGEMENT (FSM)**FSM 304 Fire Personnel Management.** (3) F

Topics include promotion, personnel development, career and incentive systems, validation of physical requirements, managerial and supervisory procedures

FSM 305 Quality Emergency Services. (3) N

Covers quality issues relating to services delivered by progressive fire departments. Covers management of personnel and resources during organizational change.

FSM 306 Fire Prevention Organization and Management. (3) N

Examination and evaluation of the techniques, procedures, programs, and agencies involved in preventing fires

FSM 363 Computer Applications in Emergency Management. (3) S

Specific computer programs will be explored which are currently in use for contingency planning, tracking chemical inventories, and response resources. Cross listed as ETM 363. Credit is awarded for only ETM 363 or FSM 363.

FSM 400 Human Behavior and the Fire Threat. (3) N

Proper ways of conducting post fire interviews; emphasizes the psychological effects of communication during emergencies

FSM 421 Political and Legal Consideration in Fire Science. (3) S

Study of legal and political considerations that affect the decision making of fire service managers

FSM 425 Fire Service Administration. (3) F

Presentation of modern management and planning techniques that apply to organizing a fire department.

FSM 460 Incident Management Systems and Emergency Operations Center. (3) F

Covers IMS terminology, players, and management philosophy. EOC setup, activation, operation and termination. EOC funding and politics. Cross listed as ETM 460. Credit is awarded for only ETM 460 or FSM 460.

INFORMATION AND MANAGEMENT CORE (IMC)**IMC 233 Desktop Publishing and Infographics.** (3) F, S

Introduction to software and hardware used for desktop publishing and infographics. Lecture/lab

IMC 331 Quality Assurance. (3) S

Instrumentation and methodologies for materials testing and quality control in various manufacturing processes. Lecture/field trips

IMC 346 Management Dynamics. (3) F, S

Management changes and the leadership skills needed to achieve organizational objectives in the changing industrial and technical environments. Prerequisite: junior or standing

IMC 396 Professional Orientation. 1 F, S

Senior advisement, industry presentations and career counseling.

IMC 470 Project Management. (3) S

Introduction to techniques for managing small groups within larger organizations including team building, motivating, planning, tracking activities and computer tools. Prerequisites: ECN 111; MC 346, TM 344

IMC 584 Internship. (1-12) F, S**IMC 592 Research.** (1-12) F, S**IMC 593 Applied Project.** (1-12) F, S**IMC 599 Thesis.** (1-12) F, S**INDUSTRIAL TECHNOLOGY MANAGEMENT (ITM)****ITM 343 Occupational Safety and Ergonomics.** (3) F

Health and safety movement, accident theories and effects, OSHA standards and safety, safeguarding, hazardous workers compensation, ergonomics, and safety. Prerequisite: junior or standing

ITM 344 Industrial Organization. (3) S

Industrial organization concepts. Topics relate to industrial relations, governmental regulations, organizational structure, labor relations, human factors and current industrial practices. Prerequisite: IMC 346.

ITM 345 Public Sector Management. (3) F, S

Management in government and public agencies. Includes classes on planning and organizing to provide services, human resource issues, conflict resolution, coordination. Prerequisite: junior or standing

ITM 402 Industrial Laws, Contracts, and Regulations. (3) F

Review of city, state, county, and federal laws that affect industry and construction operations, materials, supplies and acquisition procedures. Prerequisite: IMC 346

ITM 430 Ethical Issues in Technology. (3) S

Topics in social responsibility for industrial technology and engineering. Prerequisite: MC 346

ITM 440 Introduction to International Business. (3) S

International business principles and operations including partnerships, trade agreements, currency issues, international sales and cultural differences between countries. Prerequisite: MC 346 *General Studies*. G

ITM 445 Industrial Internship. 1-10 F, S, SS

Work experience assignment in industry commensurate with student's program. Specified instruction by industry with university supervision. Pass/fail. Prerequisites: advisor approval, junior or standing, 2.50 GPA.

ITM 451 Materials Control. (3) N

Activities of material handling including purchasing, receiving, warehousing, traffic plant layout, inventory and production control and shipping relating to technical procedures. Prerequisites: MC 346, ITM 343

ITM 452 Industrial Human Resource Management. (3) F

Concepts and practices of human resource management in a global industrial environment. Prerequisite: MC 346

ITM 453 Safety Management. (3) N

Development and management of safety programs, education and training and relationships within an organization. Prerequisite: TM 343 or instructor approval

ITM 455 Industrial Marketing Concepts. (3) N

Customer and sales strategies for industrial organizations, including current practice and future planning. Prerequisites: ECN 111, IMC 346, junior or standing

ITM 456 Introduction to Organized Labor. (3) S

Introduction to labor relations unions, federal laws, collective bargaining, grievances and labor legislation. Prerequisites: IMC 346, TM 344.

ITM 461 Operations Management. (3) F

Introduction to supervisory principles as applied to production of goods and services. Prerequisites: IMC 346, TM 344

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H) see "General Studies" page 87. For graduate requirements, see "University Graduate Requirements" page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses" page 60

ITM 480 Organizational Effectiveness. (3) S

Human aspects of supervisory behavior in the industrial setting and how they influence efficiency, morale and organizational practices
Prerequisite: IMC 346

ITM 501 Managerial Economics. (3) N

Basic managerial economic tools and techniques applied to unique concerns of scientifically intensive firms operating in rapidly evolving industrial sectors

ITM 502 Financial Management. (3) N

Examination of corporate financial and managerial accounting systems, budgeting, and financial policy using microcomputers to analyze forecast and report information

ITM 503 Marketing Management. (3) N

Modern methods and industrial case studies of planning pricing, promotion and distributing goods and services in the global marketplace
Prerequisites: TM 480 (or equivalent); instructor approval

ITM 504 Law and Ethics for Technical Professionals. (3) N

Analysis of legal and ethical framework for making managerial decisions in the corporate environment of engineering and technology-related industries

ITM 520 Strategic Management of Technology. (3) N

Analysis of entrepreneurial dynamics and technology development methods of research and development management new technology implementation, and start-up organization. Prerequisites: ITM 480 (or equivalent); instructor approval

ITM 540 International Management. (3) N

Practices and procedures for effective management of multinational business organizations including partnerships, joint ownerships, and global subsidiaries.

ITM 549 Research Techniques and Applications. (3) F, S

Selection of research problems analysis of literature and individual investigations, preparing reports, and proposal writing Prerequisite: STP 420 or equivalent

ITM 550 Industrial Training and Development. (3) N

Training techniques and learning processes. Planning development, evaluating and managing industrial and governmental programs Prerequisite: TM 480

ITM 552 Global Management Philosophies. (3) N

Analysis and comparison of significant supervisory philosophies developed in various industrial nations and their potential application in the United States

ITM 560 Managerial Decision Making. (3) F

Analysis of common decision making bias and techniques to overcome them Uses both subjective quantitative decisions and computerized decisions

ITM 570 Advanced Project Management. (3) S

Planning, organizing coordinating, and controlling staff and project groups to accomplish the project objective.

ITM 593 Applied Project. (1-12) N

ITM 598 Special Topics. (1-4) N
(a) Quantitative Research Analysis

Department of Manufacturing and Aeronautical Engineering Technology

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RAJADAS

LECTURER

OKONKWO

PURPOSE

The mission of the Department of Manufacturing and Aeronautical Engineering Technology is to emphasize applied engineering practice in the manufacturing and aerospace fields through four year degree programs in Manufacturing Engineering Technology and Aeronautical Engineering Technology. This is accomplished by the intense application of math and science principles to the solution of technical problems in a lecture laboratory environment. The goal of the Manufacturing Engineering Technology program is to prepare students for employment in areas such as materials, mechanics, design, manufacturing processes, automation, and quality control. The department actively supports the student chapter of the Society of Manufacturing Engineers. The purpose of the Aeronautical Engineering Technology program is to prepare students for employment in areas such as aircraft and aerospace vehicle design, aerospace manufacturing, applied thermodynamics, fluid mechanics and aerodynamics, propulsion, and wind tunnel testing.

ACCREDITATION

The B.S. degree in Manufacturing Engineering Technology and the B.S. degree Aeronautical Engineering Technology are accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc. (See "Accreditation," page 578, for more information.)

DEGREES

The Department of Manufacturing and Aeronautical Engineering Technology offers the B.S. degree in Manufacturing Engineering Technology and the B.S. degree in Aeronautical Engineering Technology.

For students holding an A.A.S. degree the department offers the B.A.S. degree with a concentration in production technology.

A Master of Science in Technology degree is offered for graduate study. See the *Graduate Catalog* for more information.

B.S. Degree Requirements

All degree requirements for the program are shown on curriculum check sheets. Requirements include First Year Composition, University General Studies (see "General Studies," page 87), and the Engineering Technology Core. Note that all three General Studies awareness areas are required. Consult your advisor for an approved list of courses. To graduate, students are required to complete a minimum of 128 semester hours with a 2.00 cumulative GPA, including at least 50 semester hours of upper-division courses

Manufacturing Engineering Technology—B.S.

The B.S. degree in Manufacturing Engineering Technology requires 128 semester hours as specified below:

Engineering technology core	14
First Year Composition	6
General Studies department requirements	45
Manufacturing Engineering Technology major	52
Selected concentration	11
Total	128

The following courses constitute the Manufacturing Engineering Technology major and are required of all manufacturing engineering technology students. Refer to the specific concentrations for additional requirements.

Manufacturing Engineering Technology Major

EET 406 Control System Technology	4
MET 231 Manufacturing Processes	3
MET 300 Applied Material Science	4
MET 302 Welding Survey	3
MET 313 Applied Engineering Mechanics Materials	4
MET 331 Design for Manufacturing I	3
MET 341 Manufacturing Analysis	3
MET 344 Casting and Forming Processes	3
MET 345 Advanced Manufacturing Processes	3
MET 396 Manufacturing Professional Orientation	1
MET 401 Quality Assurance	3
MET 416 Applied Computer Integrated Manufacturing CS	3
MET 443 N C Computer Programming	3
MET 444 Production Tooling	3
MET 451 Introduction to Automation	3
MET 460 Manufacturing Capstone Project I	3
MET 461 Manufacturing Capstone Project II	3
Total	52

A student participating in the Manufacturing Engineering Technology program may select from two concentrations: manufacturing engineering technology or mechanical engineering technology.

Manufacturing Engineering Technology Concentration.

This concentration is designed to prepare technologists with both conceptual and practical applications of processes, materials, and products related to metalworking industries. Accordingly, this concentration is intended to prepare students to meet the responsibilities in planning the processes

of production, developing the tools and machines, and integrating the facilities of production or manufacturing.

Students may select course work that focuses on the implementation of design and manufacturing strategies that favorably impact the environment before manufacturing and during manufacturing. Students address design, materials, and manufacturing problems with a focus on the environment. Concepts like design for recyclability, manufacturing material reuse, and air quality control during manufacturing are addressed. Required courses follow:

MET 438 Design for Manufacturing II	4
MET 442 Specialized Production Processes	3
Technical electives	4
Total	11

Mechanical Engineering Technology Concentration.

The primary objective of the mechanical engineering technology concentration is to prepare students for entry level work in mechanical design and testing, either in engineering or manufacturing departments in product oriented industries. Major emphasis is placed on reducing the amount of time required by industry to make the graduate productive in any area of work. Students obtain a well-rounded academic background with an emphasis in mechanics and thermal sciences. Required courses follow:

AET 415 Gas Dynamics and Propulsion	3
MET 434 Applied Fluid Mechanics	3
MET 438 Design for Manufacturing II	4
Approved technical elective	1
Total	11

Aeronautical Engineering Technology—B.S.

The B.S. degree in Aeronautical Engineering Technology requires 128 semester hours as specified below:

Aeronautical Engineering Technology major	63
Engineering technology core	14
First Year Composition	6
General Studies department requirements	45
Total	128

The following courses constitute the Aeronautical Engineering Technology major and are required of all Aeronautical Engineering Technology students.

