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## Psychology

### Doctoral Program

[psych.la.asu.edu](http://psych.la.asu.edu)

480/965-3326

PSY 237C

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#### Darwyn E. Linder, Chair

**Regents' Professors:** Cialdini, Eisenberg, Russo

**Professors:** Aiken, Barrera, Braun, Braver, Castro, Chassin, Homa, Karoly, Kenrick, Killeen, Knight, Lanyon, Linder, Mackinnon, Millsap, Neisewander, Neuberg, Okun, Parkinson, Presson, Reich, Sadalla, Sandler, Somerville, Van Orden, West, Wolchik, Zautra

**Associate Professors:** Castaneda, Davis, Fabricius, Goldinger, Gonzales, Leshowitz, McBeath, Nagoshi, Nemeroff, Saenz, Stone

**Assistant Professors:** E. Amazeen, P. Amazeen, Khoo

**Senior Lecturers:** Barton, Weigand, Wosinski

**Lecturer:** Palmer

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The faculty in the Department of Psychology offer graduate programs leading to the Ph.D. degree in Psychology. Concentrations are available in clinical, developmental, and social psychology, as well as in cognitive/behavioral systems, behavioral neuroscience, and quantitative research methods. (Applications to the concentration in environmental psychology are not being accepted at this time.)

Although there is no terminal master's program as such, doctoral students are required to complete a nonterminal master's degree as part of their training.

All applicants are required to submit scores on the Graduate Record Examination (verbal, quantitative, and analytical sections; advanced section is required for clinical psychology), transcripts, three letters of reference, and a statement of purpose.

#### NONTERMINAL MASTER'S

**Program of Study.** A minimum of 30 semester hours is required for the nonterminal master's degree.

**Foreign Language Requirements.** None.

**Thesis Requirements.** A thesis is required.

**Final Examination.** A final oral examination in defense of the thesis is required.

#### DOCTOR OF PHILOSOPHY

See "Doctor of Philosophy," page 96, for general requirements.

**Application Deadline.** Completed applications for admission in the fall semester, including all letters and supporting documents, should be received by December 1. (However, for the concentrations in cognitive/behavioral systems and quantitative research methods, applications are accepted until January 1.)

The Department of Psychology requires all applicants to provide scores from the aptitude sections of the GRE for clinical psychology. A score from the advanced test in psychology is required. These scores are not used exclusively to determine admission but are viewed in the context of other supporting materials, such as GPAs and letters of recommendation.

**Program of Study.** At present, the Department of Psychology offers the Ph.D. degree in the following research areas: clinical, developmental, cognitive/behavioral systems, behavioral neuroscience, quantitative, and social psychology. A minimum of 60 semester hours beyond the bachelor's degree is required, plus 24 semester hours in research and dissertation.

In addition to a core curriculum, students take courses related to their area of interest as determined in consultation with their supervisory committees.

**First-Year Evaluation.** At the end of the first year of study, each student receives a comprehensive evaluation by the faculty based upon performance in courses and in professional or laboratory assignments and upon the evidence of professional responsibility and ethical behavior.

**Foreign Language Requirements.** None.

**Comprehensive Examinations.** Written and oral examinations are required near the end or upon completion of all course work. After passing the comprehensive examinations and meeting other requirements (e.g., dissertation prospectus), the student is eligible to apply for candidacy.

**Dissertation Requirements.** The dissertation must be an original contribution to knowledge, demonstrating the student's proficiency as an independent investigator. (See "Doctoral Degrees," page 96.)

**Final Examination.** A final oral examination in defense of the dissertation is required.

#### PSYCHOLOGY (SOCIAL AND BEHAVIORAL) (PGS)

##### PGS 414 History of Psychology. (3)

*fall and spring*

Historical development of psychology from its philosophical beginnings to the present. Prerequisites: PGS 101; PSY 230, 290.

##### PGS 461 Interpersonal Influence. (3)

*selected semesters*

Principles and procedures that affect the process of social influence; consideration of attitudinal, compliance-inducing, and perceptual influences. Prerequisite: PGS 350.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## GRADUATE PROGRAMS AND COURSES

### PSYCHOLOGY (SCIENCE AND MATHEMATICS) (PSY)

For more PSY courses, see the list of E PSY courses that follows this list.

#### M PSY 420 Analysis of Behavior. (3)

*selected semesters*

Research, applications, and philosophy of the analysis and control of human behavior. Prerequisite: PSY 290.

#### M PSY 422 Motor Control in Special Populations. (3)

*spring*

Discusses principles of motor control theories and related practical applications for certain special developmental populations. Lecture, discussion. Cross-listed as KIN 422. Credit is allowed for only KIN 422 or PSY 422. Prerequisite: KIN 345.

#### M PSY 424 Genetic Psychology. (3)

*spring*

Introduces the concepts, methodologies, and findings of behavioral genetics for Psychology majors. Prerequisites: PGS 101; PSY 230, 290.

#### M PSY 425 Biological Bases of Behavior. (3)

*selected semesters*

Critical study of physiological psychology; brain mechanisms underlying motivation and learning. Prerequisite: PSY 325.

#### M PSY 426 Neuroanatomy. (4)

*selected semesters*

Structure and function of mammalian brain, including sheep brain dissection. 3 hours lecture, 3 hours lab. Prerequisite: PSY 325 (or its equivalent).

#### M PSY 434 Cognitive Psychology. (3)

*spring*

Human organism as a processor of information, from perception to cognition. Abstract concepts, semantic memory, attention, and mental imagery. Prerequisite: PSY 323 or 324 or instructor approval.

#### M PSY 437 Human Factors. (3)

*fall*

Emphasizes human factors in high-technology systems. Specific topics include systems development, systems analysis techniques, displays, and controls. Prerequisites: both PSY 290 and upper-division standing or only instructor approval.

#### M PSY 470 Psychopharmacology. (3)

*fall and spring*

Basis of drug action at physiological and behavioral levels. Psychological and medical applications and limitations of drugs used in the treatment of mental illness. Prerequisites: PSY 325; 1 semester each of biology and chemistry.

#### M PSY 501 Supervised Teaching. (4)

*fall*

Experience in and examination of perspectives on teaching undergraduate psychology. Prerequisites: graduate standing in psychology; instructor approval.

#### M PSY 506 Survey of Research in Environmental Psychology. (3)

*fall*

Major topics and paradigms in the study of person-environment relationships. Prerequisite: instructor approval.

#### M PSY 512 Advanced Learning. (3)

*selected semesters*

Principles and theories of learning, emphasizing research literature. Prerequisite: instructor approval.

#### M PSY 524 Advanced Physiological Psychology. (3)

*selected semesters*

Contributions of physiological processes and brain function to fundamental behavioral processes. Prerequisite: instructor approval.

#### M PSY 528 Sensation and Perception. (3)

*selected semesters*

Principles of sensory and perceptual processes, emphasizing research literature. Prerequisite: instructor approval.

#### M PSY 530 Analysis of Variance in Psychological Research. (3)

*fall*

One-way and factorial designs, contrasts, post-hoc tests, probing of interactions, mixed designs, power, computer applications. Prerequisite: undergraduate statistics or instructor approval.

#### M PSY 531 Multiple Regression in Psychological Research. (3)

*spring*

Multiple regression and correlation, hierarchical regression, interactions, curvilinear relationships, categorical predictors, ANOVA in regression, regression diagnostics, regression graphics. Prerequisite: PSY 530 or instructor approval.

#### M PSY 532 Analysis of Multivariate Data. (3)

*fall*

Matrix algebra for multivariate procedures, component and factor analysis, canonical and discriminant analysis, classification, MANOVA, logistic regression, hierarchical linear model. Prerequisites: both PSY 530 and 531 or only instructor approval.

#### M PSY 533 Structural Equation Modeling. (3)

*spring*

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.

#### M PSY 534 Psychometric Methods. (3)

*fall and spring*

Theory and practice of psychological measurement using classical and modern test theories. Reliability assessment, test validation, test construction, test usage. Prerequisites: both PSY 530 and 531 or only instructor approval.

#### M PSY 535 Cognitive Processes. (3)

*selected semesters*

Theoretical/empirical treatment of the human organism as a processor of information, including abstraction, memory structure, problem solving, and thinking. Prerequisite: instructor approval.

#### M PSY 536 Statistical Methods in Prevention Research. (3)

*fall and spring*

Statistical methods used in prevention research, including epidemiological methods, logistic regression, program effect estimation, estimation, and mediation analysis. Prerequisites: both PSY 530 and 531 or only instructor approval.

#### M PSY 537 Longitudinal Growth Modeling. (3)

*selected semesters*

Growth modeling methodology to describe individual variation in development over time. Employs multilevel and structural equation modeling frameworks. Prerequisite: PSY 533 or instructor approval.

#### M PSY 538 Advanced Structural Equation Modeling. (3)

*selected semesters*

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.

#### M PSY 539 Meta-Analysis I. (1)

*fall*

Meta-analysis; searching the literature, coding study characteristics, computing effect sizes. Must be followed by PSY 540. Seminar. Prerequisites: both PSY 530 and 531 or only instructor approval.

#### M PSY 540 Meta-Analysis II. (2)

*spring*

Continuation of PSY 539. Meta-analysis; computing effect sizes, and analyzing the heterogeneity of effect sizes. Seminar. Prerequisite: PSY 539.

#### M PSY 541 Research in Cognitive Development. (3)

*selected semesters*

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.

#### M PSY 542 Social Development. (3)

*selected semesters*

Reviews and critiques major issues in the area of social development. Covers theory, research, and content. Prerequisite: instructor approval.

#### M PSY 550 Advanced Social Psychology. (3)

*fall and spring*

Theory and research concerning interpersonal perception, decision making, attitude formation and change, group processes, social motivation, and interaction processes. Prerequisite: instructor approval.

**M PSY 551 Advanced Social Psychology. (3)***fall and spring*

Continuation of PSY 550. Prerequisite: PSY 550 or instructor approval.

**M PSY 553 Social Influence. (3)***selected semesters*

Researches literature relevant to attitude formation and change, conformity, obedience, power, compliance, altruism, and others. Prerequisite: PSY 551 or instructor approval.

**M PSY 555 Experimental and Quasi-Experimental Designs for Research. (3)***selected semesters*

Reviews research techniques. Analyzes laboratory and field research; applications to specific topics. Prerequisite: instructor approval.

**M PSY 569 Advanced Study of Personality. (3)***selected semesters*

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.

**M PSY 572 Psychological Assessment. (3)***fall*

Theory and research on assessment of personality, psychopathology, and intelligence; construction of psychological assessment instruments. Prerequisite: admission to clinical Ph.D. program or instructor approval.

**M PSY 573 Psychopathology. (3)***fall*

Theory and research relating to the contribution of psychological, social, physiological, and genetic factors to the development and persistence of abnormal behavior. Prerequisite: admission to Psychology Ph.D. program or instructor approval.

**M PSY 574 Psychotherapy. (3)***spring*

Detailed survey of the theoretical and empirical literature relating to verbal psychotherapy. Prerequisite: admission to the clinical Ph.D. program or instructor approval.

**M PSY 578 Developmental Psychopathology. (3)***selected semesters*

Covers major theories and research related to the development of psychological disorders of childhood and adolescence.

**M PSY 582 Community Psychology. (3)***summer*

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.

**M PSY 588 Consultation Methods. (3)***selected semesters*

Several theories and strategies of organizational consultation. Develops consultative skills through simulation and practical experience. Prerequisite: advanced standing in Psychology Ph.D. program or instructor approval.