Aeronautical Engineering Technology Major

AET 150 Introduction to Aeronautical Engineering Technology	1
AET 210 Measurements and Testing	3
AET 215 Mechanics of Aerospace Systems	3
AET 300 Aircraft Design I	3
AET 312 Applied Engineering Mechanics Dynamics	3
AET 396 Aerospace Professional Orientation	1
AET 415 Gas Dynamics and Propulsion	3
AET 417 Aerospace Structures	3
AET 420 Applied Aerodynamics and Wind Tunnel Testing	4
AET 432 Applied Heat Transfer	3
AET 487 Aircraft Design II	3
EET 406 Control System Technology	4
MET 230 Engineering Materials and Processing	3
MET 300 Applied Material Science	4

NOTE: For the General Studies requirement, courses and codes (such as L, SQ, C, and H), see General Studies, page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional common bus courses offered but not listed in this catalog, see "Classification of Courses," page 60.

MET 313 Applied Engineering Mechanics: Materials	4
MET 331 Design for Manufacturing I	3
MET 432 Thermodynamics II	3
MET 434 Applied Fluid Mechanics	3
One CET course in a programming language	3
Technical elective	6
Total	63

APPLIED SCIENCE—B.A.S.

The Bachelor of Applied Science degree is a “capstone” degree for the Associate of Applied Science degree. The B.A.S. degree exposes students to advanced concepts and diverse critical thinking skills that prepare them for future career opportunities and professional advancement.

Admission

Admission to the B.A.S. degree program is restricted to students holding an A.A.S. degree from a regionally accredited U.S. postsecondary educational institution. A GPA of 2.00 or higher is required for all resident applicants and a 2.50 for nonresident applicants

Degree Requirements

The B.A.S. degree in the College of Technology and Applied Sciences consists of 60 semester hours of upper division (300 level and above) courses, with 30 hours in residence. A total of 120 semester hours is required for graduation.

A.A.S. degree transfer	60
Assignable credit	6
B.A.S. core	15
General Studies	19
Technical concentration	20
Total	120

General Studies Curriculum

The B.A.S. curriculum builds on the general education content of the A.A.S. degree. Additional General Studies (LCS and awareness areas) are met with courses in the core or specialization. General Studies courses focus on contextual learning.

L	3
MA	3
HU	3
HU or SB	3
SB	3
SG	4
Total	19

Assignable Credit

Assignable credit allows space in the curriculum for prerequisite courses needed to succeed in the program. The courses are determined by the student and the advisor

B.A.S. Core

The area core focuses on management and organization, professional communication, quantitative analysis, and computer competency.

IMC 470 Project Management	3
ITM 344 Industrial Organization	3
MET 401 Quality Assurance	3
MET 416 Applied Computer Integrated Manufacturing CS	3

TWC 400 Technical Communications L	3
Total	15

Technical Concentration

Production Technology. This concentration prepares supervisors and other personnel for technical and management positions in the manufacturing industry. The students increase their knowledge of manufacturing and gain insight into other areas, such as management, that support their professional growth

AERONAUTICAL ENGINEERING TECHNOLOGY (AET)

AET 150 Introduction to Aeronautical Engineering Technology. (1) F

Introduction to the fields of aeronautical engineering and engineering technology

AET 210 Measurements and Testing. (3) F

Measurement systems, components, system response and the characteristics of experimental data. Lecture/lab. Prerequisites: MET 230, PHY 112, 114

AET 215 Mechanics of Aerospace Systems. (3) S

Basic physics of flight. Principles and design of aircraft systems and powerplants. Lecture/lab. Prerequisite: AET 210

AET 300 Aircraft Design I. (3) F S

Basic applied aerodynamics, propeller performance and airframe performance analysis. Prerequisites: AET 210 and 215 (or AMT 280 and 287); ETC 100; MAT 260, PHY 112, 114.

AET 310 Instrumentation. (3) F

Measurement systems, components, system response and the characteristics of experimental data. Methods of collecting and analyzing data. Lecture, lab. Prerequisites: ETC 201, MAT 261. Prerequisite/corequisite: MET 313

AET 312 Applied Engineering Mechanics: Dynamics. (3) F, S

Masses; motion kinematics, dynamics of machinery. Prerequisites: ETC 211, MAT 261

AET 396 Aerospace Professional Orientation. (1) F

Career focus for Aeronautical Engineering Technology students familiarization with the aerospace industry. Prerequisite: junior or standing.

AET 409 Nondestructive Testing and Quality Assurance. (1) N

Purpose of inspection and quality assurance. Theory and application of nondestructive inspection methods. Application of pertinent standards, specifications and codes. Lecture/lab. Cross-listed as AMT 409. Credit is allowed for only AET 409 or AMT 409. Prerequisite: AMT 280 or MET 230.

AET 415 Gas Dynamics and Propulsion. (3) S

Introduction to compressible flow, internal and external flow, and aerodynamic analysis of propulsion systems. Prerequisites: ETC 340, MAT 262

AET 417 Aerospace Structures. (3) F

Analysis and design of aircraft and aerospace structures. Shear flow. Semimonocoque structures. Effects of dynamic loading. Prerequisites: AET 300, 312, 420, MAT 262, MET 313.

AET 420 Applied Aerodynamics and Wind Tunnel Testing. (4) F

Introduction to viscous and inviscid flow and the relationship to aircraft lift and drag. Wind tunnel design and testing. Lecture/lab. Prerequisites: AET 300; MAT 262

AET 432 Applied Heat Transfer. (3) F

Steady-state and transient conduction, heat transfer by convection and radiation. Applications of heat transfer. Prerequisite: MET 434 or instructor approval.

AET 487 Aircraft Design II. (3) S

Basic aerodynamics and airplane performance analysis methods applied to practical design project. Prerequisite: AET 300

AET 490 Advanced Applied Aerodynamics. (3) N

Study of fluid motion and aerodynamics. Essentials of incompressible aerodynamics and computational fluid dynamics. Elements of laminar and turbulent flows. Prerequisites: AET 312, ETC 100, MAT 262.

AET 524 Application of Heat Transfer. (3) F

Energy conservation, steady state and transient conduction, convection transfer, free and forced convection on Reynolds analogy, backbody and environmental radiation. Prerequisite: MET 434 or instructor approval.

AET 525 Advanced Propulsion. (3) S

Mechanics and thermodynamics of propulsion systems. Solid, liquid propellant rocket design performance. Electrical nuclear propulsion systems. Space missions. Prerequisites: AET 420 (or MET 434 and 415 or instructor approval).

AET 560 Numerical Methods in Engineering Technology. (3) N

Analyzing problems in physical sciences, modeling of physical problems, perturbation techniques, curve fitting, data analysis, numerical solutions, ordinary and partial differential equations.

MANUFACTURING ENGINEERING TECHNOLOGY (MET)**MET 230 Engineering Materials and Processing.** (3) F, S, SS

Materials, their structures, properties, fabrication characteristics, and applications. Material forming, joining, and finishing processes. Automation and quality control.

MET 231 Manufacturing Processes. (3) F

Design documentation and material processes on plastics, ferrous and nonferrous materials, emphasizing orthographic projection, geometric dimensioning and tolerances. Lecture, lab. Prerequisite: MAT 117 or 170.

MET 300 Applied Material Science. (4) F

Principles of material science emphasizing concepts relevant to manufacturing and use. Discusses metals, polymers, ceramics, and composites. 3 hours lecture, 1 hour lab. Prerequisite: MET 231 or instructor approval.

MET 302 Welding Survey. (3) F

Theory and application of industrial welding processes: introductory welding metallurgy and weldment design. SMAW, GTAW, GMAW, Oxycetylene, and brazing experiences. Lecture, lab. Prerequisite: upper class standing.

MET 313 Applied Engineering Mechanics: Materials. (4) F, S, SS

Stress, strain relations between stress and strain, shear moments, deflections, and combined stresses. 3 hours lecture, 1 hour lab. Prerequisite: ETC 211.

MET 331 Design for Manufacturing I. (3) S

Introduction to design of machines and structures, with emphasis on layout design drawing. Basics of gears, cams, fasteners, springs, bearing linkages, cylindrical fits, flat pattern development and surface finishing requirements emphasized. Prerequisite: MET 313.

MET 341 Manufacturing Analysis. (3) F

Organization and functional industrial requirements. Manufacturing economics and group technology. Writing assembly and production plans. Analysis on industrial specifications. Prerequisite: MET 231 or 343.

MET 343 Material Processes. (4) S

Industrial processing as applied to low, medium, and high volume manufacturing. Basic and secondary processing, fastening and joining, coating, and quality control. Lecture, lab.

MET 344 Casting and Forming Processes. (3) S

Analysis of various forming processes to determine load requirements necessary for a particular metal forming operation. This information is used to select equipment and design tooling. Metal casting processes and design of castings. Introduction to powder metallurgy. Prerequisites: MET 300 and 313 or instructor approval.

MET 345 Advanced Manufacturing Processes. (3) S

Material removal processes emphasizing advanced turning, milling, and machinability studies using cutting tools. CNC programming for machining and turning centers. Lecture, lab. Prerequisites: MET 231, 343.

MET 346 Numerical Control Point to Point and Continuous Path Programming. (3) N

Methods of programming, setup, and operation of numerical control machines emphasizing lathe and mill systems. Lecture, lab. Prerequisite: MET 231.

MET 396 Manufacturing Professional Orientation. (1) F

Career focus for Manufacturing Engineering Technology students. Familiarization with the manufacturing industry. Prerequisite: junior or standing.

MET 401 Quality Assurance. (3) F

Introduction to statistical quality control methods, design of experiments, sampling, gage requirements, specification, quality assurance, tooling, emphasis on CNC/CMM programming. Lecture, lab. Prerequisite: junior or standing.

MET 416 Applied Computer-Integrated Manufacturing. (3) F

Techniques and practices of computer-integrated manufacturing with an emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 346 or instructor approval. *General Studies: CS.*

MET 432 Thermodynamics II. (3) S

Thermodynamics of mixtures, combustion process, applications of thermodynamics to power and refrigeration cycles. Prerequisite: ETC 340.

MET 433 Thermal Power Systems. (4) N

Analysis of gas power, vapor power, and refrigeration cycles. Components of a refrigeration system. Direct energy conversion. Psychrometry. Analysis of internal combustion engines and fluid machines. Lecture, lab. Prerequisite: MET 432 or instructor approval.

MET 434 Applied Fluid Mechanics. (3) N

Fluid statics. Basic fluid flow equations. Viscous flow, pipes and channels, compressible flow. Applications to fluid measurement and flow in conduits. Prerequisite: ETC 340.

MET 435 Alternate Energy Sources. (3) F

Alternate energy systems, energy use and its impact on the environment, and demonstrating practical alternative energy sources to fossil fuels. Prerequisite: instructor approval.

MET 436 Turbomachinery Design. (3) N

The application of thermodynamics and fluid mechanics to the analysis of machinery design and power cycle performance predictions. Prerequisite: MET 432 or instructor approval.

MET 438 Design for Manufacturing II. (4) F

Application of mechanics in design of machine elements and structures. Use of experimental stress analysis in design evaluation. Lecture, lab. Prerequisite: AET 312 or MET 331 or instructor approval.

MET 442 Specialized Production Processes. (3) F

Nontraditional manufacturing processes, emphasizing EDM, ECM, ECG, CM, PM, HERF, EBW, and LBW. Prerequisite: MET 231.

MET 443 N/C Computer Programming. (3) F

Theory and application of computer-aided N/C languages with programming emphasis with APT and suitable postprocessors. Lecture, lab. Prerequisite: MET 346 or instructor approval.

MET 444 Production Tooling. (3) F

Fabrication and design of jigs, fixtures, and special industrial tooling related to manufacturing methods. Lecture, lab. Prerequisite: MET 345.

MET 448 Expert Systems in Manufacturing. (3) F

Introduction to expert systems through conceptual analysis, with an emphasis on manufacturing applications. Prerequisite: MET 231.

MET 451 Introduction to Automation. (3) F

Introduction to automation. Topics included are assembly techniques, fixed and flexible automation systems, robot materials, hand systems, sensors, and controls. Lecture, lab. Prerequisite: MET 346.

MET 452 Implementation of Robots in Manufacturing. (3) N

Robotic workcell design, end effectors, parts presenters, and optimum material flow. Prerequisite: MET 451 or instructor approval.

MET 453 Robotic Applications. (3) S

Lab course utilizing robots and other automated manufacturing equipment to produce a part. Students are required to program robots as well as interface the robots with other equipment. Prerequisite: instructor approval.

MET 460 Manufacturing Capstone Project I. (3) F

Small group projects design, evaluation, and analyzing components, assemblies, and systems. Develop products manufacturing techniques demonstrating state of the art technology. Lecture, lab. Prerequisites: MET 331, 341, 346; senior standing.

NOTE: For the General Studies requirement courses and codes (such as L, SQ, C, and H), see "General Studies, page 87. For graduation requirements, see "University Graduation Requirements," page 83. For an explanation of additional omnibus courses offered but not listed in this catalog, see "Classification of Courses, page 60."

MET 461 Manufacturing Capstone Project II. (3) S

Small-group projects applying manufacturing techniques, with an emphasis on demonstrating state-of-the-art technology. Lecture, lab. Prerequisite: MET 460 or instructor approval.

MET 494 Special Topics. (1–3) F, S

Topics such as the following are offered:

- (a) Consumer Manufacturing
- (b) Manufacturing Process Simulation
- (c) Packaging Design

MET 501 Statistical Quality Control Applications. (3) S

SPC problem-solving techniques for implementation in industrial setting, design and analysis of experiments. Prerequisite: instructor approval.

MET 502 Specialized Production Processes. (3) F

Specialized production processes including lasers, electronic beam, abrasive and water jet, and chemical and thermal processes. Prerequisite: instructor approval.

MET 504 Applications of Production Tooling. (3) F

Design and fabrication of fixtures, jigs, templates, and specialized industrial tooling for manufacturing. Lecture, lab. Prerequisite: instructor approval.

MET 507 Manufacturing Enterprise. (3) F, S

Organization and project management of cellular manufacturing methods, including JIT and lean manufacturing. Prerequisite: instructor approval.

MET 512 Introduction to Robotics. (3) N

Introduction to industrial robots. Topics include: robot workspace, trajectory generation, robot actuators and sensors, design of end effectors, and economic justification. Application case studies. Prerequisite: instructor approval.

MET 513 Advanced Automation. (3) F

Analysis and design of hard and flexible automation systems. Particular attention to material handling technology. Prerequisite: instructor approval.

MET 514 N/C Computer Programming. (3) S

Point-to-point and continuous path control system programming emphasizing metal removal procedures and processes. Lecture, lab. Prerequisite: instructor approval.

MET 517 Applied Computer-Integrated Manufacturing. (3) F

Techniques and practices of computer-integrated manufacturing, with an emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 346 or instructor approval.

MET 560 Fundamentals of Security Engineering. (3) F

Definitions of threats, fundamentals of design of physical protection systems, computer modeling and analysis of security systems.

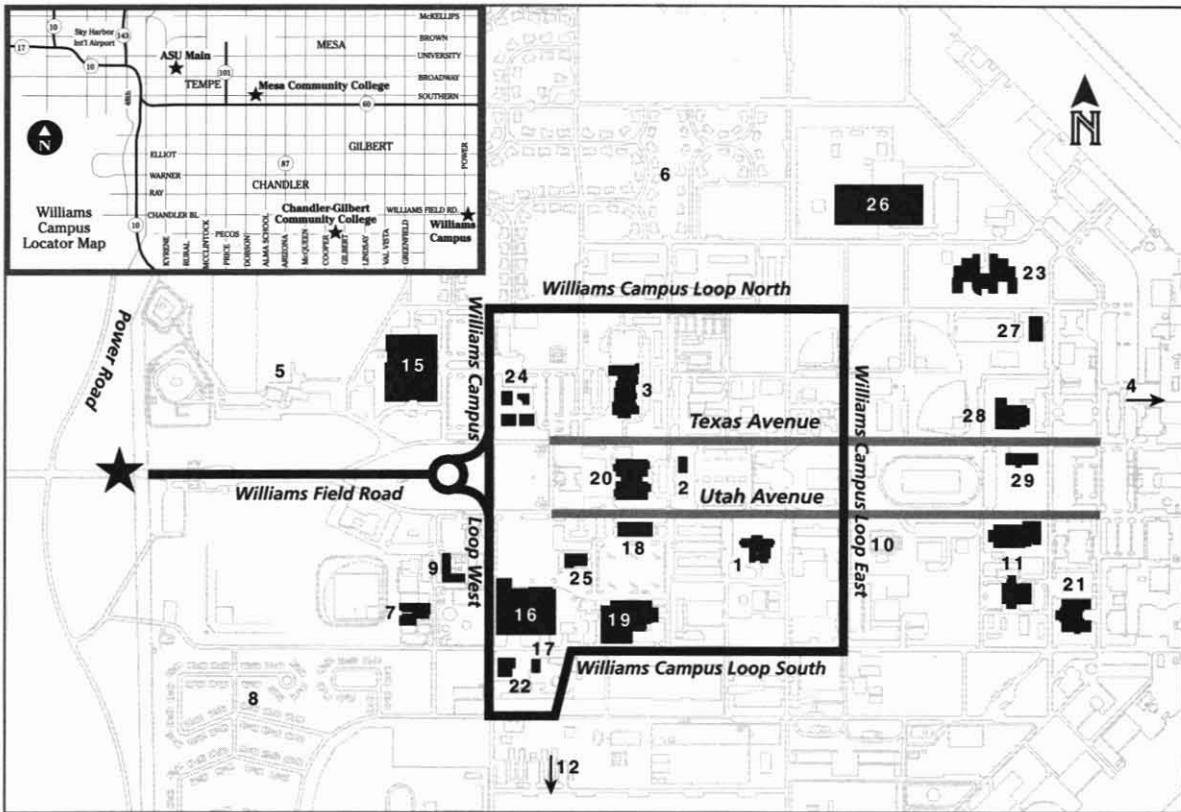
MET 571 Waste Minimization and Waste Prevention. (3) S

Life cycle analysis, selection of environmentally compatible materials, design of waste minimization equipment and operation, economics of waste minimization and prevention. Prerequisite: ETC 340 or instructor approval.

MET 592 Research. (1–12) N**MET 593 Applied Project.** (1–12) N

The vertical diffusion furnace was the first piece of equipment to be delivered and installed in the Teaching Factory, located in the Technology Center at ASU East.

Tim Trumble photo



WILLIAMS CAMPUS

- 1 Williams Campus Dining Hall (El Mirage)
- 2 Williams Campus Housing Office
- 3 Williams Campus Union (CU)
- 4 Williams Gateway Airport & Flight Line
- 5 Toka Sticks Clubhouse & Golf Course
- 6 North Desert Village
- 7 Child Development Center (CDCTR)
- 8 West Desert Village
- 9 Administrative Services Building - Security (ADMIN)
- 10 Swimming Pool (POOL)
- 11 US Air Force Armstrong Laboratory Buildings
- 12 South Desert Village

ASU EAST

- 15 Veteran's Administration Regional Clinic (ASU East Student Health)
- 16 Technology Center (TECH)
- 17 Agribusiness Food Science Lab (AGBFS)
- 18 Auditorium (AUD)
- 19 Future Classroom and Lab Building
- 20 Academic Center Building (CNTR)
- 21 Classroom Building (CLRB)
- 22 TECH II
- 23 Flight Simulator Building (SIM)
- 24 Morrison School of Agribusiness and Resource Management Complex (AGB 1-4)
- 25 Center for Agribusiness Policy Studies (CAPS)

CHANDLER-GILBERT COMMUNITY COLLEGE AT WILLIAMS CAMPUS

- 26 Aviation Technology Center, Embry-Riddle, and University of North Dakota (ATC)
- 27 General Studies Building (GSB)
- 28 Physical Education Center (PEC)
- 29 Science Lab Building (SLB)



ASU East Directory

For the "ASU Main Directory," see page 490, or the "ASU West Directory," see page 614.

Academic Units

Agribusiness and Resource Management, Morrison School of	CNTR 20	480/727 1585
East College	CNTR 92	480/727-1515
Technology and Applied Sciences, College of	CNTR 10	480/727-1874
Aeronautics Management Technology, Department of	SIM Bldg-201	480/727 1775
Electronics and Computer Engineering Technology Department of	TECH 101	480/727 1137
Information and Management Technology Department of	TECH 102	480/727-1781
Manufacturing and Aeronautical Engineering Technology, Department of	SIM Bldg-295B	480/727 1584

Administrative

General Information	CNTR Garden Level ...	480/727 3278
American Indian Programs	AIP	480/727 1161
Bookstore	CNTR 102	480/727 1146
Campus Union	CUB	480/727 1098
Cashiering Services	CNTR 81	480/727 1081
Computer Commons, ASU East	CNTR 150	480/727 1184
Copy Center	CNTR 147	480/727 1175
Housing, Williams Campus	WCHO Bldg.	480/727 1700
Library Services	CNTR 110	480/727 1037
OASIS	CNTR Garden Level ...	480/727 3278
ASU Sun Cards		
Office of the Registrar		
Student Business Services		
Student Financial Assistance		
Undergraduate Admissions		
Williams Campus Parking Decals		
Physical Education Center, Williams Campus	WCFC Bldg.	480 988 8400
Provost Office of the	CNTR 30	480/727 1028
Student Health Services	Veterans	602/222 6568
Campus Life Services	CNTR 52	480/727-1116
Learning Center	CNTR 160	480/727-1452

ASU East Faculty and Academic Professionals

A

- Abuleyaman, Eltayeb S.** 1998 , Associate Professor of Electronics and Computer Engineering Technology, B.S., University of Khartoum (Sudan); M.S., Oregon State University; Ph.D., University of Arizona
- Autore, Donald D.** (1959), Professor Emeritus of Technology; B.S.E., University of Michigan; M.S.E., Arizona State University

B

- Backus, Charles E.** (1968), Professor of Electrical Engineering, Provost, ASU East, B.S.M.E., Ohio University; M.S., Ph.D., University of Arizona
- Balcazar, Hector** 1989 , Associate Professor of Nutrition; B.S., Iberoamericana University (Mexico); M.S., Ph.D., Cornell University
- Barchilon, Marian G.** 1989 , Associate Professor of Technical Communication, B.S., State University of New York, Binghamton, M.S., Northeastern University
- Barrett, Thomas W.** 1950 , Professor Emeritus of Agribusiness and Resource Management, B.S., Brigham Young University, M.S., Ph.D. Cornell University
- Bergeron, Bette S.** (2000), Professor of Elementary Education; M.S.Ed., Ph.D., Purdue University
- Borrmann, David W.** (1996), Lecturer of Aeronautical Management Technology, B.S., Drexel University, M.A., Arizona State University
- Brady, Ward W.** (1973), Professor of Environmental Resources, B.S., M.S., Ph.D., Colorado State University
- Brock, John H.** (1977), Professor of Environmental Resources; B.S., M.S., Fort Hayes State University; Ph.D., Texas A&M University
- Brown, Walter C.** 1966 , Professor Emeritus of Technology; B.S., Northwest Missouri State University; M.Ed., Ed.D., University of Missouri, Columbia
- Brownson, Charles W.** 1980 , Librarian, ASU East Library Services; Director, ASU East Library Services, B.A., South Dakota State University, M.F.A., University of Oregon, M.L.S., University of California, Berkeley
- Burdette, Walter E.** (1956), Professor Emeritus of Technology, B.S., M.S., Kansas State College of Pittsburg, Ed.D., University of Missouri, Columbia
- Burk, Karl W.** (1949), Professor Emeritus of Technology; B.A., M.A., Arizona State University; Ed.D., Bradley University
- Burkink, Tim** (1998), Assistant Professor of Agribusiness and Resource Management; B.S., M.B.A., Ph.D., University of Nebraska, Lincoln

C

- Carlsen, Paul A.** 1978 , Professor Emeritus of Technology; B.A.E., M.N.S., Ed.D., Arizona State University
- Cavaliere, William A.** (1946), Professor Emeritus of Technology, B.A., M.A., Arizona State University

Chalquest, Richard R. (1971) Professor Emeritus of Agribusiness and Resource Management, B.S., D.V.M., Washington State University, M.S., Ph.D., Cornell University

Collins, Donald G. 1989 , Professor of Manufacturing and Aeronautical Engineering Technology, B.Arch., Virginia Polytechnic Institute and State University; M.S., Ph.D., University of Illinois, Urbana

Cox, Frank E. (1972), Professor Emeritus of Technology, B.S.M.E., Purdue University, M.S.E., Arizona State University