**M PSY 624 Clinical Neuroscience. (3)***spring*

Examines the biological underpinnings of psychological disorders at the molecular, cellular, and system levels (schizophrenia, depression, anxiety, etc.). Lecture, pro-seminar. Prerequisites: graduate standing; instructor approval.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.**PSYCHOLOGY (SCIENCE AND MATHEMATICS) (PSY)***The courses listed are offered by only ASU East. For more PSY courses that may be offered by ASU East, see the list of M PSY courses that precedes this list.***E PSY 560 Advances in Theoretical Psychology. (3)***fall*

Covers new empirical and theoretical work in psychology with emphasis on its applicability. Prerequisites: PSY 323, 324.

**E PSY 561 Methods in Applied Psychology. (3)***fall*

Methods in applied settings, including usability testing, prototyping, and use of computers in data collection and analysis. Integrated lecture and lab. Prerequisites: PSY 290, 330 (or 530).

**E PSY 562 Advanced Human Factors. (3)***fall*

In-depth study of the issues, methods, and findings in industrial and organizational psychology. Prerequisite: PSY 437.

**E PSY 563 Advanced Industrial and Organizational Psychology. (3)***spring*

In-depth study of the issues, methods, and findings in industrial and organizational psychology. Prerequisite: PSY 440.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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**Public Administration****Master's Program**[spa.asu.edu/Acadprog/mpa.htm](http://spa.asu.edu/Acadprog/mpa.htm)

480/965-3926

WILSN 208

**Jeffrey Chapman**

Director, School of Public Affairs

**Heather Campbell**

Director, Master's Program

**Professors:** Alozie, Cayer, Chapman, Coor, Crow, J. Denhardt, R. Denhardt, Hall, Lan, Mankin, Perry**Associate Professors:** Brown, Campbell, DeGraw**Assistant Professors:** McCabe, Peck, Voorhees

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The mission of the School of Public Affairs is to advance excellence in governance by creating, sharing, and applying knowledge of public administration.

The School of Public Affairs offers a 42-semester-hour professional Master of Public Administration (M.P.A.) degree and participates in an interdisciplinary degree leading to the Ph.D. degree in Public Administration.

**MASTER OF PUBLIC ADMINISTRATION**

The M.P.A. is an interdisciplinary, professional degree designed to prepare students for public service, public management, and policy analysis at the local, state, and national levels of government. The M.P.A. degree is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA).

**Admission.** Applicants to the M.P.A. program are considered for admission irrespective of undergraduate major, although students may be required to complete additional courses and/or workshops to prepare themselves for the core courses.

## GRADUATE PROGRAMS AND COURSES

The applicant's undergraduate GPA, GRE scores (verbal, quantitative, and analytical), letters of recommendation, statement of educational and career goals, and professional experience are all considered in the admissions process. In addition, TOEFL scores (550 or higher) are required for international students. Admission may be limited by space availability.

Applications for admission can be sent at any time. Students requesting graduate assistantships and tuition scholarships should have their application files completed by March 1.

All applicants must submit the following materials to the Graduate College:

1. an official application;
2. official transcripts of all undergraduate and graduate work;
3. scores on the GRE (verbal, quantitative, and analytical; special subject tests not required); and
4. TOEFL scores for international students.

All applicants must submit the following materials to the School of Public Affairs:

1. three letters of recommendation, at least two of which should be written by faculty who can evaluate the applicant's academic performance;
2. a written statement of applicant's educational and career goals, which also is used as a sample of the applicant's writing abilities; and
3. résumé or additional documents as the applicant sees fit.

**Program of Study.** The M.P.A. program consists of 42 hours of graduate credit. Students take 27 of these hours in nine core classes in the School of Public Affairs, and 15 additional hours in elective courses.

No more than nine semester hours of ASU graduate courses taken before admission to the school and approved by the M.P.A. Committee can be included in the Program of Study.

Students enrolling in core courses must demonstrate minimum competency in statistics, American government, and computer applications. Courses taken to fulfill the competency do not count toward the 42-hour degree program. Competency in statistics is met with a grade of "B" or higher (within the last six years) in such approved courses as PAF 401, POS 401, PSY 230, QBA 221, and SOC 390. Students without an undergraduate course in American government are required to take an approved course such as POS 310, PAF 300 or PAF 340 or to pass the CLEP examination in American government. Competency in computer applications is determined on the basis of a student's academic record and/or work experience.

**Internship.** A public service internship is recommended for M.P.A. students without previous administrative experience in government. The purpose of the internship is to provide students with practical and professional experience in a specific career area. Students work in and for public organizations applying the knowledge, skills, and abilities acquired in their program of study. During the internship experience,

students can develop a professional network that will aid them in their pursuit of a career in government or non-profit organizations. Students can apply three hours of internship credit to the degree program. To receive course credit for an internship, students are required to attend class sessions and submit a paper to the internship coordinator.

**Foreign Language Requirements.** None.

**Comprehensive Examination.** None.

**Thesis Requirements.** None.

**Capstone Requirement.** The M.P.A. degree requires students to demonstrate competency for public service by synthesizing and applying core course knowledge, skills, and abilities to public service problems. Students demonstrate their public service competency by earning an "A" or a "B" in the M.P.A. capstone course, PAF 509 Public Service.

### Morrison Institute for Public Policy

As an integral part of the School of Public Affairs, the Morrison Institute is an applied public policy research center that conducts research on public policy, informs policymakers and citizens about issues, and advises leaders on choices and actions. In partnership with government officials, university faculty, and the private sector, the Morrison Institute conducts research, policy forums, program evaluations, and strategic planning for public, private, and non-profit clients. The Institute produces publications on a wide range of topics, including urban growth, education, natural resources, governmental systems and relations, health care, social services, quality of life, and economic development.

### Advanced Public Executive Program (APEP)

APEP is a continuing education program designed to provide public-sector executives with analytical approaches and skills in leadership, policy analysis, total quality management, media relations, organizational development, team-building, and communication. Located at the ASU Downtown Center, APEP sponsors the Certified Manager Program, the Institute for Public Executives, Total Quality Management in the Public Sector, the County Elected Officials' Certification Program, and presents custom-tailored professional development programs for public-sector managers.

## PUBLIC AFFAIRS (PAF)

### PAF 401 Statistics. (3)

*fall and spring*

Surveys 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 I. (3)

*fall and spring*

Philosophy, scope, and methods; public service research design, values, and ethics. Prerequisite: an approved course in statistics.

### PAF 502 Public Service Research II. (3)

*fall and spring*

Quantitative techniques, including multivariate analysis, data analysis, decision making, and computer applications in public affairs. Prerequisite: PAF 501.

**PAF 503 Public Affairs. (3)***fall and spring*

Development and context of American public administration and policy, role of administration in governance, and values and ethics in administration.

**PAF 504 Public Affairs Economics. (3)***fall and spring*

Basics of public sector economics, microeconomic and macroeconomic concepts applied to public sector decisions and policies.

**PAF 505 Public Policy Analysis. (3)***fall and spring*

Institutional and formal analysis of policy processes, decision 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)***fall and spring*

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)***fall and spring*

Personnel systems, behavior and management of people in public organizations, collective behavior, unionism, conflict management, motivation, productivity, and ethics.

**PAF 508 Organization Behavior. (3)***fall and spring*

Theory and application in the management of organizational behavior with emphasis on leadership and the public service.

**PAF 509 Public Service. (3)***fall and spring*

Capstone application of core course knowledge, skills, and abilities required for public service. Prerequisites: PAF 501, 502, 503, 504, 505, 506, 507, 508.

**PAF 511 Governmental Finance. (3)***selected semesters*

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)***selected semesters*

Management process in government and public agencies, with emphasis on the executive leadership within the public sector.

**PAF 521 Organization Theory. (3)***selected semesters*

Organization theory and current research emphasis with application to public administrative organizations.

**PAF 522 Public Labor Relations. (3)***selected semesters*

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)***once a year*

Manager's role and resources in the differing forms of administrative, legislative, and community sectors.

**PAF 526 Public Sector Human Resource Development. (3)***selected semesters*

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)***selected semesters*

Explores 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)***selected semesters*

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)***selected semesters*

Interdisciplinary approach to understanding the dynamics of community conflict. Strategic considerations in policy design and advocacy; potential reaction to conflict. Relevant models and research findings generated by both case studies and comparative methods.

**PAF 532 Urban Planning Administration. (3)***selected semesters*

Historical and present-day uses of urban planning and procedures for its implementation. Basic principles and practices.

**PAF 533 Urban Growth Administration. (3)***selected semesters*

Examines the process of urban growth and change. Emphasizes partnership roles played by public and private sectors in management.

**PAF 535 Urban Housing Policy. (3)***selected semesters*

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)***selected semesters*

Analyzes the opportunities and costs of influencing public policy and the roles of officials and bureaucracies in decision making.

**PAF 540 Advanced Policy Analysis. (3)***once a year*

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)***selected semesters*

Various methodologies available for the evaluation of public policies and programs. Prerequisite: PAF 501 or instructor approval.

**PAF 546 Environmental Policy and Management. (3)***selected semesters*

Analyzes 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)***selected semesters*

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)***selected semesters*

Explores how political philosophy, politics, and public policy affect and are affected by women.

**PAF 549 Diversity Issues and Public Policy. (3)***selected semesters*

Examines 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)***selected semesters*

Concepts and theory of information and information technology in public sector organizations.

**PAF 551 Computers in Administration. (3)***selected semesters*

Experience in use of computer technology for public administration problem solving.

**PAF 552 Public Information Systems. (3)***selected semesters*

Systems analysis concepts and theory as applied to administration. Alternative modes of information organization and their impact on public decision making.

**PAF 556 Database Management Systems. (3)***selected semesters*

Concept and use of modern database management systems in an administrative organization. Advantages and disadvantages of this approach.

## GRADUATE PROGRAMS AND COURSES

### **PAF 561 Comparative Administration. (3)**

*selected semesters*

Literature on comparative public administration theory. Bureaucracies and their impact on the political development process. Studies selected nations.

### **PAF 562 Intergovernmental Relations. (3)**

*once a year*

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)**

*selected semesters*

Intensive practice in written and oral presentation of reports to conferences with problems in public administration. Visual aid techniques.

### **PAF 564 Political Economy. (3)**

*once a year*

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)**

*fall and spring*

Topics may include the following:

- Business and Government
- Emergency Management
- General Public Administration
- Geographic Information Systems
- Information Management
- Law and Public Administration
- Public Finance Administration
- Public Management
- Public Policy Analysis
- Transportation Systems Pro-Seminar
- Urban Affairs and Urban Planning

### **PAF 600 Research Design and Methods. (3)**

*once a year*

Advanced methods of research design and data collection. Prerequisites: formal graduate-level course work in statistics and in research methods.

### **PAF 601 Seminar: Policy Analysis and Evaluation. (3)**

*once a year*

Normative and conceptual issues of policy formulation, implementation, and evaluation; methods of policy analysis and evaluation.

### **PAF 602 Seminar: Foundations of Public Administration. (3)**

*once a year*

Ethical, social, legal, and philosophical foundations of public administration.