D

- Daneke, Gregory A.** (1982), Professor of Information and Management Technology; B.A., M.A., Brigham Young University, Ph.D., University of California, Santa Barbara
- Danielson, Scott G.** 1999 , Professor of Manufacturing and Aeronautical Engineering Technology; Chair, Department of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., University of Wyoming; Ph.D., North Dakota University
- Dolin, Penny Ann** (1998) Lecturer of Information and Management Technology, B.A., Bard College, M.S., Arizona State University
- Duff, Jon M.** (1997), Professor of Information and Management Technology, B.S., M.S., Purdue University, Ph.D., Ohio State University
- Edwards, Mark R.** (1978), Professor of Agribusiness and Resource Management; B.S.M.E., United States Naval Academy, M.B.A., D.B.A., Arizona State University
- Edwards, Marvin J.** (1959), Professor Emeritus of Technology; B.S., M.A., Arizona State University

E

F

Fordemwalt, James N. (1987), Associate Professor of Electronics and Computer Engineering Technology; B.S., M.S., University of Arizona, Ph.D., Iowa State University of Science and Technology

G

- Gesell, Laurence E.** 1984 , Professor of Aeronautical Management Technology, B.A., Upper Iowa University, M.P.A., University of San Francisco, Ph.D., Arizona State University
- Gordon, Richard S.** (1980), Professor Emeritus of Agribusiness and Resource Management; A.B., University of Rochester; M.A., Harvard University; Ph.D., Massachusetts Institute of Technology
- Green, Douglas M.** 1990 , Associate Professor of Environmental Resources; B.S., Oregon State University, M.S., North Dakota State University, Ph.D., Oregon State University
- Grossman, Gary M.** 1994 , Associate Professor of Information and Management Technology, B.A., University of the Pacific; M.S., Ph.D., Purdue University

H

- Hampl, Jeffrey** (1998), Assistant Professor of Nutrition; B.S., Liberty University, M.S., University of Massachusetts, Lowell; Ph.D., University of Nebraska
- Hefner, Stephen P.** 1973, Instructional Professional of Agribusiness and Resource Management, Morrison School of Agribusiness and Resource Management, B.S., Illinois State University, M.S., Arizona State University
- Hild, Nicholas R.** (1983), Professor of Information and Management Technology; B.S.M.E., M.S.Enve., University of Iowa; Ph.D., Union Graduate School
- Hirata, Ernest T.** (1974), Associate Professor of Information and Management Technology; B.A., San Diego State College; Ed.D., Arizona State University
- Horowitz, Renee B.** (1986), Professor Emeritus of Information and Management Technology; B.A., Brooklyn College, M.A., Ph.D., University of Colorado
- Humble, Jane E.** 1989, Associate Professor of Information and Management Technology; B.S.E., M.S.E., Ph.D., Arizona State University

J

- Jackson, Andrew E.** (1995), Associate Professor of Aeronautical Management Technology; B.A., University of Louisville, M.B.A., Embry Riddle Aeronautical University; Ph.D., University of Central Florida
- Johnson, William T.** (1999), Assistant Librarian; B.S., M.S., Arizona State University; M.L.S., University of Arizona
- Johnston, Carol S.** (1986), Associate Professor of Nutrition; B.S., University of Michigan; M.A., Ph.D., University of Texas, Austin

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- Kagan, Albert** 1992, Professor of Agribusiness and Resource Management, B.S., M.S., Ph.D., Iowa State University of Science and Technology
- Karp, Merrill R.** 1994, Assistant Professor of Aeronautical Management Technology; B.S., Arizona State University, M.A., Central Michigan University, Ph.D., Walden University
- Keith, Marlow F.** (1946), Professor Emeritus of Technology; B.A., M.A., Arizona State University
- Kelley, Donald G.** (1980), Professor Emeritus of Manufacturing and Aeronautical Engineering Technology, B.S., M.S., Arizona State University
- Kigin, Denis J.** (1958–65; 1967), Professor Emeritus of Technology, Dean Emeritus, Continuing Education and Summer Sessions, B.S., Mankato State University, M.S., University of Wisconsin, Stout; Ed.D., University of Missouri
- Kisielewski, Robert V.** (1978), Professor Emeritus of Technology, B.S.M.E., M.S.M.E., University of Wisconsin, Madison

L

- Lawler, Eugene D.** (1967), Professor Emeritus of Technology; B.S., Northern State College, M.A., Arizona State University
- Lipari, Charles A.** (1995), Assistant Professor of Electronics and Computer Engineering Technology; B.S.E.E., M.S.E.E., University of Southwestern Louisiana, Ph.D., Louisiana State University
- Lytte, Robert G.** (1972), Professor Emeritus of Agribusiness and Resource Management; B.S., Western Kentucky University; M.S., Arizona State University

M

- Macia, Narciso F.** 1990, Associate Professor of Electronics and Computer Engineering Technology; B.S., M.S., University of Texas, Arlington; Ph.D., Arizona State University
- Maddy, Kenneth H.** 1980, Professor Emeritus of Agribusiness and Resource Management, B.S., Pennsylvania State University; M.S., University of Wisconsin, Madison, Ph.D., Pennsylvania State University
- Maid, Barry M.** (2000), Professor of Multimedia Writing and Technical Communication, Ph.D., University of Massachusetts, Amherst
- Maisel, James E.** 1985, Professor Emeritus of Electronics and Computer Engineering Technology; B.Eng.Sci., B.E.E., Fenn College, M.S.E.E., Ohio State University
- Manfredo, Mark R.** (1999), Assistant Professor of Agribusiness and Resource Management, B.S., California State University, Fresno; M.S., New Mexico State University, Ph.D., University of Illinois, Urbana
- Manore, Melinda M.** 1984, Professor of Nutrition; B.S., Seattle Pacific University, M.S., University of Oregon, Ph.D., Oregon State University
- Marquardt, Raymond A.** (1997), Professor of Agribusiness and Resource Management; Dean, Morrison School of Agribusiness and Resource Management; B.S., M.S., Colorado State University, Ph.D., Michigan State University
- Martin, Rose L.** (1990), Senior Lecturer of Nutrition; B.S., University of Illinois, M.S., Pennsylvania State University
- Matson, John H.** (1978), Associate Professor of Information and Management Technology, B.S., M.S., Illinois State University
- Matthews, James B.** (1989), Professor Emeritus of Aeronautical Technology, B.S., Rose Hulman Institute of Technology; M.S., Massachusetts Institute of Technology, Ph.D., University of Arizona
- McBrien, Edward F.** (1986), Professor Emeritus of Electronic Computer Technology, B.S.E., Fenn College, M.S.E.E., Cleveland State University
- McCurry, William K.** (1995), Associate Professor of Aeronautical Management Technology; Chair, Department of Aeronautical Management Technology, B.S., Purdue University; M.S., Troy State University; Ph.D., University of Kansas
- McHenry, Albert L.** (1978), Professor of Electronics and Computer Engineering Technology; Dean, College of Technology and Applied Sciences, B.S., Southern University and A&M College, M.S., Ph.D., Arizona State University
- Miller, Victor J.** (1958), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., Ph.D., University of Illinois
- Miller, William H.** (1984), Associate Professor of Environmental Resources; B.S., M.S., Ph.D., Washington State University
- Minter, Marshall R. Jr.** (1965), Professor Emeritus of Technology; B.S.M.E., Purdue University; M.S.M.E., University of Arizona
- Monte, Woodrow** (1979), Associate Professor of Nutrition, B.S., New Mexico Institute of Mining and Technology, M.S., Ph.D., Colorado State University
- Moody, E. Grant** (1951), Professor Emeritus of Agribusiness and Resource Management, B.S., University of Arizona, M.S., Kansas State University; Ph.D., Purdue University
- Munukutla, Lakshmi V.** (1987), Professor of Electronics and Computer Engineering Technology, Associate Dean, College of Technology and Applied Sciences; B.S., M.S., Andhra University (India); Ph.D., Ohio University

N

Nowlin, Robert W. (1990), Professor of Electronics and Computer Engineering Technology; Chair, Department of Electronics and Computer Engineering Technology, B S E E , University of Washington; M S E E , San Diego State University, Ph D E E , Texas Tech University

O

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Okonkwo, Charles U. (1994), Lecturer of Manufacturing and Aeronautical Engineering Technology; B.S., M.S., Iowa State University, Ph.D., University of Florida

Olson, Larry W. (1995), Associate Professor of Information and Management Technology, B.S., Baylor University; Ph.D., University of Pennsylvania

P

Palmgren, Dale E. (1984), Associate Professor of Manufacturing and Aeronautical Engineering Technology; Assistant Dean, College of Technology and Applied Sciences; B.S., M.S., Ph.D., University of Wisconsin, Madison

Pardini, Louis J. (1967), Professor Emeritus of Technology; B.A., A.M., Idaho State University; Ed.D., University of Northern Colorado

Patterson, Paul M. (1995), Assistant Professor of Agribusiness and Resource Management, B.S., Auburn University, M.S., Ph.D., Purdue University

Pearce, Martha V. (1977), Professor Emeritus of Technology; B.S., Columbia University; M.S., Boston University, Ed.D., Arizona State University

Pearson, Michael W. (1998), Assistant Professor of Aeronautical Management Technology, B.A., University of Houston; M.B.A., J.D., Arizona State University

Peterson, Danny M. (1999), Associate Professor of Information and Management Technology; B.S., University of Idaho; M.B.A., California State University, Sacramento; M.S., Ph.D., Arizona State University

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Prust, Zenas A. (1959), Professor Emeritus of Technology, B.S., University of Wisconsin, Stout, M.A., University of Minnesota, Twin Cities; Ed.D., University of Northern Colorado

R

Raccach, Moshe (1980), Associate Professor of Agribusiness and Resource Management, B.Sc., M.Sc., The Hebrew University (Israel), Ph.D., Cornell University

Rajadas, John N. (1996), Assistant Professor of Manufacturing and Aeronautical Engineering Technology, B.Tech., Indian Institute of Technology (India); M.S., Ph.D., Georgia Institute of Technology

Rasmussen, Robert D. (1949), Professor Emeritus of Agribusiness and Resource Management, B.S., Iowa State University; M.S., Washington State University

Reed, William H. (1968), Professor Emeritus of Manufacturing and Aeronautical Engineering Technology, B.S., University of Oklahoma; M.S., Arizona State University

Richards, Timothy J. (1994), Associate Professor of Agribusiness and Resource Management, B.Comm., University of British Columbia; M.A., Ph.D., Stanford University

Richardson, Grant L. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., M.S., University of Arizona, Ph.D., Oregon State University

Robinson, Daniel O. (1950), Professor Emeritus of Agribusiness and Resource Management; A.B., Brigham Young University, M.S., University of Arizona, Ph.D., Ohio State University

Roe, Keith B. (1979), Professor Emeritus of Technology, B.S., Wisconsin State College, M.A., University of Michigan

Rogers, Bradley B. (1984), Associate Professor of Manufacturing and Aeronautical Engineering Technology, B.S., M.S., Montana State University; Ph.D., Arizona State University

Rook, Fern H. (1969), Professor Emeritus of Technology, B.A., University of Colorado, M.A., Arizona State University

Roper, Devon J. (1966), Professor Emeritus of Aeronautical Technology, B.S., Utah State University, M.S., Arizona State University

S

Sadowski, Mary A. (1999), Professor of Information and Management Technology; B.S.E., Bowling Green University, M.A., Ohio State University, Ph.D., Purdue University

Salmirs, Seymour (1981), Professor Emeritus of Technology; B.A.E., M.S.A.E., Georgia Institute of Technology

Schildgen, Thomas E. (1981), Professor of Information and Management Technology; Chair, Department of Information and Management Technology; B.S., M.S., Illinois State University; Ed.D., Northern Arizona University

Schmidt, Peter A. (1978), Associate Professor of Manufacturing and Aeronautical Engineering Technology, B.S., Northern Illinois University; M.A., Ed.D., Arizona State University

Schmitz, Troy G. (1998), Assistant Professor of Agribusiness and Resource Management, B.S., University of Saskatchewan (Canada), M.S., Ph.D., University of California, Berkeley

Schoen, Robert A. (1966), Professor Emeritus of Technology; B.S., M.S., Arizona State University

Schvaneveldt, Roger (2000), Professor of Applied Psychology, B.A., University of Utah, M.S., Ph.D., University of Wisconsin, Madison

Schwalm, David E. (1986), Associate Professor of English; Dean of East College, Vice Provost ASUE, B.A., Carleton College; M.S., Ph.D., University of Chicago