### **PAF 603 Seminar: Organization and Behavior in the Public Sector. (3)**

*once a year*

Structure, organization, conduct, and performance of public sector institutions in the administration of public policy. Prerequisite: PAF 602.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Public Administration

### Interdisciplinary Doctoral Program

[spa.asu.edu](http://spa.asu.edu)

480/965-3926

WILSN 208

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**Jeffrey Chapman**

Director, School of Public Affairs

**Robert Denhardt**

Director, Doctoral Program

### **Agribusiness and Resource Management (ASU East)**

Professors: Edwards, Thor

### **Economics**

Professor: Hogan

### **Geography**

Professor: Burns

### **Health Administration and Policy**

Professor: Johnson

### **Journalism and Mass Communication**

Professor: Merrill

### **Justice Studies**

Regents' Professor: Altheide

Professors: Hepburn, Musheno, Schneider

### **Management**

Professor: Bohlander

### **Planning and Landscape Architecture**

Professors: Mushkatel, Pijawka

### **Political Science**

Professor: Berman

### **Psychology**

Associate Professor: Castro

### **Public Affairs**

Professors: Alozie, Cayer, Chapman, Crow, J. Denhardt,

R. Denhardt, Hall, Lan, Mankin, Perry

Associate Professors: Brown, Campbell

Assistant Professors: McCabe, Peck, Voorhees

### **Recreation Management and Tourism**

Associate Professor: Virden

### **Social Work**

Professors: Kettner, MacEachron

### **Sociology**

Professor: Nagasawa

Associate Professor: Benin

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The School of Public Affairs offers an interdisciplinary graduate program leading to the Ph.D. degree in Public Administration.

The purpose of the degree program is to foster the next generation of public administration scholars in research and university teaching and to prepare skilled professional public administrators for high-level positions in the public sector. The program is designed to emphasize both normative and conceptual content pertaining to value assessments, theoretical assumptions, ethics, and modes of decision making, as well as practitioner problem-solving skills in budgeting, public personnel management, public finance, planning, program evaluation, and policy analysis.

The degree program is interdisciplinary in nature and is offered by faculty from various colleges. One of the unique features of this interdisciplinary program is that, because it utilizes faculty research and teaching interests from a number of academic units, a student may tailor a course of study to fit individual needs and goals.

**Admission.** Applications are reviewed by an admissions committee appointed by the director of the program. Recommendations for admission are made by the director to the dean of the Graduate College. Minimum Graduate College admission requirements must be met. See "Admission to the Graduate College," page 84, for requirements. Additionally, each applicant must provide a letter of career goals and statement of reasons for seeking the degree, a GRE test score, a professional résumé, and six letters of recommendation (three from faculty and three from professional public administrators). International students must submit both TOEFL and TSE scores. Admissions recommendations are made only once each year, with admitted students beginning their studies in the fall semester. To assure consideration for the ensuing fall semester, submit applications for admission, graduate assistantship, and tuition waiver by January 15. Only applicants already holding a master's degree are considered. If deficiencies exist in public administration course work at the master's level, appropriate classes are prescribed.

**Program of Study.** When the program of study is filed, a supervisory committee consisting of at least three persons is appointed by the dean of the Graduate College upon the recommendation of the director of the program. The chair of the supervisory committee serves as the student's graduate advisor. The supervisory committee advises the student in developing a program of study and assumes primary responsibility in assessing the student's progress in the program. The program consists of a minimum of 66 semester hours of graduate work beyond the master's degree. Of the 66 semester hours, at least 24 must be dissertation and research credit. A minimum of 30 semester hours of approved course work, exclusive of dissertation and research, must be taken at ASU after admission to the program. A sequence of four core

courses is required of all students, followed by successfully passing a screening examination. In addition to the four core courses, an approved program of study must have a course listed in each of the following areas: quantitative research methods, qualitative research methods, political economy, and democratic theory and governance.

**Residency.** See the graduate director with regard to the residency requirements for this program.

**Comprehensive Examinations.** Upon completion of course work, and before dissertation research, the student is given a written examination in chosen areas of specialization. The written examination is followed by a single oral examination. If the student should fail one or more components of the examination, a reexamination may be administered no sooner than three months and no later than one year from the date of the original examination. Approval for this reexamination must be obtained from the supervisory committee, the director of the program, and the dean of the Graduate College. A second failure is considered final and dismissal from the program is recommended to the Graduate College.

**Candidacy.** Doctoral students should apply for admission to candidacy immediately after they have met all requirements for the degree, *except the dissertation*. These requirements include passing the comprehensive examinations and other requirements specified by the program.

**Dissertation Requirements.** A dissertation is required of each student. The dissertation must consist of a fully documented written analysis demonstrating a high level of skill and competence. Each student must register for a minimum of 24 hours of dissertation and research. The dissertation is supervised by a committee of at least three faculty members appointed by the dean of the Graduate College.

**Final Examination.** The final oral examination in defense of the dissertation is scheduled by the dean of the Graduate College and conducted by the student's dissertation committee. A candidate must pass the final examination within five years after completing the comprehensive examination. Any exception must be approved by the dissertation committee, the director, and the dean of the Graduate College.

**Graduation.** The student is eligible for graduation when the Graduate College scholarship requirements have been met, the final oral examination has been passed, and the dissertation has been approved by the supervisory committee and accepted by the director and the dean of the Graduate College.

Applications for graduation should be made no later than the date specified in the Graduate College calendar.

## COURSES

For courses, see "Public Affairs (PAF)," page 306.



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## Public Health

### Master's Program

[wpcarey.asu.edu/hap](http://wpcarey.asu.edu/hap)

480/965-7778

BA 318

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Christine R. Larsen, ASU Coordinator

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The College of Nursing and the School of Health Administration and Policy in the W. P. Carey School of Business, at ASU, in conjunction with the University of Arizona and Northern Arizona University, offer courses leading to the Master of Public Health degree. Two concentrations are offered at ASU, community health practice and health administration and policy.

#### MASTER OF PUBLIC HEALTH

The ASU curriculum of the Master's of Public Health degree prepares graduates to assume leadership roles in the health care industry. Graduates become public health architects with skills and knowledge vital to the planning, implementation, and evaluation of programs and policies essential for promotion of health and the alleviation of illness and disease.

The community health practice concentration is designed to provide graduates with a broad-based foundation in public health practice. Particular attention is focused on the health needs of groups and communities, especially border, rural, minority, and vulnerable populations. Completion of the community health practice curriculum prepares community-based health practitioners to successfully lead the public health community in managing population-based health care issues.

The specialized curriculum of the health administration and policy concentration emphasizes skills necessary for assuming administrative and leadership responsibilities in local, state, and national health departments, policy formulating and public health advocacy organizations, foundations, and organizations engaged in the delivery of health services to both the public and private sectors. Health sector leaders throughout the state contribute to the program creating an integrated interdisciplinary statewide academic endeavor.

Materials describing the two Master of Public Health concentrations offered at ASU are available by calling 480/965-6633, accessing the Web site at [wpcarey.asu.edu/hap](http://wpcarey.asu.edu/hap), sending e-mail to [asuhap@asu.edu](mailto:asuhap@asu.edu), or writing

TRI-UNIVERSITY MASTER OF PUBLIC HEALTH  
ARIZONA STATE UNIVERSITY  
PO BOX 874506  
TEMPE AZ 85287-4506

Other concentrations are available at the University of Arizona and Northern Arizona University.

**Admission.** Applicants must hold a bachelor's degree or equivalent from an accredited college or university. Three letters of recommendation that comment on the student's motivation, commitment, achievements, work experience, and opportunity for success in the program are required. The application packet includes essay questions that should be answered in detail, and a current résumé must be attached. Prospective students must also submit an official Graduate Record Examination (GRE) or Medical College Admissions Test (MCAT) score, or the GMAT if the applicant is applying to the health administration and policy concentration only. For applicants with a U.S. doctoral degree, test scores are recommended but not required.

Applicants whose native language is not English are required to submit a score on the Test of English as a Foreign Language (TOEFL). Domestic students should submit their application packets by February 1 to the University of Arizona for fall admission. International students should submit their applications to the university by December 1. Applications are accepted only for fall admission.

Application materials can be obtained by calling the Master of Public Health program office toll-free (within the US) at 1-800-841-5984, accessing the Web site at [www.ahsc.arizona.edu/pub-hlth](http://www.ahsc.arizona.edu/pub-hlth), sending e-mail to [mphadmit@u.arizona.edu](mailto:mphadmit@u.arizona.edu), or writing

MASTER OF PUBLIC HEALTH  
THE UNIVERSITY OF ARIZONA  
HEALTH SCIENCES CENTER, ROOM 1115A  
1501 N CAMPBELL AVE  
PO BOX 24-5033  
TUCSON AZ 85724-5033

**Program of Study.** The program of study for both concentrations requires 39 semester hours: 15 semester hours of core courses, 12 semester hours of concentration courses, and six hours of electives. Both concentrations require the student to successfully complete a six-hour internship.

#### Tri-university Master of Public Health: Core Courses

HSA 560 Health Services Administration and Policy .....	3
HSA 561 Biostatistics .....	3
HSA 566 Principles of Epidemiology.....	3
PHL 575 Environmental and Occupational Health* .....	3
PHL 577 Social and Behavioral Aspects of Public Health*.....	3
Total .....	15

\* These courses, offered at ASU, are not ASU courses per se and are not found in this catalog.

**Prerequisites.** Students lacking sufficient background in mathematics are required to take a college algebra class before starting the program.

**Foreign Language Requirements.** None.

**Comprehensive Examination.** Each student is required to produce a comprehensive, analytical, problem-solving report integrating the in-class learning with the internship experience. The student is also required to make an oral presentation before a student and faculty colloquium, reporting



on activities during the internship and relating those activities to broader public health issues.

**Thesis Requirement.** None.

### DUAL DEGREE PROGRAMS

**M.S. in Nursing/M.P.H.** The College of Nursing at ASU offers a dual Master's of Science/Master's of Public Health degree. This program is designed to prepare advanced practice public health nurses for leadership positions by synthesizing the strengths of both the profession of nursing and the discipline of public health. Students interested in this program should contact the ASU coordinator at 480/965-6633 for program information and application instructions.

### COURSES

For courses, see "Health Services Administration (HSA)," page 227.

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## Recreation

### Master's Program

[www.asu.edu/copp/recreation](http://www.asu.edu/copp/recreation)

480/965-7291

MOEUR 134

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**Randy J. Virden, Chair, Department of Recreation Management and Tourism**

**Carlton Yoshioka, Director, Master's Program**

**Professors:** Allison, Haley, Yoshioka

**Associate Professors:** Ashcraft, Sonmez, Teye, Virden

**Assistant Professors:** Barry, Brown, Guo, Leclerc, Pritchard, Timothy, White

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### MASTER OF SCIENCE

The faculty in the Department of Recreation Management and Tourism offer a program leading to the M.S. degree in Recreation.

The M.S. degree program prepares students to analyze and understand critical topics and issues pertinent to the field of leisure and recreation.

Students choose between two academic options: the thesis or the professional option.

**Admission.** Students applying to the M.S. program must have achieved a GPA of 3.00 or the equivalent in the last two years of work leading to the bachelor's degree. Applicants should submit their application, application fee, all undergraduate transcripts, Graduate Record Examination (or Miller's Analogy Test) scores, a statement of professional and academic goals, and three letters of recommendation to the Graduate College by March 1 to be considered

for fall admission. Only complete application files are reviewed or considered for admission. Students without undergraduate academic work in the recreation/tourism disciplines are required to take six semester hours of deficiency course work in addition to the M.S. degree requirements. Deficiency course work may be taken in conjunction with M.S. degree classes.