Seperich, George J. (1976), Professor of Agribusiness and Resource Management, Associate Dean, Morrison School of Agribusiness and Resource Management, B.S., Loyola University, Chicago, M.S., Ph.D., Michigan State University

Sheller, Don (1986), Professor Emeritus of Manufacturing Technology; B.M.E., Ohio State University, M.S., Arizona State University

Shultz, Clifford J. (1992), Professor of Agribusiness and Resource Management; Marley Foundation Chair in Consumer Food Marketing; B.A., DePauw University; M.S., Ph.D., Columbia University

Stanton, Julie V. (1996), Assistant Professor of Agribusiness and Resource Management; B.A., Georgetown University, Ph.D., University of Maryland, College Park

Stiles, Philip G. (1969), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Arkansas, M.S., University of Kentucky, Ph.D., Michigan State University

Sundararajan, Rajeswari (1996), Assistant Professor of Electronics and Computer Engineering Technology; B.S., University of Madras (India); M.S., Indian Institute of Science (India); Ph.D., Arizona State University

T

Taysom, Elvin D. (1953), Professor Emeritus of Agribusiness and Resource Management; B.S., University of Idaho; M.S., Utah State University; Ph.D., Washington State University

Thomason, Leslie L. (1969), Professor Emeritus of Technology; A.B., M.A., Ed.D., University of Oklahoma

Thor, Eric P. (1990), Professor of Agribusiness and Resource Management; B.S., M.S., Ph.D., University of California, Berkeley

Turney, Mary Ann (1999), Associate Professor of Aeronautical Management Technology; B.A., LeMoyne College; M.A., Hofstra University; Ed.D., Nova Southeastern University

V

Vaughan, Linda A. (1982), Professor of Nutrition; B.S., University of California, Davis; M.N.S., Cornell University; Ph.D., University of Arizona

W

Watkins, Thomas B. (1972), Professor Emeritus of Technology; B.S., University of Wyoming; M.S., Arizona State University

Welty, Ellen L. (1996), Reference/Instruction Librarian, ASU East Library Services; B.A., University of Wyoming; M.L.S., University of Arizona

Wenhart, James C. (1996), Lecturer in ITCP in Elementary Education; B.S., M.Ed., Arizona State University

Whysong, Gary L. (1974), Associate Professor of Environmental Resources; B.S., M.S., Montana State University; Ph.D., University of Wyoming

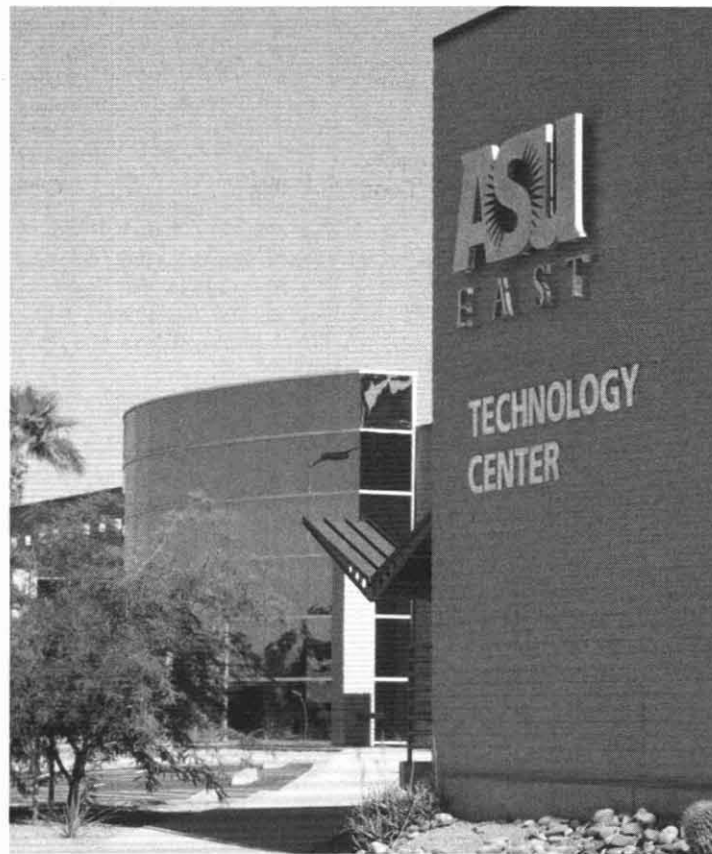
Wilcox, Sidney W. (1955), Professor Emeritus of Engineering; B.A., Bethany-Peniel College; M.A., University of Oklahoma

Wilson, Daniel (1978), Senior Lecturer of Information and Management Technology; B.S., Drexel University; M.S.E., Ph.D., Arizona State University

Wood, Billy G. (1977), Professor Emeritus of Electronics and Computer Engineering Technology; A.B., University of California; B.S., Eastern Illinois University; M.S., University of Arizona

Z

Zeng, Guoliang (1991), Associate Professor of Electronics and Computer Engineering Technology; B.S., Chengdu Telecommunication Institute (China); M.S., University of California, San Diego; M.N.S., Ph.D., Arizona State University



The ASU East Technology Center

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ASU East Administrative Personnel

Academic Administration

Provost.....	Charles E. Backus
Vice Provost, Academic Programs and Dean, East College ..	David E. Schwalm
Dean, College of Technology and Applied Sciences	A bert L. McHenry
Associate Dean, College of Technology and Applied Sciences.....	Lakshm V. Munukutla
Assistant Dean, College of Technology and Applied Sciences.....	Dale E. Palmgren
Chair, Department of Aeronautical Management Technology	William K. McCurry
Chair, Department of Electronics and Computer Engineering Technology	Robert W. Nowl n
Cha r, Department of Information and Management Technology	Thomas E. Schildgen
Cha r, Department of Manufacturing and Aeronautical Engineering Technology	Scott G. Dan elson
Project Director, International Projects Institute.....	Gary M. Grossman
Dean, Morrison Schoo of Agribusiness and Resource Management.....	Raymond A. Marquardt
Associate Dean, Morrison School of Agribusiness and Resource Management.....	George J. Seper'ch
Dean, Student Affairs.....	Gary L. McGrath
Director, Academic Services.....	C. V'nette Will'ams
Director, Adm nistrative Services	Terry C. Isaacson
Director, American Indian Programs.....	Phillip J. Huebner
Director, Campus Life Services	Gary L. Kleemann
Director, Center for Agribusiness Policy Studies	Raymond A. Marquardt
Director, Development	Judith L. Heasley
Director, nformation Technology	Kati L. Weingartner
Interim Director, Institutional Advancement	C. Vinette Williams
D rector, L brary Services	Charles W. Brownson
D rector, Plann ng and Budget.....	She la L. Ainlay
Director, Research and Sponsored Projects	Jean N. Humphries
Marley Foundation Chair in Consumer Food Marketing	Cl fford J. Shultz

ASU West

Elaine P. Maimon, Ph.D., Vice President and Provost

www.west.asu.edu



ASU West serves the diverse needs of career-focused students.

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Admission and Advising609	Directory614
Degree Programs610	Faculty and Academic Professionals615
Map .....	.613	Administrative Personnel .....	.621

ASU West currently offers 29 baccalaureate degree programs and six master's degree programs, plus specialized minors and programs leading to professional certificates. Degree programs are offered through five academic units:

1. College of Arts and Sciences
2. College of Education
3. College of Human Services
4. Division of Collaborative Programs
5. School of Management

Established in 1984 as a nonresidential campus, ASU West serves the diverse needs of approximately 5,000 working adults, returning students, and continuing students, many of whom balance academic demands with work and family. Students enjoy a small college atmosphere on a conveniently located, full service neighborhood campus, while having access to the resources of a Research I, PAC 10 university.

Academic programs, classes, and support services (including child care) are innovative and provide students with a high quality education. Classes are offered in the day and evening, as well as on weekends, through television (cable), on the Internet, and at off campus locations.

The ASU West campus occupies more than 300 acres and is easily accessed via the interstate routes of I 10 and I 17. Facilities are state of the art and consist of seven major buildings (600,000 square feet) surrounded by a beautifully landscaped, natural environment.

ACCREDITATION

ASU West is accredited by the Commission on Institutions of Higher Education of the North Central Association of Colleges and Schools, 30 North LaSalle St., Chicago, IL 60602 2504.

Professional programs in various academic areas are also accredited.

The Business Administration and Accountancy degree programs in the School of Management are accredited by the AACSB The International Association for Management Education. The Accountancy program is also an Endorsed Internal Auditing Program by the Institute of Internal Auditors.

In the College of Human Services, the Department of Recreation and Tourism Management is accredited by the National Recreation and Park Association/American Association for Leisure and Recreation, and the Social Work program is accredited by the Council on Social Work Education. See "Academic Accreditation at ASU West," page 20.

ACADEMIC ORGANIZATION AND ADMINISTRATION

As chief operating and academic officer of ASU West, the vice president and provost provides executive leadership for the continuing development and management of the campus and reports directly to the president of Arizona State University. The vice president and provost is aided in the administration of the campus by vice provosts, deans, directors, department chairs, faculty, and other officers. There are four schools and colleges at ASU West and a Division of Collaborative Programs administered by deans. These academic units develop and implement the teaching, research,

and service programs of the institution, aided by the ASU West Library and other services.

The faculty and students of the institution play an important role in campus governance, with the Academic Senate, Associated Students of ASU West, and numerous cross campus and joint ASU West ASU Main ASU East committees serving the needs of a rapidly growing institution.

See "ASU West Administrative Personnel," page 621, and "Academic Organization," page 8.

ADMISSION AND ADVISING

Admission

Nondegree Students. Nondegree students may take courses at ASU West according to the special provisions under "Admission of Undergraduate Nondegree Applicants," page 68.

Degree-Seeking Students. Any student admitted to ASU may take courses at ASU West. To be admitted to an ASU West degree program, the student must meet university admissions requirements and the specific admission requirements of the ASU West program. A student who is admitted to an ASU West degree program is defined as an ASU West student.

For more information on applying to ASU West degree programs, see the current *ASU West Catalog* or *ASU West Schedule of Classes*. For applications and admission information, call 602/543 8203, or write

ADMISSION SERVICES
UNIVERSITY CENTER BUILDING 120
ARIZONA STATE UNIVERSITY WEST
PO BOX 37100
PHOENIX AZ 85069-7100

Change of Major from ASU Main to ASU West

Currently enrolled ASU Main degree seeking students who want to relocate to an ASU West degree program should contact the Admissions and Records Office at ASU West for the appropriate procedures. Acceptance to an ASU West degree program requires the student to meet the prerequisites for entry to the student's choice of major as stated in the appropriate catalog. Students should be aware that certain requirements (e.g., the minimum number of upper division semester hours to graduate) differ between ASU West and ASU Main. Students should contact an academic advisor at ASU West.

Application of Course Credit. All courses completed on any ASU campus may fulfill the 120 semester hour requirement for graduation with a baccalaureate degree. Every candidate for the baccalaureate degree is required to earn a minimum of 30 semester hours in resident credit courses at the ASU campus from which the student will graduate. Some degree programs have specific requirements that must be completed in the department of the major or through another department at the resident campus. The application of courses to the degree program is determined by the appropriate faculty member or academic advisor of the student's major. Because of these constraints, students should seek advice from the appropriate advisor for their major before registering for classes at another ASU campus.

Academic Advising

Effective academic advising is an essential aspect of the educational experience at ASU West. Prospective students should contact a general advisor as a first step in the admission process. Call 602 543-8144 or visit Transition and Outreach Services in UCB 201 to make an appointment. A general counselor reviews admission requirements and processes and makes referrals to academic advisors as appropriate. A convenient alternative is to meet with an outreach advisor at an ASU West Transfer Center located on the campuses of local community colleges.

DEGREE PROGRAMS

Refer to the "ASU West Baccalaureate Degrees and Majors" table, on this page, "ASU West Graduate Degrees

and Majors" table, page 611, and "ASU West Certificates" table, page 612.

The College of Education offers postbaccalaureate programs for teacher certification in elementary education and secondary education. Students who complete the approved program, including student teaching, are recommended for certification to the Arizona Department of Education.

The following academic specializations for the B.A.E. degree in Secondary Education require course work in the subject matter area not currently available at ASU West (but offered at ASU Main): business education, chemistry, family resources and human development, physical education, physics, political science, and Spanish.