**Program of Study.** Completion of the M.S. degree in Recreation on the average requires approximately two years of study. Students may select a thesis or professional option. The thesis option is a research-oriented degree and is recommended for students planning to continue graduate studies beyond the master's degree. The professional option is intended for students seeking additional knowledge and expertise relevant to professional career development. Advising and direction in both options are under the direct supervision of an assigned faculty member.

**Program Requirements: Thesis Option.** The thesis option consists of a minimum of 30 semester hours. The 30 semester hours include six hours of thesis (REC 599), which must be defended in an oral examination before a supervisory committee of at least three faculty members, one of which resides in another department.

REC 500 Research Methods.....	3
REC 552 Foundation of the Recreation and Tourism Professions.....	3
REC 555 Social and Psychological Aspects of Recreation and Tourism Behavior.....	3
Advanced inquiry skills .....	3
Electives .....	9
Introductory statistics (500-level) .....	3
Thesis .....	6
Minimum total .....	30

**Program Requirements: Professional Option.** The professional option consists of 33 semester hours including six hours of practicum (REC 580). A signed affiliation agreement is required to be on file with the graduate coordinator before registration. The purpose of the practicum is to provide graduate students with in-depth agency-based professional experiences. The student committee consists of one department faculty member and one community/agency professional. At the end of the practicum, the student is required to submit a written description and analysis of the project as well as present the results to the committee.

REC 500 Research Methods.....	3
REC 501 Program Evaluation and Information Management.....	3
REC 530 Recreation and Tourism Service Management .....	3
REC 552 Foundation of the Recreation and Tourism Professions.....	3
REC 555 Social and Psychological Aspects of Recreation and Tourism Behavior .....	3
REC 580 Practicum .....	6
Electives .....	9
Introductory statistics (500-level) .....	3
Minimum total .....	33

**Foreign Language Requirements.** None.

**Thesis Requirements.** A thesis is an option.

## GRADUATE PROGRAMS AND COURSES

**Final Examination.** A final oral examination in defense of the thesis or a practicum is required.

### RESEARCH ACTIVITY

The study of leisure, recreation, and tourism is a multidisciplinary field of research, scholarship, and program development. Recent scholarly activity of departmental faculty and students reflect this approach. Major research areas include the following: international travel and tourism; philosophy of leisure; recreation resource planning; social and psychological analyses of leisure behavior; leisure and youth development; travel and tourism policy and planning; urban recreation administration; outdoor recreation and wilderness management; cross-cultural analysis of play and leisure; gender differences in leisure behavior patterns; non-profit agency leadership/management.

### RECREATION MANAGEMENT AND TOURISM (REC)

#### REC 500 Research Methods. (3)

*once a year*

Introduces 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)

*selected semesters*

Develops 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)

*spring in even years*

Examines and applies organizational behavior, leadership, human resources, development, planning, and risk management to profession.

#### REC 552 Foundation of the Recreation and Tourism Professions. (3)

*once a year*

Examines 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)

*once a year*

Theoretical review and empirical analysis of social, cultural, and psychological foundations of leisure behavior with practical implications.

#### REC 569 Current Issues in Tourism. (3)

*once a year*

General survey of tourism literature with emphasis on relevant theories, concepts, and current research.

#### REC 570 Social Aspects of Outdoor Recreation Management. (3)

*once a year*

Analyzes the social aspects of natural resource recreation management and planning. Prerequisite: REC 370 (or its equivalent).

#### REC 580 Practicum. (1–12)

*selected semesters*

#### REC 593 Applied Project. (1–12)

*selected semesters*

#### REC 598 Special Topics. (1–12)

*selected semesters*

#### REC 599 Thesis. (1–12)

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Religious Studies

### Master's Program

[www.asu.edu/clas/religious\\_studies](http://www.asu.edu/clas/religious_studies)

480/965-7145

ECA 377

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### Joel D. Gereboff, Chair

**Professors:** Cady, Coudert, Feldhaus, Foard, Morrison, Samuelson

**Associate Professors:** Clay, Fessenden, Gereboff, Moore, Schober, Swanson, Woodward

**Assistant Professors:** Benn, Damrel, Leon, Park, Umar

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The faculty of the Department of Religious Studies offer a graduate program leading to the M.A. degree in Religious Studies. This program is designed to serve three main purposes. It offers intensive training in research methods and in select special fields for students who seek to qualify for doctoral programs at leading universities. It serves as specialized training for those who plan to teach religious studies subject matter in colleges and high schools or who wish to bring cultural and cross-cultural analytical tools to professions such as business, social work, government, and journalism. It allows qualified persons in nonacademic occupations the opportunity to acquire competence in the study of religions, broadly defined, and in areas of special interest.

Course offerings and faculty appointments reflect the commitment of the department to a balance of Western and Asian, historical and conceptual, methodological, and subject-oriented areas of study. This programmatic diversity is maintained in a context of scholarly collegiality involving both faculty and graduate students.

### MASTER OF ARTS

See "Master's Degrees," page 94, for general requirements.

The graduate program leading to the M.A. degree provides two options: (1) a thesis option and (2) a portfolio option. While admission requirements and procedures are identical for both options, requirements for degree completion vary as indicated.

**Admission.** In order to be eligible for admission to the graduate program in Religious Studies, an applicant must meet Graduate College requirements. See "Admission to the Graduate College," page 84, and provide the following:

1. The student must submit test scores from the Graduate Record Exam (older returning students may petition the department to have this requirement waived).
2. The student must have completed the equivalent of 15 hours of undergraduate work in the study of

religions, including advanced courses in both Western and Asian or other non-Western religions. Students without the necessary background in religious studies may remove deficiencies by taking additional specified courses (which may or may not count toward the fulfillment of degree requirements) at the beginning of their program of study.

3. The student must request three academic letters of reference to be sent to the graduate coordinator of the department.
4. The student must submit an essay of approximately 1,000 words outlining the academic background, career goals, and specific area of interest in religious studies in relation to fields offered by the faculty.

Complete applications are due by February 1. Students will receive notification from the department by April 1. Graduate assistantship awards are also announced on or about April 1. Late applications and applications for spring semester are reviewed on an individual basis.

For more information, send e-mail to [religious.studies@asu.edu](mailto:religious.studies@asu.edu).

## GRADUATE PROGRAM REQUIREMENTS

**Thesis Option.** This option is recommended for students intending to seek admission to a doctoral program upon completion of the M.A. degree or planning to teach in the discipline at community colleges. For the thesis option the student must satisfy the following requirements:

1. reading knowledge of French, German, or another language relevant to the proposed thesis topic is normally required. At the discretion of the student's supervisory committee, the requirement may be waived for students who either are not planning to enter a doctoral program or are planning to pursue doctoral work that does not require proficiency in foreign languages;
2. 24 hours of course work, including six hours in methods and theory (REL 501, 502); six hours of graduate seminar (REL 591), offered each semester on varying topics within the academic study of religion; and three hours of research (REL 592) in the field of the thesis topic;
3. a thesis that earns six semester hours of 599 Thesis credit; and
4. an oral defense of the thesis.

**Portfolio Option.** This option is recommended for students intending to augment their primary area of expertise and professional training in fields such as journalism, law, teaching K–12, counseling, social work, the ministry, and others. For the portfolio option, the student must satisfy the following requirements:

1. reading knowledge of a foreign language relevant to the proposed area of concentration. At the discretion of the student's supervisory committee, the requirement may be waived;
2. 30 hours of course work, including six hours in methods and theory (REL 501, 502); six hours of

graduate seminar (REL 591); four courses in a major area of concentration; and two courses in a minor area;

3. a portfolio consisting of three papers: one on theory and method, one on the student's minor area of study, and one on the major area of study. Although portfolio papers may germinate from ideas generated in graduate seminars, they will be of publishable quality and make substantive contributions to the scholarship of the field. Credit towards completing the portfolio may be earned as part of the required credit hours outlined in (2); and
4. an oral defense of the portfolio.

## RESEARCH ACTIVITY

For information on current research activity, access the Department of Religious Studies Web site at [www.asu.edu/class/religious\\_studies](http://www.asu.edu/class/religious_studies).

## RELIGIOUS STUDIES (REL)

### REL 410 Judaism in Modern Times. (3)

*selected semesters*

Variety of expressions of Judaism and Jewishness in the modern period. Topics may include American Judaism or religious responses to the Holocaust.

### REL 415 The Jewish Mystical Tradition. (3)

*selected semesters*

Examines some of the esoteric lore of Judaism. Studies movements and literature such as Hasidism and Kabbalah.

### REL 420 Religion in American Life and Thought. (3)

*selected semesters*

Influence of religion on American society, culture, and ideas; the distinctive character of religion in America. Prerequisite: REL 320 or 321 (or its equivalent).

### REL 426 American Preachers and Preaching: The Sermon in America. (3)

*selected semesters*

Life and work of notable American preachers. Emergence of the preacher as representative of American religion. Prerequisite: REL 320 or 321 (or its equivalent).

### REL 427 American Religious Thought. (3)

*selected semesters*

Thought of representative American religious thinkers, i.e., Jonathon Edwards, William Ellery Channing, Horace Bushnell, and Reinhold Niebuhr. Prerequisite: REL 320 or 321 (or its equivalent).

### REL 444 Religion in Japan. (3)

*once a year*

Religion in Japanese history, especially the development of Japanese Buddhism, and religion in the modern transformation of Japan. Prerequisite: instructor approval.

### REL 460 Studies in Islamic Religion. (3)

*selected semesters*

Issues in the interpretation and understanding of Islamic texts, history, society, culture, and rituals. Prerequisites: both REL 365 and Religious Studies major or only instructor approval.

### REL 470 Religion in the Middle Ages. (3)

*selected semesters*

Religious aspects of medieval life and thought; variety of forms of dissent, heresy, and reform movements from the 4th to 13th centuries.

### REL 471 Reformation and Modern Christianity. (3)

*selected semesters*

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.

## GRADUATE PROGRAMS AND COURSES

### REL 483 Religion and Science. (3)

*spring*

Investigates the correlation between science and religion as an interdisciplinary study from a historical perspective. Readings, film, lecture, discussion. Prerequisite: junior standing or instructor approval.

### REL 494 Special Topics in Religious Studies. (3)

*fall and spring*

Open to all students. Topics may be selected from various areas. Prerequisite for freshmen: instructor approval.

### REL 498 Pro-Seminar in Religious Studies. (3)

*selected semesters*

For students with a major or minor emphasis in Religious Studies.

### REL 501 Research Methods in Religious Studies. (3)

*fall*

Explores the major themes and methods in the study of religion, with primary focus on classical texts. Lecture, discussion.

### REL 502 Research Methods in Religious Studies. (3)

*spring*

Explores the major themes and methods in the study of religion, with primary focus on contemporary texts. Lecture, discussion.

### REL 591 Seminar. (3)

*fall and spring*

Topics on methodological issues in the study of religion. Prerequisite: Religious Studies graduate student or instructor approval.

### REL 592 Research. (1–12)

*fall and spring*

### REL 598 Special Topics. (1–4)

*fall and spring*

May be repeated for credit. Topics may include the following:

- Christianity. (3)
- Islam. (3)
- Judaism. (3)
- Native American Religion. (3)
- Problems in Religious Studies. (3)
- Religion in America. (3)
- Religion in East Asia. (3)
- Religion in South and Southeast Asia. (3)
- Study of Religion, Comparative Religion. (3)
- Western Religious Thought, Ethics. (3)

### REL 599 Thesis. (1–12)

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Renaissance Studies

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See "Medieval and Renaissance Studies," page 269.

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## Scholarly Publishing

### Certificate Program

[www.asu.edu/clas/history/graduate/area\\_publishing.html](http://www.asu.edu/clas/history/graduate/area_publishing.html)

480/965-5775

SS 235A

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Beth Luey, Director

Senior Instructional Professional: Luey

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Graduate students in any discipline may pursue a Certificate in Scholarly Publishing in conjunction with their degree programs. The program is also open to students who already hold graduate degrees. Students gain an understanding of the structure of scholarly publishing (scholarly books, journals, reference books, college textbooks, and scholarly electronic media), its role and responsibility in society, the legal and ethical issues that impinge upon it, and its economics. They also learn to perform the responsibilities of editors, designers, or producers of scholarly publications. Course work includes a required core, required courses in editing or design, and electives from a variety of disciplines. The certificate requires 28 hours of course work, including six internship hours. Some courses may be applied to both the certificate and the student's degree program. Applicants are strongly urged to submit Graduate Record Examination aptitude scores; a writing sample is required. Application deadline is February 1. For more information, contact the director, Scholarly Publishing Program, SS 235A, 480/965-5775.

### SCHOLARLY PUBLISHING (PUB)

#### PUB 501 Introduction to Scholarly Publishing. (3)

*once a year*

Introduces the purpose, organization, and operation of scholarly publishing, including its history, societal role, and current issues. Lecture, discussion. Prerequisite: graduate standing.

#### PUB 502 Scholarly Editing. (3)

*once a year*

Publishing procedures, proofreading, and manuscript editing of scholarly books, textbooks and scholarly journals. Lecture, discussion. Prerequisite: admission to scholarly publishing certificate program. Pre- or corequisite: PUB 501.

#### PUB 503 Advanced Scholarly Editing. (3)

*once a year*

Advanced manuscript editing, acquisitions, developmental editing, and indexing of scholarly books, textbooks, and scholarly journals. Lecture, discussion. Prerequisites: PUB 501, 502.

#### PUB 510 Research in Scholarly Publishing. (3)

*once a year*

Individual or group research projects on issues in scholarly publishing, including legal, economic, design, technological, and related topics. Directed research, discussion. Prerequisites: PUB 501; admission to scholarly publishing certificate program.

#### PUB 584 Scholarly Publishing Internship. (1–6)

*once a year*

Structured, supervised, practical experience with a scholarly publisher or other appropriate publishing enterprise. Internship. Prerequisites: PUB 501; 9 hours in scholarly publishing core; instructor approval.

**PUB 598 Special Topics in Scholarly Publishing. (1)***spring*

One-week short courses covering special topics in scholarly publishing, to be taught by visiting publishing professionals. Lecture, discussion. Prerequisites: PUB 501; admission to scholarly publishing certificate program.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## Science and Engineering of Materials

### Interdisciplinary Doctoral Program

[www.asu.edu/graduate/SEM](http://www.asu.edu/graduate/SEM)

480/965-2460

PS A323

**James B. Adams, Codirector**

**William T. Petuskey, Codirector**

#### Chemical and Materials Engineering

Professors: Adams, Dey, Krause, Mahajan, Newman, Picraux  
Associate Professor: Alford

#### Chemistry and Biochemistry

Regents' Professor: Buseck  
Professors: Kouvetakis, Petuskey  
Assistant Professor: Matyushov

#### Electrical Engineering

Regents' Professor: Ferry  
Professors: Goodnick, Kozicki, Schroder, Thornton, Zhang

#### Mechanical and Aerospace Engineering

Professor: Sieradzki

#### Physics and Astronomy

Regents' Professor: Smith  
Professors: Bennett, Ponce, Rez, Sankey, Tsong, Venables  
Associate Professors: Culbertson, Drucker, Herbots, Marzke

#### Solid State Science

Regents' Professor: Smith  
Professor: Carpenter  
Senior Research Scientists: Crozier, McCartney, McKelvy  
Associate Research Scientist: Sharma

The Committee on the Science and Engineering of Materials offers an interdisciplinary graduate program leading to the Ph.D. degree in Science and Engineering of Materials, with concentrations in high-resolution nanostructure analysis and solid-state device materials design. The members of the faculty composing the program are from several academic research units in the College of Liberal Arts and Sciences and the College of Engineering and Applied Sciences: the Center for Solid State Science; the Departments of Chemical and Materials Engineering; Chemistry and Biochemistry; Electrical Engineering; Mechanical and Aerospace Engineering; and Physics and Astronomy.

## DOCTOR OF PHILOSOPHY

The Ph.D. degree in the Science and Engineering of Materials is an interdisciplinary program of study that integrates courses offered by faculty representing various disciplines, along with courses in mathematics, to provide a sound foundation for research leading to a dissertation. Emphasis is placed upon applications of the core fundamentals for investigation of the relationships between microstructure and properties and performance of solids, and the dependence of microstructure on processing.

**Admission.** Admission to the SEM Program is a two-step process. First, all prospective students must satisfy the general admission requirements of the Graduate College. International students must submit a Test of English as a Foreign Language (TOEFL) score. The minimum TOEFL score required by the SEM Program is 600. Second, students must satisfy the requirements of the SEM Program. These requirements are: a GRE (verbal, quantitative, analytical), a professional résumé, a statement of purpose, and three letters of recommendation. International students who wish to be considered for teaching assistantships must provide the program with a Test of Spoken English (TSE) score. Application materials must be received by the SEM Program Office by the following established deadlines: for fall, documents must be received (postmarked) by February 1; for spring, by October 1.

**Program of Study.** The program consists of a minimum 84 semester hours beyond the bachelor's degree, at least 24 of which are research and dissertation credit. Programs of study for individual students are defined during discussions between the student and the faculty supervisory committee. At least 30 semester hours of the approved program of study, including the core, exclusive of research and dissertation, must be completed after admission to the Ph.D. at ASU.

A minimum of 10 graduate-level courses beyond the bachelor's degree is required.

The curriculum includes core courses that define the essential course work for all students, involving 21 semester hours of selected courses in materials, chemistry, and physics. Students who previously have taken courses fulfilling some of the core requirements may select electives.

#### Interdisciplinary Core Courses

CHM 471	Solid-State Chemistry .....	3
	or CHM 453 Inorganic Chemistry (3)	
CHM 541	Advanced Thermodynamics .....	3
CHM 545	Quantum Chemistry I.....	3
	or EEE 434 Quantum Mechanics for Engineers (3)	
	or PHY 571 Quantum Physics (3)	
PHY 498	PS: Materials Physics II.....	3
	or PHY 598 ST: Materials Physics II (3)	
SEM 500	RM: Introduction to Physical Materials.....	3
SEM 591	Seminar .....	3

Students may choose one of the following concentrations in their program of study: (1) high-resolution nanostructure analysis and (2) solid-state device materials design, or may tailor a program of study in the science and engineering of materials to meet their professional and academic needs. Students achieve the desired concentration by completing



## GRADUATE PROGRAMS AND COURSES

three or more of the courses in the appropriate concentration group of courses. The courses in these concentrations are a part of the elective portion of the degree course requirements.

**High-Resolution Nanostructure Analysis.** The courses composing the high-resolution nanostructure analysis concentration are the most comprehensive education in the theory and application of transmission electron microscopy in the U.S. This group of courses is highly interdisciplinary. Because of the strict and important correspondence between the properties of materials and their nanostructure, transmission electron microscopy plays a central role in modern materials science, far beyond its role in other fields of natural science and engineering. Nanostructure analysis is fully one-third the field of materials research and is often the critical knowledge necessary to understand the behavior of materials. The development and applications of high-resolution nanostructure analysis methods is one of ASU's strongest materials research and education specialities and is an important part of the SEM program. Required courses are as follows:

SEM 556 Electron Microscopy Laboratory .....	3
SEM 557 Electron Microscopy Laboratory .....	3
SEM 558 Electron Microscopy I.....	3
SEM 559 Electron Microscopy II .....	3
Total .....	12

**Solid-State Device Materials Design.** The courses specified for the solid-state device materials design concentration are materials applications and characterization courses that introduce SEM students to the culture of device engineering. Students apply their knowledge of basic materials science to contemporary problems of the solid-state electronics industry. Required courses are as follows:

EEE 435 Microelectronics .....	3
EEE 436 Fundamentals of Solid-State Devices .....	3
EEE 536 Semiconductor Characterization.....	3
IEE 572 Design of Engineering Experiments .....	3
MSE 598 ST: Growth and Processing of Semiconductor Devices.....	3
Total .....	15

**Foreign Language Requirements.** None.

**Comprehensive Examination.** Near completion of course work and no later than three years after admission to the program, the student is given a comprehensive examination with oral and written components. The written component is a test that examines the student's knowledge in the core course subjects. The examination is administered by the Curriculum and Examination Committee. The oral component requires the presentation of a research proposition to the student's faculty supervisory committee. The student must define a research problem of current relevance to the materials science field. The problem may be experimental, theoretical, or a combination of both. The presentation should be based on the study of literature and discussions with members of the supervisory committee and materials researchers. The student defines the problem, describes its significance in the field, proposes a method of investigation leading to a solution of the problem, and defends the prob-

lem and proposed solution before the faculty supervisory committee. The proposed problem may be from any area of materials research but it may not be part of the student's dissertation topic. The student must prepare and deliver to the members of the supervisory committee the written proposal describing the research proposition not less than seven business days before the scheduled examination date. The comprehensive exams may be taken no more than twice upon formal application to, and under conditions specified by, the student's faculty committee, the director of the supervisory program, and the dean of the Graduate College. Upon successful completion of this examination, the student is advanced to candidacy for the degree by the Graduate College.

**Dissertation Requirements.** The dissertation, which is the final and most important product of the student's effort in this program, must report original research in the field and demonstrate the student's ability to conduct creative, independent research. Each candidate must register for 24 semester hours of research and dissertation as part of the degree requirements; specifically 12 semester hours of SEM 792 Research and 12 semester hours of SEM 799 Dissertation. Dissertation credits should be taken in the semester(s) following the student's advancement to candidacy.

After the student passes the comprehensive examinations, and every semester up to the time the student defends the dissertation, the student must submit a one-page report on the dissertation proposal to his or her dissertation committee at the end of the semester.

**Final Examination.** The final oral examination in defense of the dissertation is conducted by the student's dissertation committee and others appointed by the dean of the Graduate College.

### SCIENCE AND ENGINEERING OF MATERIALS (SEM)

#### SEM 500 Research Methods. (1-12)

*selected semesters*

Topics may include the following:

- Introduction to Physical Materials. (3)

#### SEM 552 Electron Microscopy I. (3)

*fall*

Kinematical and dynamical electron diffraction and microscopy. Analysis of defect structures and composition of materials using STEM imaging. Cross-listed as MSE 552/PHY 552. Credit is allowed for only MSE 552 or PHY 552 or SEM 552. Prerequisite: instructor approval.

#### SEM 553 Electron Microscopy Laboratory I. (3)

*fall*

Lab support for SEM 552. Cross-listed as MSE 553/PHY 553. Credit is allowed for only MSE 553 or PHY 553 or SEM 553. Pre- or corequisite: MSE 552 or PHY 552 or SEM 552.

#### SEM 554 Electron Microscopy II. (3)

*spring*

Determination of structure and composition of materials using high-resolution imaging, convergent beam diffraction, and electron holography. Cross-listed as MSE 554/PHY 554. Credit is allowed for only MSE 554 or PHY 554 or SEM 554. Prerequisite: instructor approval.