For more information on ASU West degree requirements, see the *ASU West Catalog*.

ASU West Baccalaureate Degrees and Majors

Major	Concentration	Degree	Administered By
Accountancy		B.S.	School of Management
Administration of Justice	—	B.S.	College of Human Services
American Studies	Emphases: American cultures, American lives, American systems, writing	B.A.	College of Arts and Sciences
Applied Science	All minors available at ASU West, individualized concentration	B.A.S.	Division of Collaborative Programs
Communication Studies	Emphases: communication and culture; communication and organizations; communication and relationships; rhetoric, philosophy, and media studies	B.A., B.S.	College of Human Services
Elementary Education	Bilingual education, early childhood education, English as a second language Option: middle school education	B.A.E.	College of Education
English		B.A.	College of Arts and Sciences
Global Business	Financial management, human resources management, information systems management, international studies, marketing	B.S.	School of Management
History		B.A.	College of Arts and Sciences
Integrative Studies	All minors available at ASU West, individualized concentration	B.A.	College of Arts and Sciences
Interdisciplinary Arts and Performance	Media, music, performance studies, theater performance, visual art	B.A.	College of Arts and Sciences
Life Sciences	Emphases: cell biology and physiology, ecology and organismal biology, human biology and environment	B.S.	College of Arts and Sciences
Nursing		B.S.N.	College of Nursing (ASU Main)
Politics	—	B.A., B.S.	College of Arts and Sciences
Psychology		B.A., B.S.	College of Arts and Sciences
Recreation and Tourism Management	—	B.S.	College of Human Services
Secondary Education	Academic specializations: biological sciences, English, history, mathematics, social studies Option: middle school education	B.A.E.	College of Education
Social and Behavioral Sciences	Emphases: interdisciplinary behavioral sciences, interdisciplinary social sciences	B.A., B.S.	College of Arts and Sciences
Social Work		B.S.W.	College of Human Services
Sociology	—	B.A., B.S.	College of Arts and Sciences
Spanish		B.A.	College of Arts and Sciences
Special Education	—	B.A.E.	College of Education
Women's Studies		B.A., B.S.	College of Arts and Sciences

ASU West Graduate Degrees and Majors

Major	Concentration	Degree	Administered By
Business Administration	—	M.B.A.	School of Management
Criminal Justice	—	M.A.	College of Human Services
Educational Administration and Supervision	—	M.Ed.	College of Education
Elementary Education	Bilingual education, educational media and computers, ESL education, reading	M.Ed.	College of Education
Secondary Education	Educational media and computers	M.Ed.	College of Education
Special Education	Infants and young children	M.Ed.	College of Education

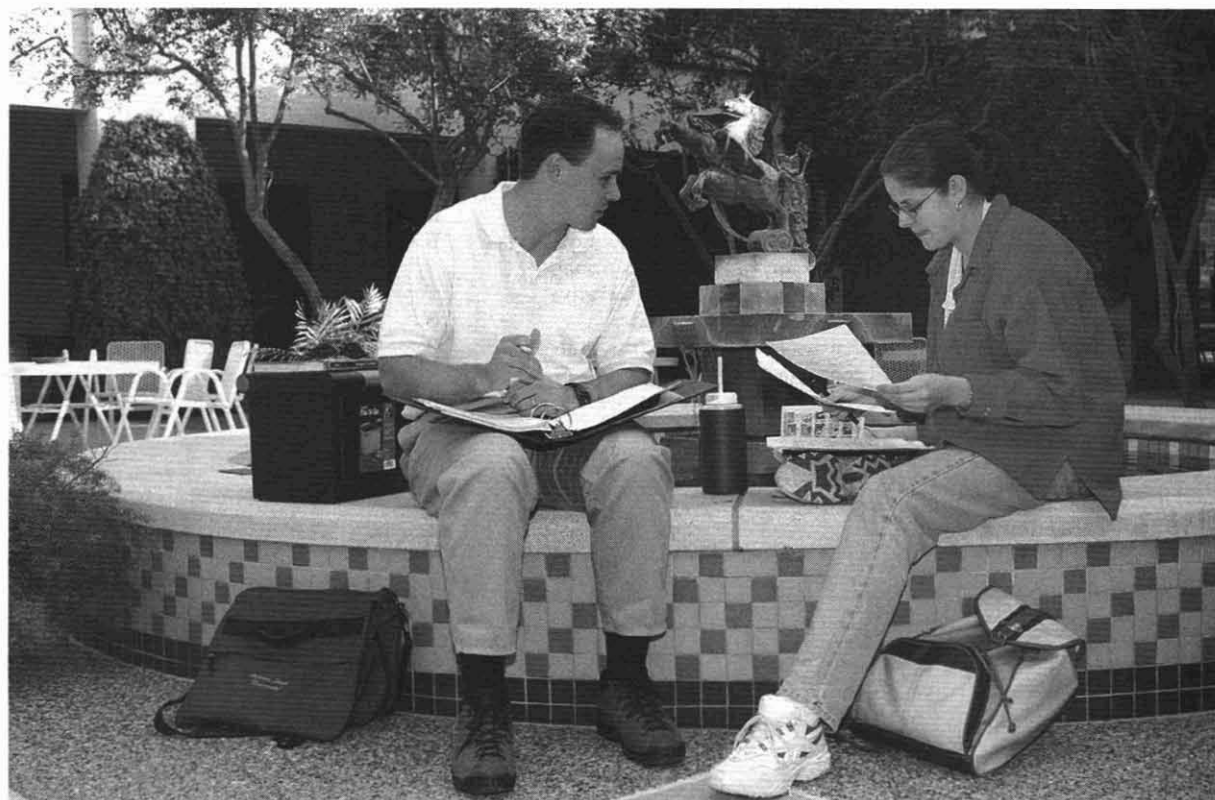
Minors and Certificates

ASU West offers an extensive selection of minors and certificate programs that may be taken in conjunction with a major. Other certificate programs may be taken independently for the complete list see "ASU West Minors" table, page 612, and the "ASU West Certificates," page 612. For more information, refer to the individual department or college descriptions in the *ASU West Catalog*.

ASU Main Programs Hosted at ASU West. Courses for the Bachelor of Science in Nursing (B.S.N.) degree are offered at ASU West. For specific information on requirements, see page 446.

Course Information

For information on ASU West course offerings, see the current *ASU West Schedule of Classes*. For ASU West course descriptions and General Studies courses offered at ASU West, see the *ASU West Catalog*.



The Delph Courtyard fountain of the University Center Building at ASU West

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ASU West Minors

Minor	Administered By
American Studies	Department of American Studies
Communication Studies	Department of Communication Studies
English	Department of American Studies
Ethnic Studies	Ethnic Studies Program
Film and Video Studies	Department of Interdisciplinary Arts and Performance
Gerontology	Gerontology Program
History	Department of American Studies
Interdisciplinary Arts and Performance	Department of Interdisciplinary Arts and Performance
Life Sciences	Department of Life Sciences
Mathematics	Department of Integrative Studies
Politics	Department of Social and Behavioral Sciences
Prelaw	College of Human Services
Psychology	Department of Social and Behavioral Sciences
Social and Behavioral Sciences	Department of Social and Behavioral Sciences
Sociocultural Anthropology	Department of Social and Behavioral Sciences
Sociology	Department of Social and Behavioral Sciences
Spanish	Department of American Studies
Special Events Management	Department of Recreation and Tourism Management
Tourism Management	Department of Recreation and Tourism Management
Women's Studies	Women's Studies Program

ASU West Certificates

Certificate	Administered By
Accountancy, Postbaccalaureate Certificate in	School of Management
Communication and Human Relations, Postbaccalaureate Certificate in	College of Human Services
Ethnic Studies	College of Arts and Sciences
Film and Video Studies	College of Arts and Sciences
Gerontology	College of Human Services
Professional Accountancy, Postbaccalaureate Certificate in	School of Management
Women's Studies	College of Arts and Sciences
Writing	College of Arts and Sciences

ASU West Directory

For the "ASU Main Directory," see page 490. For the "ASU East Directory," see page 602.

Academic Units (Administrative and Faculty Offices)

American Studies, Department of	FAB N220B	602/543 6090
Ethnic Studies Program	CLCC 208A	602/543 6034
Integrative Studies, Department of	FAB N	602/543 6003
Interdisciplinary Arts and Performance, Department of	FAB N230F	602/543 6057
Life Sciences, Department of	CLCC 210	602/543 6050
Social and Behavioral Sciences Department of	FAB N250	602/543-6058
Women's Studies Program	FAB S115A	602/543-3300
Arts and Sciences College of	FAB N200L-3	602/543 6000
Cooperative Programs Division of	FAB S144	602/543-4600
Bachelor of Applied Science Program	FAB S144	602/543-4BAS
Research Consulting Center	FAB S131	602/543 3410
University-College Center	FAB S150	602/543 4222
University Honors College	FAB S151	602/543-4503
Writing Across the Curriculum, Center for	UCB 202	602/543-6151
Education, College of	FAB S200L 1	602/543 6300
Human Services College of	FAB N290	602/543 6600
Administration of Justice Department of	FAB S270D	602/543 6607
Communication Studies, Department of	FAB S270D	602/543 6606
Gerontology Program	FAB S116	602/543 6642
Nursing (ASU Main Program)	FAB S116-1	602/543 6605
Recreation and Tourism Management, Department of	FAB S277	602/543 6603
Social Work Department of	FAB S270 1	602/543 6602
Library, Fletcher	FLHLB	602/543 8501
Circulation and Renewal		602/543 8520
Hours		602/543 8500
Information and Reference Services		602/543 8501
Management, School of	FAB N101	602/543-6200
Accountancy Program	FAB S178	602/543-6275
Master of Business Administration Program	FAB N151	602/543-6201
Undergraduate Global Business Program	FAB N101	602/543-6200

Others

Admissions and Records (Registration Services Student Records)	UCB 120	602/543-8123
Associated Students of ASU West	UCB 221	602/543-8186
Bookstore	UCB 140	602/543-6800
Career Services and Personal Counseling Center	UCB 320	602/543 8124
Disability Resource Center	UCB 130	602/543 8145
TDD		602/543 4327
Financial Aid Services	UCB 120	602/543 8178
Graduate Studies	FAB S301	602/543 4567
Information Desk	FAB Lobby	602/543-5500
Multicultural Services	UCB 221	602/543-8148
Parking Services (Decks, Appeals)	UCB 105	602/543-7275
Residency Classification	UCB 120	602/543-8123
Student Employment	UCB 120	602/543-8178
Student Health Services	UCB 170	602/543 8019
Student Life	UCB 220	602/543 8200
Student Support Services Program	UCB 201	602/543-8121
Transition and Outreach Services (General Advising)	UCB 201	602/543 8144
Tutoring and Testing Services	UCB 201	602/543-8136
Veterans Services	UCB 120	602/543 8123
Vice President/Provost	FAB N303	602/543 7000
Vice Provost, Academic Affairs	FAB N301	602/543 4500
Women's Resource Center	UCB 323	602/543 3421

ASU West Faculty and Academic Professionals

A

Abramson, Marianne 1999, Visiting Assistant Professor of Psychology; B.A., Northern Arizona University, M.A., Ph.D., Arizona State University

Achilles, Elayne R. 1986), Associate Professor of Education, B.M.Ed., Temple University; M.M., Ed.D., Arizona State University

Aguiñaga, Jose (1999, Assistant Librarian, B.A., University of San Diego, M.L.S., University of Arizona

Aleshire, Peter (1993), Senior Lecturer of Professional Writing, B.A., M.A., Stanford University

Allison, Jeanette (1994), Associate Professor of Early Childhood Education; B.S., Warner Pacific College, M.A., California State University, Fresno, Ph.D., University of Illinois

Andreck, Kathleen L. 1993, Associate Professor of Recreation and Tourism Management, B.S., University of Wisconsin, Stevens Point, M.S., Texas A&M University; Ph.D., Clemson University

Anders, Gary C. (1989), Professor of Economics, Director, Institute for International Business, School of Management, B.S., West Texas State University; M.A., Ph.D., University of Notre Dame

Anderson, Laurel A. 1989, Associate Professor of Marketing; B.S.N., University of Minnesota, Twin Cities; M.N., University of Washington; Ph.D., Arizona State University

Anokye, Akua Duku 1999, Visiting Associate Professor of American Studies; B.A., Michigan State University, M.A., Federal City College, District of Columbia, M.A., Ph.D., City University of New York Graduate School and University Center

Armstrong, Todd A. (1999, Assistant Professor of Administration of Justice, B.A., M.A., Ph.D., University of Maryland, College Park

Atwater, Leanne E. 1993, Associate Professor of Management; Director, Faculty Development and School of Management, B.A., M.A., San Diego State University, Ph.D., Claremont Graduate School

Ávalos, Manuel (1990), Associate Professor of Political Science, B.A., M.A., University of Arizona; Ph.D., University of New Mexico

Awender, Michael A. (2000, Professor of Education; Dean, College of Education, B.A., M.A., University of Windsor (Canada); M.Ed., University of Toronto (Canada), Ph.D., Claremont Graduate School

B

Baldwin, Bruce A. (1989, Professor of Accountancy; B.A., M.B.A., Michigan State University, Ph.D., Arizona State University

Balthazard, Pierre A. (1999), Associate Professor of Information Management Systems, B.S., McGill University (Canada); M.S., Ph.D., University of Arizona

Beckett, E. Carol (1996), Assistant Professor of Bilingual Education, B.A., M.Ed., Ed.D., Arizona State University

Bellizzi, Joseph A. (1988, Professor of Marketing, B.S., M.A., Ph.D., University of Nebraska, Lincoln

Berman, Tressa 1995), Assistant Professor of Anthropology; B.A., San Francisco State University, M.A., University of Colorado, Boulder, Ph.D., University of California, Los Angeles

Bernat, Frances P. (1993), Associate Professor of Administration of Justice; B.S., M.A., J.D., State University of New York, Buffalo, Ph.D., Washington State University

Bonakdarian, Mansour 1999), Visiting Assistant Professor of American Studies, B.A., M.A., Ph.D., University of Iowa

Brawley, E. Allan 1992, Professor of Social Work, Vice Provost for Academic Personnel; Certificate of Social Work, University of Strathclyde (United Kingdom), D.S.W., University of Pennsylvania

Bredbenner, Candice D. (1990, Associate Professor of American History; B.A., Russell Sage College, M.A., Ph.D., University of Virginia

Brett, Joan F. (1999, Associate Professor of Marketing; B.A., B.S., Ohio State University; Ph.D., New York University

Britt, Chester L. III (1999), Associate Professor of Administration of Justice; B.A., University of Iowa, M.A., Washington State University, Ph.D., University of Arizona

Broadus, Dorothy C. (1990, Associate Professor of English; Chair, Department of American Studies, B.A., Eastern Kentucky University, M.Ed., Ph.D., University of Louisville

Brodar, Valerie A. (1999, Visiting Assistant Professor of Interdisciplinary Arts and Performance; B.A., Carnegie Mellon University, M.A., School of the Art Institute of Chicago, M.A., Ohio State University

Bryn, Sandra L. 1994), Assistant Professor of Curriculum and Instruction, B.S., Minot State College, M.A., Ed.D., Northern Arizona University

Burleson, Mary H. 1997), Assistant Professor of Psychology, B.A., M.S., New Mexico State University; Ph.D., Arizona State University

Buss, Ray R. (1990, Associate Professor of Educational Psychology, Assistant Dean, College of Education; B.S., M.S., Ph.D., University of Wisconsin, Madison

Byam, L. Dale 1999), Visiting Assistant Professor of Interdisciplinary Arts and Performance, B.A., Concordia University (Canada), M.A., Ph.D., New York University

C

Cardelle-Elawar, Maria 1987, Associate Professor of Educational Psychology, B.A., Universidad Experimental Libertador (Venezuela), M.S., University of Southern California, Ph.D., Stanford University

Cárdenas, Lupe 1986), Associate Professor of Spanish, B.A., M.A., Ph.D., Arizona State University

Carey, James 1998), Lecturer, School of Management, B.S., M.B.A., Ph.D., Arizona State University

Carey, Jane M. (1988), Associate Professor of Management Information Systems, B.S., M.B.A., Eastern Illinois University, Ph.D., University of Mississippi

Carlile, Barbara J. 1993), Lecturer of Education, Coordinator, Field Placement for Education, B.A., Immaculate Heart College; M.Ed., Arizona State University; Ed.D., Northern Arizona University

Carter, Wendy (1997), Assistant Professor of Sociology, B.A., Stanford University, M.S., Carnegie Mellon University, M.S., Ph.D., University of Wisconsin, Madison

Cerveris, Michael E. (1990), Professor of Music: B.S., The Julliard School, M.A., Catholic University; D.M.A., West Virginia University

Chaffin, Nancy (1994), Assistant Librarian; B.A., M.L.S., University of Arizona

Chang, Stanley Y. (1992), Associate Professor of Accountancy; B.B.A., National Taiwan University (Taiwan), M.A., University of Missouri; Ph.D., Texas Tech University

Chisholm, Inés M. (1991), Associate Professor of Bilingual Education; B.A., M.Ed., University of Puerto Rico, Ph.D., University of Florida

Christie, Alice A. (1995), Assistant Professor of Technology and Education; B.A., Denison University, M.Ed., Boston University; Ph.D., Arizona State University

Cleland, Jo Ann V. (1991), Associate Professor of Reading Language Arts, B.A., Saint Olaf College, M.A., Ed.D., Northern Arizona University

Cohen, Charlotte (1999), Assistant Librarian, B.A., M.L.S., University of Arizona

Coles, Jerilyn W. 1994, Assistant Professor of Management, B.S., Brigham Young University, Ph.D., University of Utah

Collins, Kathleen (1997), Assistant Librarian, B.A., University of Maine, Farmington; M.L.I.S., Dalhousie University (Canada)

Collins-Chobanian, Shari C. (1994), Assistant Professor of Philosophy; B.A., Colorado State University, M.A., Ph.D., Washington University

Corrigan, John A. 1992, Professor of Religion, B.A., University of Dayton; M.A., Miami University; Ph.D., University of Chicago

Costantino, James (1998), Lecturer of Accountancy, B.S., M.Acc., Arizona State University; M.A., University of Southern California

Craig, Timothy P. (1990), Associate Professor of Ecology; B.S., Kansas State University, M.S., Ph.D., Northern Arizona University

Cuádriz, Gloria H. (1994), Assistant Professor of American Studies; B.A., University of California, Santa Cruz, M.A., Ph.D., University of California, Berkeley

Cutrer, Emily E. (1990), Associate Professor of American Studies, Dean, Division of Collaborative Programs; Interim Dean of Students and Associate Vice Provost for Student Affairs; B.A., M.A., Ph.D., University of Texas, Austin

Cutrer, Thomas W. (1992), Professor of American Studies, B.A., M.A., Louisiana State University, Ph.D., University of Texas, Austin

D

D'Angelo, Barbara (1999), Assistant Librarian; B.A., Emmanuel College, M.S., University of Illinois, Urbana Champaign

Davidson, Ronald (1997), Associate Professor of Accountancy, Director, Accountancy Program, B.Comm., University of Manitoba (Canada), M.B.A., York University (Canada); Ph.D., University of Arizona

De La Cruz, Yolanda (1991), Assistant Professor of Mathematics Education, B.A., M.A., California State University, Northridge, Ed.D., University of California, Berkeley

Delgado, Fernando (1994), Associate Professor of Communication Studies, B.A., San Jose State University, M.A., Ph.D., University of Iowa

Di Mare, Lesley (1992), Associate Professor of Communication Studies; Chair, Department of Communication Studies; B.A., California State University, Chico; M.A., California State University, Hayward, Ph.D., Indiana University, Bloomington

Dix, Clarence L. 1979, Senior Lecturer of Social Work, B.A., Buena Vista College, M.S.W., University of Chicago

Duncan, William A. 1991, Associate Professor of Accountancy, B.S., Portland State University, Ph.D., University of Texas, Austin

E

Elenes, C. Alejandra (1992), Assistant Professor of Women's Studies, Licenciada en Ciencias de la Informacion, University of Monterrey Mexico, M.A., Ph.D., University of Wisconsin, Madison

Erfani, Julie A. Murphy (1989), Associate Professor of Political Science; B.A., Knox College, M.A., Ph.D., University of Minnesota, Twin Cities

F

Farest, Cynthia A. (1994), Assistant Professor of Reading Education, B.S., University of Texas, Austin, M.Ed., Houston Baptist University, Ph.D., University of Texas, Austin

Farrelly, deg 1991, Associate Librarian, B.A., Illinois State University, M.L.S., Rutgers, The State University

Fedock, Patricia 1993, Assistant Professor of Science Education, B.A., M.A., Ph.D., Arizona State University

Feezor-Buttes, Barbara (1995), Assistant Professor of American Studies; B.A., University of California, Berkeley; M.A., Ph.D., University of California, Los Angeles

Firat, A. Fuat (1990), Professor of Marketing, Licencié en Economie, Istanbul University (Turkey), Ph.D., Northwestern University

Flint, G. David (1998), Lecturer of Management; B.A., Grand Canyon University, M.I.M., American Graduate School of International Management; Ph.D., Texas A&M University

G

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Garcia, Mildred (1997), Associate Professor of Social and Behavioral Sciences, Associate Director, Hispanic Research Center, B.S., Bernard M. Baruch College, M.A., New York University, M.A., Ed.D., Columbia University

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Collaborative Programs, Division of (ASU West)	www.west.asu.edu/asuw/dcp/bas.html
Commencement	www.asu.edu/ssc/commence
East College (ASU East)	www.east.asu.edu/ecollege

Education, College of	www.ed.asu.edu/coe
Dean's Office	courses.ed.asu.edu/deanos
Arizona Educational Information System (AEIS)	www.aeis.asu.edu
Bureau of Educational Research and Services (BERS)	bers.asu.edu
Center for Academic Precocity (CAP)	www.asu.edu/educ/cap
Center for Bilingual Education and Research	www.asu.edu/educ/cber
Center for Indian Education	www.asu.edu/educ/cie
Curriculum and Instruction, Division of	www.ed.asu.edu/coe/candi
Educational Leadership and Policy Studies, Division of	coe.asu.edu/elps
Office of Professional Field Experiences	www.asu.edu/educ/pfe
Office of Student Affairs	www.asu.edu/educ/osa
Psychology in Education, Division of	coe.asu.edu/psyched
Student Computing Lab	www.coescl.asu.edu
Education, College of (ASU West)	www.west.asu.edu/coe
Engineering and Applied Sciences, College of	www.eas.asu.edu
Chemical, Bio, and Materials Engineering, Department of	www.eas.asu.edu/cbme
Civil and Environmental Engineering, Department of	www.eas.asu.edu/civil
Computer Science and Engineering, Department of	www.eas.asu.edu/csedept
Construction, Del E. Webb School of	www.eas.asu.edu/dewsc
Electrical Engineering, Department of	www.eas.asu.edu/ee
Industrial Engineering, Department of	www.eas.asu.edu/imse
Mechanical and Aerospace Engineering, Department of	www.eas.asu.edu/mae
Extended Education, College of	www.asu.edu/xed
Academic and Professional Programs	www.asu.edu/xed/dpcc
American English and Culture Program	www.asu.edu/xed/aecp/esl.html
ASU Downtown Center	www.asu.edu/xed/dtc
Distance Learning Technology	www.dlt.asu.edu
Fine Arts, College of	www.asu.edu/cfa
Art, School of	www.asu.edu/cfa/art
Dance, Department of	www.asu.edu/cfa/dance
Music, School of	www.asu.edu/cfa/music
Theatre, Department of	www.asu.edu/cfa/theatre
Graduate College	www.asu.edu/graduate
Graduate Studies (ASU West)	www.west.asu.edu/graduate
Honors College, Craig and Barbara Barrett	www.asu.edu/honors
Human Services, College of (ASU West)	www.west.asu.edu/humansvcs
International Programs	www.asu.edu/ipo
Law, College of	www.law.asu.edu
Liberal Arts and Sciences, College of	www.asu.edu/clas
Aerospace Studies, Department of	www.asu.edu/clas/afrotc
African American Studies	www.asu.edu/clas/afamstu
Anthropology, Department of	www.asu.edu/clas/anthropology
Biology, Department of	lsvl.la.asu.edu/biology
Chemistry and Biochemistry, Department of	www.asu.edu/clas/chemistry
Chicana and Chicano Studies	www.asu.edu/clas/chicana
English, Department of	www.asu.edu/clas/english
Exercise Science and Physical Education, Department of	www.asu.edu/clas/espe
Family Resources and Human Development, Department of	www.asu.edu/clas/frhd
Geography, Department of	geography.asu.edu
Geology, Department of	geology.asu.edu
History, Department of	www.asu.edu/clas/history
Interdisciplinary Humanities Program	www.asu.edu/clas/humanities
Languages and Literatures, Department of	www.asu.edu/clas/dll
Mathematics, Department of	math.la.asu.edu
Microbiology, Department of	lsvl.la.asu.edu/microbiology
Molecular and Cellular Biology	lsvl.la.asu.edu/mcb
Philosophy, Department of	www.asu.edu/clas/philosophy
Physics and Astronomy, Department of	phy.asu.edu
Plant Biology, Department of	lsvl.la.asu.edu/plantbiology
Political Science, Department of	www.asu.edu/clas/polisci
Psychology, Department of	www.asu.edu/clas/psych
Religious Studies, Department of	www.asu.edu/clas/religious_studies