#### SEM 555 Electron Microscopy Laboratory II. (3)

*spring*

Lab support for SEM 554. Cross-listed as MSE 555/PHY 555. Credit is allowed for only MSE 555 or PHY 555 or SEM 555. Pre- or corequisite: MSE 554 or PHY 554 or SEM 554.

**SEM 591 Seminar. (1)**

*fall and spring*

Emphasizes discussion, student presentations, and written research papers.

**SEM 592 Research. (1–12)**

*fall, spring, summer*

**SEM 594 Vacuum System Science and Engineering. (3)**

*spring*

Vacuum concepts, equipment, and systems are studied to give an operational knowledge of modern vacuum technology. Equal emphasis is placed on theoretical and practical instruction. Class time is equally distributed between lecture and laboratory sessions. Lab sessions consist of exercises and tours to provide hands-on experience with and a working perspective of the vacuum techniques and systems principally used in industry, academia, and government laboratories. Undergraduates take two written exams; graduate students take two written exams and complete a vacuum system design project. Prerequisite: college algebra.

**SEM 598 Special Topics. (1–4)**

*selected semesters*

Topics may include the following:

- Phase Transformations in Solids. (3)

**SEM 599 Thesis. (1–12)**

*fall, spring, summer*

**SEM 700 Research Methods. (1–6)**

*selected semesters*

**SEM 790 Reading and Conference. (1–6)**

*selected semesters*

Independent study in which a student meets regularly with a faculty member to discuss assignments (such as intensive reading in a specialized area, writing synthesis of literature on a specified topic, writing literature review of a topic).

**SEM 791 Seminar. (1)**

*selected semesters*

**SEM 792 Research. (1–12)**

*fall, spring, summer*

**SEM 799 Dissertation. (1–12)**

*fall, spring, summer*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Secondary Education

### Master's Program

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ASU West offers a Master of Education degree in Secondary Education. For more information, see the *ASU West Catalog*, call 602/543-4567, or access [www.west.asu.edu](http://www.west.asu.edu) on the Web.

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## Social and Philosophical Foundations of Education

### Master's Program

[coe.asu.edu/elps/spf.php](http://coe.asu.edu/elps/spf.php)

480/965-6357

ED 120

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### Nicholas Appleton, Academic Program Coordinator

**Regents' Professor:** Berliner

**Professors:** Appleton, Barone, Glass, Smith, Webb, Wiley

**Associate Professors:** Hunnicutt, Margolis

**Assistant Professors:** Moses, Powers

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### MASTER OF ARTS

The faculty in the Division of Educational Leadership and Policy Studies offer a graduate program leading to the M.A. degree in Social and Philosophical Foundations of Education. Students may also select policy analysis as an area of study. The program offers students a grounding in historical, social, and philosophical literature. The program is geared toward students seeking relevant and advanced preparation for doctoral-level study in one of the fields of education. The program is also appropriate for educational practitioners seeking terminal master's degrees and advanced intellectual development that will make them more thoughtful teachers and better informed decision makers. Students study both classic and leading contemporary thought taken from educational, social, and philosophical literature. The program draws on intellectual sources and scholarly disciplines, including anthropology, curriculum theory, history, law, philosophy, sociology, and comparative international and multicultural perspectives.

Applicants for admission to the M.A. degree program must submit scores on the Graduate Record Examination. Candidates for the M.A. degree must pass a written comprehensive examination, in addition to writing a thesis or equivalent. An oral examination in defense of the thesis or equivalent is required.

### RESEARCH ACTIVITY

Faculty are currently conducting research in philosophy of education, visual sociology and sociology of education, and education policy.

### SOCIAL AND PHILOSOPHICAL FOUNDATIONS (SPF)

#### SPF 501 Culture and Schooling. (3)

*fall and spring*

Introduces social science concepts of culture and the cultural milieu in which schooling takes place in the United States. Lecture, recitation.



## GRADUATE PROGRAMS AND COURSES

### **SPF 510 Introduction to Organization and Administration of American Public Schools. (3)**

*fall and spring*

Explores organizational structure and administration of public education through the application of legal and ethical concepts and relevant information of the social sciences.

### **SPF 511 School and Society. (3)**

*fall, spring, summer*

Interrelationship of school and society and the role of education in social change.

### **SPF 515 Gender and Education. (3)**

*spring*

Analyzes relationships of gender and education emphasizing analyses and critiques of traditional conception of knowledge, identity, and feminist theory. Seminar.

### **SPF 520 Cultural Diversity in Education. (3)**

*spring*

Philosophic and sociological investigation of cultural diversity in the United States and how it relates to education.

### **SPF 530 Sociology of Education. (3)**

*fall*

Current issues in the sociology of education: stratification, social mobility.

### **SPF 533 Comparative Education in the Western World. (3)**

*selected semesters*

Educational practices and traditions in the leading nations of Europe and the Soviet Union.

### **SPF 534 Foundations of Educational Inquiry. (3)**

*fall*

Overview of the nature of inquiry examining the philosophy of science and social science, approaches to knowing in the humanities. Seminar. Credit is allowed for only SPF 534 or 634.

### **SPF 544 Philosophical Foundations of Education. (3)**

*fall*

Theories of education in ancient, medieval, and modern classical and contemporary philosophies.

### **SPF 566 History of Education. (3)**

*spring*

Development of educational institutions and ideas in the Western world, from ancient times to the 20th century.

### **SPF 591 Seminar. (1–12)**

*selected semesters*

Topics may include the following:

- Foundations of Inquiry. (3)

### **SPF 598 Special Topics. (1–4)**

*selected semesters*

Topics may include the following:

- Education of Women. (3)

### **SPF 603 Visual Ethnography in Education. (3)**

*fall*

Advanced qualitative methods class combining ethnography with the use of video and still photography in data gathering and presentation. Seminar. Corequisite: COE 503.

### **SPF 612 Evaluation Theory. (3)**

*fall*

Explores the major theories of evaluation (inquiry leading to value judgments) in educational policy through examination of cases.

### **SPF 622 Organizational Theory. (3)**

*spring*

Major views of organizations and their influence on role definition and participant behaviors in educational organization. Seminar, discussion. Cross-listed as HED 688. Credit is allowed for only HED 688 or SPF 622.

### **SPF 634 Foundations of Educational Inquiry. (3)**

*fall*

Overview of the nature of inquiry examining the philosophy of science and social science, approaches to knowing in the humanities. Seminar. Credit is allowed for only SPF 634 or 534.

### **SPF 677 Foundations of Educational Reform Movements. (3)**

*fall*

Historical and contemporary survey of curricular reform movements in the United States with emphasis on equity and social justice issues.

Cross-listed as EDA 677. Credit is allowed for only EDA 677 or SPF 677. Prerequisite: admission to doctoral program or instructor approval.

### **SPF 685 Education in Global Contexts. (3–6)**

*spring*

Global perspectives on education in contemporary society with emphasis on social, political, and economic factors that affect access and equity. Lecture, travel. Cross-listed as EDA 685. Credit is allowed for only EDA 685 or SPF 685. Prerequisite: admission to doctoral program in education or instructor approval.

### **SPF 711 Social and Historical Foundations of Education. (3)**

*spring*

Explores the history of sociological thought, especially theories of the relations between educational systems and the social/cultural world.

### **SPF 791 Seminar. (1–12)**

*selected semesters*

Topics may include the following:

- Pro-Seminar. (3)

### **SPF 792 Research. (1–12)**

*selected semesters*

### **SPF 799 Dissertation. (1–15)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Social Work

### Master's and Doctoral Programs

[ssw.asu.edu](http://ssw.asu.edu)

480/965-3304

WHALL 135

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### Leslie Leighninger, Director, School of Social Work

**Professors:** Ashford, Coudroglou, Daley, Figueira-McDonough, LeCroy, Leighninger, MacEachron, Moroney, Segal

**Associate Professors:** Brzuzy, Gerdes, Gustavsson, Marsiglia, Montero, Nichols, Paz, Risley-Curtiss, Steiner, Stromwall, Waller, Yellow Bird

**Assistant Professors:** Holley, Holschuh, Hurdle, Larson, Napoli, Okamoto

**Academic Professionals:** Rountree-Antar, Gonzalez-Santin, Knutson-Woods, Yopez

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The faculty in the School of Social Work offer programs leading to the Master of Social Work degree and the Ph.D. degree in Social Work.

### MASTER OF SOCIAL WORK

The professional program leading to the Master of Social Work (M.S.W.) degree prepares social workers for advanced direct practice or planning, administration, and community practice. The program is designed to prepare social workers to be capable of responding effectively to the needs of special populations in the Southwest. The M.S.W.

degree program is accredited by the Council on Social Work Education.

**Advanced Standing Program**

The advanced standing program is a full-time, 36-semester-hour program available in both Tempe and Tucson.

**Program of Study.** Students must start the program in summer (beginning with the first summer session) and complete a total of three semester hours in each summer session for a total of six hours. The six semester hours of summer courses are available in Tempe only. Students also complete one internship and select one of two concentrations: advanced direct practice or planning, administration, and community practice. The planning, administration, and community practice courses are generally offered in Tempe only.

**Summer Session Course Work**

SWG 598 ST: Advanced Standing Bridge Seminar.....	3
One required social work course.....	3

The following concentration courses are required:

**Advanced Direct Practice (ADP)**

SWG 606 Assessment of Mental Disorders .....	3
SWG 611 Social Work with Families .....	3
SWG 619 Practice-Oriented Research.....	3
SWG 621 Integrative Seminar .....	3
SWG 632 Social Policy and Services II .....	3
SWG 641 Advanced Practicum: Direct Practice I.....	3
SWG 642 Advanced Practicum: Direct Practice II.....	3
One of the following five approved advanced courses .....	3
SWG 613 Social Work with Individuals (3)	
SWG 614 Social Work with Families in Transition (3)	
SWG 616 Social Work with Chemically Dependent Families (3)	
SWG 617 Social Work Practice with Children and Adolescents (3)	
SWG 618 Domestic Violence (3)	
Electives .....	6
Total .....	30

**Planning, Administration, and Community Practice (PAC)**

SWG 623 Agency and Community-Based Research in Social Work.....	3
SWG 632 Social Policy and Services II .....	3
SWG 643 Advanced Practicum: Planning, Social Work Administration, and Community Practice I .....	3
SWG 644 Advanced Practicum: Planning, Social Work Administration, and Community Practice II.....	3
SWG 680 Program Planning in Social Services .....	3
One of the following advanced courses .....	3
SWG 681 Social Work Administration (3)	
SWG 682 Community Participation Strategies (3)	
Electives .....	12
Total .....	30

Electives may be selected from offerings at the School of Social Work or courses offered through other departments with the approval of the M.S.W. program coordinator.

**Application Procedures.** Applicants must follow the procedures for admission to the Graduate College (see “Admission to the Graduate College,” page 84). Master’s degree program applicants must have a B.S.W. degree from a Council on Social Work Education accredited program with

at least a 3.50 GPA (on a 4.00 scale) in required upper-division social work courses. A GPA of at least 3.00 (on a 4.00 scale) for the last two years of work leading to the B.S.W. degree is also required. In addition, all applicants are required to successfully complete a course in human biology and statistics before enrolling in the advanced standing program. Applications to the advanced standing program are accepted from November 1 to January 2 preceding the summer session to which the applicant is seeking admission. Applicants admitted to the advanced standing program begin classes in the summer.

All advanced standing program applicants must submit the following to the School of Social Work:

1. a School of Social Work M.S.W. application form;
2. an M.S.W. advanced standing application;
3. a statement of educational and career goals;
4. a professional résumé that includes volunteer and paid work experience;
5. a written case example covering areas specified in the advanced standing application; and
6. three letters of reference.

At least one of the three required references must be from the applicant’s B.S.W. field instructor, or if employed in a social work-related job for two or more years, a recommendation from the applicant’s supervisor. Preference may be given to applicants with professional social work-related employment, and to individuals with less than six years between the granting of their B.S.W. degrees and the current application date. In addition, all applicants must submit the following to the Graduate College:

1. completed Graduate College application form;
2. application fee; and
3. an official transcript of all academic work completed or in progress.

**Comprehensive Exam.** All students must pass a comprehensive examination administered by the school or complete a thesis before graduation.

**Academic Standing and Curriculum Sequencing.** To remain in good academic standing, the student must maintain an overall GPA of 3.00 at the end of each semester. Most courses in the program are sequential; successful completion of the prior course in the sequence is required to enroll in the following course.

**Standard M.S.W. Program**

The standard program consists of 60 hours, including both classroom instruction and field practicum. It is divided into a foundation year (core curriculum) and a concentration year. During both years, students spend two days a week in a practicum setting.

**Program of Study.** The foundation curriculum is the same for all students and must be completed before entering the concentration year. The following are the required foundation courses:

SWG 501 Human Behavior in the Social Environment I.....	3
SWG 502 Human Behavior in the Social Environment II.....	3

## GRADUATE PROGRAMS AND COURSES

SWG 510 Foundation Practice I.....	3
SWG 511 Foundation Practice II.....	3
SWG 519 Research Methods in Social Work.....	3
SWG 531 Social Policy and Services I.....	3
SWG 533 Diversity and Oppression in Social Work Context.....	3
SWG 541 Field Practicum I.....	3
SWG 542 Field Practicum II.....	3
SWG 580 Community and Organizational Change.....	3

In the second year, students pursue a concentration in either (1) advanced direct practice or (2) planning, administration, and community practice. Six to twelve hours of electives are required for students either to take additional course work in their concentration or to increase knowledge and skills in such areas as health and mental health, family and child welfare, or aging.

The following are required concentration courses:

<b>Advanced Direct Practice (ADP)</b>	
SWG 606 Assessment of Mental Disorders.....	3
SWG 611 Social Work with Families.....	3
SWG 619 Practice-Oriented Research.....	3
SWG 621 Integrative Seminar.....	3
SWG 632 Social Policy and Services II.....	3
SWG 641 Advanced Practicum: Direct Practice I.....	3
SWG 642 Advanced Practicum: Direct Practice II.....	3
One of the following five approved advanced courses.....	3
SWG 613 Social Work with Individuals (3)	
SWG 614 Social Work with Families in Transition (3)	
SWG 616 Social Work with Chemically Dependent Families (3)	
SWG 617 Social Work Practice with Children and Adolescents (3)	
SWG 618 Domestic Violence (3)	
Electives.....	6
Total.....	30

<b>Planning, Administration, and Community Practice (PAC)</b>	
SWG 623 Agency and Community-Based Research in Social Work.....	3
SWG 632 Social Policy and Services II.....	3
SWG 643 Advanced Practicum: Planning, Social Work Administration, and Community Practice I.....	3
SWG 644 Advanced Practicum: Planning, Social Work Administration, and Community Practice II.....	3
SWG 680 Program Planning in Social Services.....	3
One of the following advanced courses.....	3
SWG 681 Social Work Administration (3)	
SWG 682 Community Participation Strategies (3)	
Electives.....	12
Total.....	30

Electives may be selected from offerings at the School of Social Work or courses offered through other departments with the approval of the M.S.W. program coordinator. The total semester hours for each concentration equals 30.

**Application Procedures.** Applicants must follow the procedures for admission to the Graduate College (see “Admission to the Graduate College,” page 84). Applications to the standard M.S.W. program are accepted from November 1 to March 1 preceding the fall semester to which the applicant is seeking admission. Applicants admitted to the standard M.S.W. program begin classes in the fall.

All applicants for the standard M.S.W. program must submit to the School of Social Work the following:

1. a School of Social Work M.S.W. application form;
2. a statement of educational and career goals;
3. a professional résumé that includes volunteer and paid work experience; and
4. three letters of reference.

Test scores from either the Graduate Record Exam or the Miller Analogies Test are required only if the applicant’s GPA was below 3.00 (on a 4.00 scale) during his or her junior and senior years. In addition, all applicants must submit to the Graduate College the following:

1. a completed Graduate College application form;
2. the application fee; and
3. an official transcript of all academic work completed or in progress.

The school requires one of the following:

1. a liberal arts undergraduate degree;
2. a B.S.W. from a Council on Social Work Education accredited school of social work; or
3. another undergraduate degree, with 30 semester hours in liberal arts courses at the undergraduate or graduate level.

The 30 semester hours described in item 3 above must include course work from the social/behavioral sciences, natural sciences, and humanities. The distribution should approximate the current curriculum for the B.S.W. program: 18 hours in social and behavioral sciences, six hours in natural sciences with at least one course in human biology, and six hours in humanities.

All students are required to successfully complete a course in human biology before enrollment in the graduate program. Additionally, all students must have successfully completed a course in statistics before admission. If the statistics requirement has not been met, then an equivalent course must either be successfully completed by December 31 or before registering for SWG 519.

**Provisional Admission.** Applicants with lower test scores or grades below minimal levels may be considered for provisional admission if there is counterbalancing evidence suggesting the potential of outstanding performance in the M.S.W. program. Normally, final determination of the removal of provision status is made by the time the student has completed 12 hours of approved graduate study. The provisional student does not complete field work until this status has been changed. However, the student carries the same academic load as a regularly admitted student and is expected to meet the same standards for continuation in the program.

**Part-Time Program.** Students are admitted each fall to a planned part-time program. Students interested in this option must specifically apply to the part-time program.

**Tucson Component.** The School of Social Work offers the full foundation year (30 semester hours of credit) and some concentration-year course work in Tucson. Students may be required to commute to Tempe during both semesters of their concentration year. Courses are scheduled, however, so that a minimum of travel time is required of students. For

information about or application to the Tucson component, call 520/884-5507.

**Transfer Credit.** Upon recommendation of the admissions committee, the first year of graduate study (up to 30 graduate semester hours) earned at another CSWE accredited school of social work may be transferred and applied toward the M.S.W. degree at ASU. Under these circumstances, the student must complete the second full year of graduate study (at least 30 semester hours of graduate work) at ASU, resulting in a 60-hour program composed of the work from both schools. A full report from the school at which the intended transfer credit was obtained is required.

In other cases, with the approval of the M.S.W. program coordinator, up to six semester hours of graduate work completed at another university may be transferred as elective credit.

Consideration for acceptance of prior graduate credits must be applied for at the time of admission. The grades of all transfer credit must be a “B” or higher.

**Nondegree Course Work.** A maximum of nine graduate semester hours earned as a nondegree student in the ASU School of Social Work or six semester hours earned at another graduate degree program at ASU may be applied toward the program of study. A combination of credit earned as a nondegree student—at ASU or transferred from another university—may not exceed nine hours and of those nine hours, no more than six hours may be electives.

Course work toward a master’s degree must be completed within six consecutive years. The six-year period begins with the first course included on the student’s approved program of study.

Consideration for acceptance of nondegree work must be applied for at the time of admission.

**Exemptions and Waiver Examinations.** The number of hours required to complete the M.S.W. degree ranges from 36 to 60 semester hours, with 60 hours representing the standard program. In addition to transferring credit (see policy on transfer credit), admitted students may meet requirements of up to 24 hours of credit towards the degree by (1) exempting up to fifteen hours of foundation course work without examination or (2) successfully completing examinations in any of the foundation courses except field practicum.

*Exemptions.* Only students from B.S.W. programs accredited by the Council on Social Work Education can be considered for exemptions. To be eligible for an exemption from any course, students must have received their B.S.W. degree no more than five years before the date of admission or must demonstrate current continuing education credits. Admitted B.S.W. students from ASU are exempted from the courses listed below without examination if they meet the stated GPA requirements. B.S.W. students from other accredited programs may also be exempted from the same courses, but must submit their course content material (course description, syllabus, and outline) for review by the M.S.W. program coordinator for an equivalency review to determine exemption. B.S.W. students may be exempted from the following courses:

1. SWG 501, if the student has an “A” in SWU 301 or an equivalent social work course;
2. SWG 502, if the student has an “A” in SWU 340 or an equivalent social work course;
3. SWG 519, if the student has an “A” in SWU 320 or an equivalent social work course;
4. SWG 531, if the student has an “A” in SWU 171 and 432 or equivalent social work courses;
5. SWG 533, if the student has an “A” in SWU 374 or an equivalent social work course.

*Waiver Examinations.* Students who believe they have successfully completed equivalent undergraduate courses or have related work experience covering content taught in these courses can take a written waiver examination, before starting the M.S.W. program in the fall, for the following courses:

SWG 501 Human Behavior in the Social Environment I.....	3
SWG 502 Human Behavior in the Social Environment II.....	3
SWG 510 Foundation Practice I.....	3
SWG 511 Foundation Practice II*.....	3
SWG 519 Research Methods in Social Work.....	3
SWG 531 Social Policy and Services I.....	3
SWG 533 Diversity and Oppression in a Social Work Context.....	3
SWG 580 Community and Organizational Change.....	3

\* Only students who successfully pass the waiver exam for SWG 510 Foundation Practice I are allowed to take the waiver exam for SWG 511 Foundation Practice II.

**Comprehensive Examination.** ASU requires a comprehensive examination or thesis for graduation in all professional master’s programs. All Social Work students must pass a comprehensive examination, administered by the school, or complete a thesis before graduation.

**Academic Standing and Curriculum Sequencing.** In order to remain in good academic standing, the student must maintain an overall GPA of 3.00 at the end of each semester. Most courses in the program are sequential; successful completion of the prior course in the sequence is required to enroll in the following course. Students may not enroll in any second-year required courses until all foundation courses, including the foundation field (SWG 541 and 542), have been successfully completed.

**Financial Assistance.** Recent federal reductions in support of human services and educational programs have severely limited the resources available for stipends. Therefore, it is important that applicants have a sound financial plan to cover expenses for the duration of the degree program.

Financial assistance information is available from Student Financial Assistance Office, Student Services Building, second floor, 480/965-3355.

## DOCTOR OF PHILOSOPHY

The program seeks to prepare future social work scholars who are involved in the development and application of theories in social work practice, and who plan to enhance social work knowledge through the classroom and field settings.

## GRADUATE PROGRAMS AND COURSES

The program introduces students to the range of roles and responsibilities of faculty leadership, to the challenging expectations of critical thinking and creativity in research and teaching, and to the multiple ways of integrating research, teaching, and service in the social work profession.

The Social Work faculty advocate for and support the human potential in the distinct experiences and perspectives of the Southwest region. The cultural and economic diversity of the Southwest makes it possible for faculty and students to engage in many issues in their community-based research and practice.

**Admission.** Applicants must hold an M.S.W. degree from an accredited school of social work, preferably have a minimum of two years of post-M.S.W. professional social work paid employment, and apply to both the ASU Graduate College and the School of Social Work.

Admission to the Ph.D. program requires completion of all admission requirements and procedures set forth by the Graduate College and test scores from the Graduate Record Examination (GRE) (verbal, quantitative, and analytical). Applications are accepted up to February 1 preceding the fall semester to which the applicant is seeking admission.