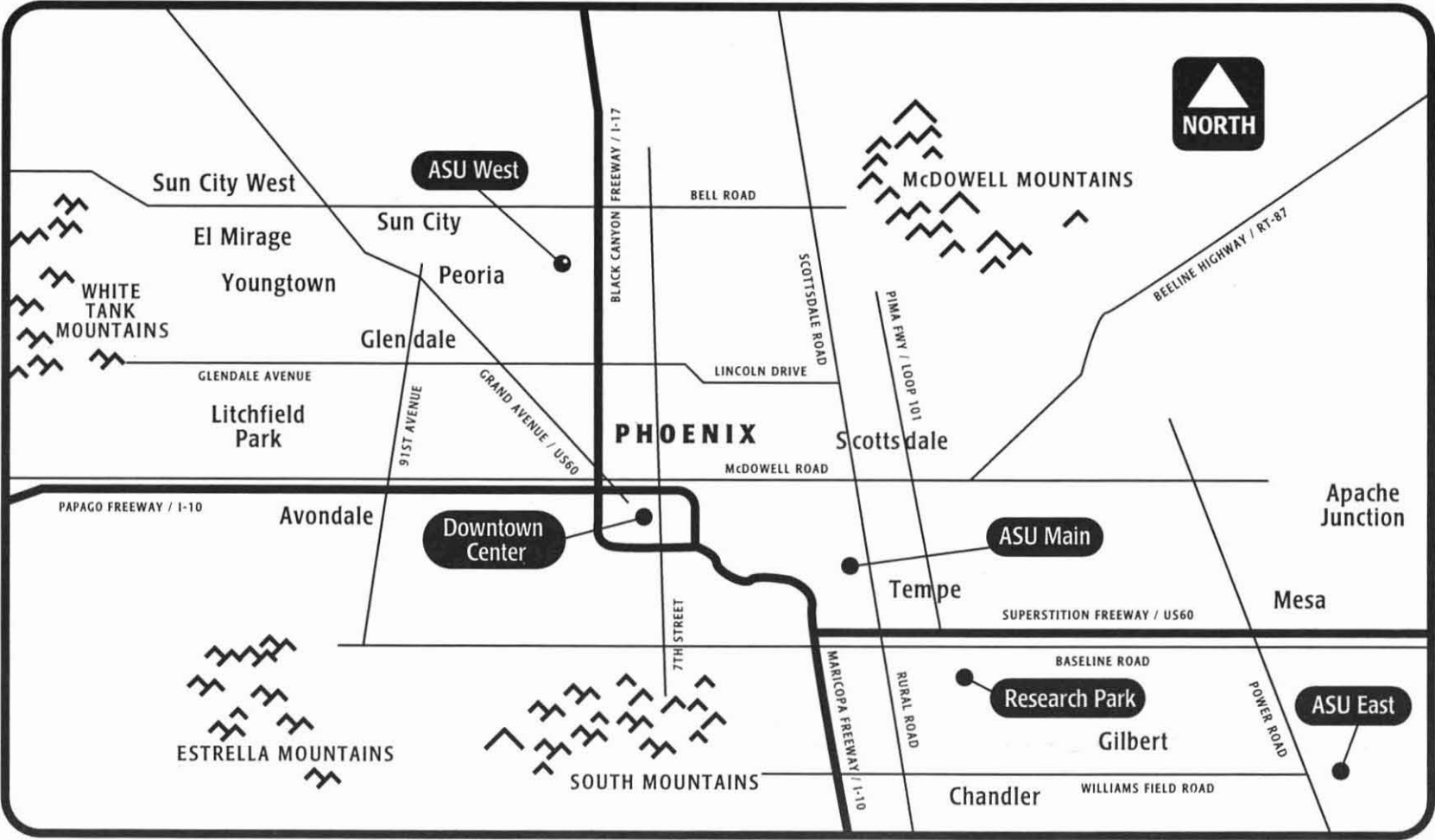
Sociology, Department of	www.asu.edu/clas/sociology
Speech and Hearing Science, Department of	www.asu.edu/clas/shs
Women's Studies Program	www.asu.edu/clas/womens_studies
Management, School of (ASU West).	www.west.asu.edu/som
Nursing, College of.	www.asu.edu/nursing
Continuing and Extended Education	www.asu.edu/nursing/ce
Public Programs, College of	www.asu.edu/copp
Human Communication, Hugh Downs School of	www.asu.edu/copp/communication
Journalism and Telecommunication, Walter Cronkite School of	www.asu.edu/cronkite
Justice Studies, School of	www.asu.edu/copp/justice
Public Affairs, School of	www.asu.edu/copp/publicaffairs
Recreation Management and Tourism, Department of	www.asu.edu/copp/recreation
Social Work, School of	ssw.asu.edu
Schedule of Classes	www.asu.edu/registrar/schedule
Summer Sessions, Office of	www.asu.edu/ssc
Technology and Applied Sciences, College of (ASU East)	www.asu.edu/east/tech
Undergraduate Academic Services, Division of.	www.asu.edu/duas
Bachelor of Interdisciplinary Studies	www.asu.edu/duas/bis
Campus Match	www.asu.edu/duas/campmat
Cross-College Advising Services	www.asu.edu/duas/cas
Degree Audit Reporting System (DARS)	www.asu.edu/duas/dars
Service Learning Program	www.asu.edu/duas/servlearn
Summer Bridge Program	www.asu.edu/duas/bridge
Supplemental Instruction	www.asu.edu/duas/si
University Success Courses	www.asu.edu/duas/uni100
Writing Across the Curriculum	www.asu.edu/duas/wac
Writing Center	www.asu.edu/duas/wcenter
University Libraries	www.asu.edu/lib
Architecture and Environmental Design Library	www.asu.edu/caed/AEDlibrary
Arizona Historical Foundation	www.asu.edu/lib/ahf
Fletcher Library (ASU West)	www.west.asu.edu/asuw/campus/lib
Hayden Library (Business, Fine Arts, Humanities, Social Sciences)	www.asu.edu/lib/hayden
Music Library	www.asu.edu/lib/music
Noble Science and Engineering Library	www.asu.edu/lib/noble
University Archives	www.asu.edu/lib/archives/archives.htm
Video Resources	www.asu.edu/lib/video



The John J. Ross-William C. Blakley Law Library.

John MacIsaac photo

ASU VICINITY MAP



MAP BY AL CAMASTO, ASU PDC, 1'00

Building Abbreviations

ADM (Wings A-B)	Administration	LL	G. Homer Durham Language and Literature Building
AED	College of Architecture and Environmental Design/North	LSA	Life Sciences A Wing
AG	Agriculture Building	LSC	Life Sciences C Wing
AGB1-4	ASUE Agribusiness Quads 1-4	LSE	Life Sciences E Wing
AGBFS	ASUE Agribusiness Food Science Lab	LYC	Lyceum Theatre
AIP	American Indian Programs	MAIN	Old Main
ANTH (Wings A-C)	Anthropology Building	MANZH	Manzanita Hall
ANX	Visual Arts Annex	MARIP	Mariposa Hall
AQUAT Wings A and B	Mona Plummer Aquatics Center	MCENT	A J Matthews Center
ARCH	College of Architecture and Environmental Design/South	MCL	James H McClintock Hall
ARCV	University Archives	MB	M O. Best Hall
ART	Art Building	MHALL	Carrie Matthews Hall
ARWH	Art Warehouse	MOEUR	B B Moeur Administration
ASUDC	Downtown Center	MTCHL	Mitchell School Temple
BA	Business Administration Building	MU	Memorial Union
BAC	Business Administration C Wing	MUR	John Murdock Lecture Hall
BKSTR	ASU Bookstore	MUSIC Wings E and W	Musical Building
CERA (Wings A and B)	Ceramics Annex	NEEB	L.S. Neeb Hall
CFS	Center for Family Studies	NOBLE	Daniel E. Noble Science and Engineering Library
CHAPL	Danforth Chapel	NUR	Nursing Building
CLCC	Classroom Laboratory, Computer Classroom Building ²	PBS	Packard Baseball Stadium
CLRB	ASUE Classroom Building ¹	PEBE	Physical Education Building East
CMPIN	Campus Inn	PEBW	Physical Education Building West
CNTR	ASUE Academic Center Building	PPS	Physical Plant Shops
COMM	Center for Agribusiness Policy Studies ¹	PRNT	ASUE Academic/Business Services Complex ¹
COWDN	Cowden Family Resources Building	PS Wings A-G	George M. Bateman Physical Sciences Center
CP	Central Plant	PSH	Physical Science H Wing
CPCOM	Computing Commons Building	PSY	Psychology Building
CRI	Cancer Research Institute	PVE	Palo Verde East
CRNX	Classroom Annex ²	PVM	Palo Verde Main
CSB	Community Services Building	PVW	Palo Verde West
CSC	Central Services Complex	RITT Wings A and B	Ritter Building
CUB	Williams Campus Union Building ¹	SANDS	Sands Classroom Building ²
DPSMN	Department of Public Safety Main	SCOB	John W. Schwada Classroom Office Building
ECA	Engineering Center A Wing	SCRED	Sonora Center Residence Education Center
ECB	Engineering Center B-Wing	SDF	Solar Demonstration Facility
ECC	Engineering Center C-Wing	SHS (Wings A and B)	Student Health Service
ECD	Engineering Center D Wing	SIM	ASUE Flight Simulator Building ¹
ECE	Engineering Center E Wing	SOLAR	Photovoltaics Testing Laboratory ¹
ECF	Engineering Center F Wing	SRC	Student Recreation Complex
ECG	Engineering Center G Wing	SS	Social Sciences Building
ECANX	Engineering Center Annex	SSV	Student Services Building
ED	Hiram B. Farmer Education Building	STAD	Sun Devil Stadium
EDB	Ira D. Payne Education Hall	STAUF (Wings A and B)	Charles Stauffer Communication Arts Building
EDC	Education Lecture Hall	TC	Technology Center
ELAB	Electronics Laboratory Building ²	TCB	Tacnautics Building
ENGR	Engineering Research Center	TCC	Technology Center Annex
FAB	Faculty and Administration Building ²	TECH	ASUE Technology Center ¹
FABNX	Faculty and Administration Building Annex ²	TECH2	ASUE Technology Center Annex ¹
FAC	Nelson Fine Arts Center	THWH	Theatre Warehouse
FIELD	University Field Lab	TOWER Wings A and B	University Tower Center
FLHLB	Fletcher Library	TRACK	Joe Selleh Track
GGMA	Grady Gammage Memorial Auditorium	UAC	Wells Fargo Arena
GHALL	Dixie Gammage Hall	UASB	Undergraduate Academic Services Building ²
GWC	Barry M. Goldwater Center for Science and Engineering Research	UCB	University Center Building ²
IAPNX	Interdisciplinary Arts and Performance Annex	UCLUB	University Club
ICA	Intercollegiate Athletics	UVCMN	University Commons
IRISH (A-C)	Frederick M. Irish Hall	VISIT	ASU Visitor's Information Center
LAW	John S. Armstrong Hall	WFLD	ASU West Alternate Locations ²
LAWLB	John J. Ross William C. Blakley Law Library	WH	Warehouse
LIB	Charles T. Hayden Library	WHALL	West Hall
		WILSN	George W. Wilson Hall
		WTC	Whiteman Tennis Center

¹ Located at ASU East.

² Located at ASU West

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