**Application Procedure.** The following items should be submitted to

ADMISSIONS OFFICE  
GRADUATE COLLEGE  
ARIZONA STATE UNIVERSITY  
PO BOX 871003  
TEMPE AZ 85287-1003

1. the application for admission to the Graduate College;
2. one official transcript from each institution the applicant has attended previously; and
3. test scores from the GRE.

The following items should be submitted to

ACADEMIC SERVICES  
SCHOOL OF SOCIAL WORK  
ARIZONA STATE UNIVERSITY  
PO BOX 871802  
TEMPE AZ 85287-1802

1. application to the Ph.D. program in Social Work;
2. writing sample—Social Problem Essay;
3. examples of written work (students may submit samples of their professional and/or academic writing);
4. three letters of reference that must use the reference letter form provided by the School of Social Work; and
5. curriculum vitae or résumé.

**Program of Study.** Students must demonstrate scholarly competencies in several broad areas identified during the mentoring and advising process. These areas must include: micro/macro theories and perspectives on critical issues in social work and social welfare (24 semester hours), quanti-

tative/qualitative research methodologies (12 semester hours), and professoriate training and mentoring in research, teaching, and service. The program requires a minimum of 36 semester hours of course work beyond the M.S.W. degree and 84 semester hours beyond the baccalaureate degree. Because students must achieve competency requirements, they may need to take additional course work to achieve these competencies.

The program emphasizes enhancement of scholarship through:

1. applied social work research in diverse community settings and populations of the Southwest;
2. teaching, from syllabus development to classroom teaching across the professional continuum;
3. participation in collegial decision making; and
4. participation in field education and community services.

Students are expected to participate fully in research, teaching, and field liaison activities during their course of studies.

**Advisement.** The individualized plan for becoming a social work scholar and for learning associated faculty roles is developed by students and their faculty advisors over time.

**Residency.** The minimum residency requirement for the Ph.D. program is 18 semester hours in courses relating to the program of study, exclusive of dissertation. The residency must be completed in two consecutive semesters, not including summer sessions.

**Foreign Language Requirements.** None.

**Qualifying Examination.** Students are given a qualifying examination in the semester following the completion of the first 18 semester hours of approved Ph.D. course work. Students who fail the examination may retake it the following semester. Students failing the qualifying examination twice will be dropped from the program.

**Comprehensive Examination.** Upon completion of course work and the qualifying examination, but before beginning dissertation research, students are given a written examination covering research, theory, and methods in their substantive area. If students should fail one or more components of the examination, a reexamination may be administered no sooner than three months and no later than one year from the date of the original examination. Approval of the reexamination must be obtained from the supervisory committee and the dean of the Graduate College.

**Dissertation Requirements.** Each candidate must register for a minimum of 24 semester hours of credit for research and dissertation. The final copy of the dissertation must be received by the supervisory committee and the dean of the Graduate College at least three weeks before the degree conferral date.

**Final Examination.** The final oral examination in defense of the dissertation is scheduled and conducted by the student's dissertation committee. A candidate must pass the

final examination within five years after completing the comprehensive examination.

## RESEARCH ACTIVITY

### Drug Resistance Strategies (DRS) Project

This is a school-based substance abuse program funded by the National Institute on Drug Abuse (NIDA). Dr. Flavio Marsiglia is the principal investigator for the project. The program is uniquely designed to reflect students' cultural norms and values. Presented to seventh grade classes throughout the City of Phoenix, DRS is impacting 50 schools and 5,500 students. Latino, non-Latino, and mixed versions of the drug prevention curriculum have been developed. This innovation enables students to recognize themselves in the prevention message and provides solutions that are sensitive to their unique cultural environment. The objective of DRS is to prevent and reduce substance abuse by teaching valuable communication and life skills.

### Understanding the Cultural Context: Working with American Indian Children and their Families

The School's Office of American Indian Projects is working to develop a competency-based training curriculum. The curriculum is intended to assist both state and tribal child welfare staff in developing the necessary cultural competence to work with American Indian families. This grant is a collaborative effort with the Inter Tribal Council of Arizona and Diné College, the only American Indian College in Arizona.

## FACULTY SCHOLARSHIP

Faculty of the School of Social Work are actively engaged in a variety of research areas, with an emphasis on populations of the Southwest. The following are some recent faculty publications.

1. Ashford, J.B., Lecroy, C.W., and Lortie, K.L. (2001). *Human Behavior in the Social Environment: A Multidimensional Perspective* (second edition).
2. Ashford, J.B., Sales, B.D., and LeCroy, C.W. (2001). *Aftercare and Recidivism Prevention*.
3. Ashford, J.B., Sales, B.D., and Reid, W.H. (2001). *Political, Legal and Professional Challenges to Treating Offenders with Special Needs*.
4. Brzuzy, S., Stromwall, L., Sharp, P., Wilson, R., and Segal, E. A. (2000). *The Vulnerability of American Indian Women in the New Welfare State*.
5. Daley, J.M. and Marsiglia, F.F. (2000). *Community Partnerships: Old Wine in New Bottles?*
6. Gustavsson, N.S., and MacEachron, A.E. (2000). *Death and the Foster Child*.
7. Gustavsson, N.S., and MacEachron, A.E. (2001). *Death and the Child Welfare Worker*.
8. Gustavsson, N.S., and MacEachron, A.E. (2001). *Perspectives on Research-Related Anxieties Among B.S.W. Students: Math, Computer, and Library Anxiety*.
9. Holschuh, J., and Segal, S.P., (in progress). Factors Related to Multiplexity in Support Networks of Persons with Severe Mental Illness. In J.A. Levy and B.A. Pescosolido (Ed.), *Social Networks and Health*, Vol. 8, Advances in Medical Sociology. Greenwich, CT: JAI Press.
10. Kettner, P.M. (2002). *Achieving Excellence in the Management of Human Service Organizations*.
11. Knutson Woods, T. (2002). *Restructuring Autonomy: The Journey from Freestanding to Administratively Subordinate Status*.
12. Knutson Woods, T., Blaine, K., and Francisco, L. (2002). *O'odham Himdag as a Source of Strength and Wellness Among the Tohono O'odham of Southern Arizona and Northern Sonora, Mexico*.
13. LeCroy, C.W. and Daley, J.M. (2001). *Empowering Adolescent Girls: Examining the Present, Building Skills for the Future with the Go Girls Program*.
14. LeCroy, C.W. and Okamoto, S. (2002). *Guidelines for Using Assessment Instruments with Children*.
15. Leighninger, L. (2000). *Creating a New Profession: The Beginnings of Social Work Education in the United States*.
16. Leighninger, L. and Leighninger, R.D. (2000). *Social Policy in the New Deal*.
17. Marcenko, M.O., Kemp, S.P., and Larson, N.C. (2000). *Childhood Experiences of Abuse, Later Substance Use, and Parenting Outcomes Among Low-Income Mothers*.
18. Marsiglia, F.F., Holleran, L. and Jackson, K.M. (2000). *Assessing the Impact of Internal and External Resources on School-Based Substance Abuse Prevention*.
19. Marsiglia, F.F., Kulus, S. and Hecht, M.L. (2001). *Ethnic Labels and Ethnic Identity as Predictors of Drug Use and Drug Exposure among Middle School Students in the Southwest*.
20. Murphy, S., Risley-Curtiss, C., and Gerdes, K.E. (2002). *American Indian Women and Domestic Violence: The Lived Experience*.
21. Patterson, S. and Marsiglia, F.F. (2000). *Mi Casa es Su Casa: A Beginning Exploration of Mexican-Americans' Natural Helping*.
22. Risley-Curtiss, C., and Kronenfeld, J.J. (2001). Health Care Policies for Children in Out-of-Home Care. *Child Welfare*, LXXX, 325-359.
23. Segal, E.A., Gerdes, K.G., and Steiner, S. (2001). *Social Work and Social Welfare in the New Century*.
24. Segal, E.A. and Stromwall, L.K. (2000). *Social Work Practice Issues Related to Poverty and Homelessness*.
25. Steiner, S., Brzuzy, S., Gerdes, K.E., and Hurdle, D. (2001). *Using Structured Controversy to Teach Diversity Content and Cultural Competence*.
26. Stromwall, L.K. (2002). *Is Social Work's Door Open to People Recovering from Psychiatric Disabilities?*
27. Stromwall, L.K. (2002). *Mental Health Barriers to Employment for TNF Recipients*.
28. Vidal de Haymes, M., Kilty, K.M., and Segal, E.A. (Eds) (2000). *Inequalities, Challenges, and Barriers: Latino Communities in the New Century*.

## GRADUATE PROGRAMS AND COURSES

29. Waller, M. (2000). *Addressing Student Writing Problems: Applying Composition Theory to Social Work Education*.

### **SOCIAL WORK (GRADUATE PROGRAM) (SWG)**

#### **SWG 501 Human Behavior in the Social Environment I. (3)**

*fall*  
Analyzes theories of personality and life span development from methodological, ecological, and systems perspectives up to adolescence.

#### **SWG 502 Human Behavior in the Social Environment II. (3)**

*spring*  
Life span development from middle childhood to maturity. Prerequisite: SWG 501.

#### **SWG 510 Foundation Practice I. (3)**

*fall*  
Basic social work methods with emphasis on the problem-solving process as it pertains to individuals, families, and small groups. Prerequisite: Social Work major.

#### **SWG 511 Foundation Practice II. (3)**

*spring*  
Theory and methods of direct practice with groups and selected practice models. Lecture, lab. Prerequisite: SWG 510.

#### **SWG 517 Aging and Wellness. (3)**

*fall and spring*  
One-on-one service/experiential learning with seniors from the community. Lecture, lab. Cross-listed as GRN 540. Credit is allowed for only GRN 540 or SWG 517.

#### **SWG 519 Research Methods in Social Work. (3)**

*spring*  
Conceptual foundations and methods of nomothetic research in social work. Includes problem identification, hypothesis formulation, measurement, sampling, and experimental design. Prerequisites: Social Work major; an approved course in statistics.

#### **SWG 531 Social Policy and Services I. (3)**

*fall*  
Conceptual, analytical, and historical perspectives on the social welfare institution. Emphasizes poverty and inequality. Principles of policy analysis.

#### **SWG 533 Diversity and Oppression in a Social Work Context. (3)**

*fall and spring*  
Explores issues of social inequality related to disability, ethnicity, gender, race, and sexual orientation. Emphasizes populations of the Southwest.

#### **SWG 541 Field Practicum I. (3)**

*fall and spring*  
With SWG 542, two consecutive semesters (480 hours) of supervised social work practice in an approved placement. Pre- or corequisite: SWG 510.

#### **SWG 542 Field Practicum II. (3)**

*fall and spring*  
See SWG 541. Prerequisite: SWG 541. Pre- or corequisite: SWG 511.

#### **SWG 580 Community and Organizational Change. (3)**

*fall and spring*  
Examines communities and human service organizations as social systems. Introduces strategies for initiating planned change.

#### **SWG 598 Special Topics. (1–4)**

*selected semesters*  
Topics may include the following:  
• Advanced Standing Bridge Seminar. (3)

#### **SWG 605 Substance Abuse. (3)**

*selected semesters*  
Psychological and sociocultural determinants of substance abuse. Overview of social policies and treatment approaches.

#### **SWG 606 Assessment of Mental Disorders. (3)**

*fall*  
Theories and concepts of mental health and illness. Attention to classification systems and nomenclature used in assessing mental disorders. Prerequisite: SWG 502.

#### **SWG 611 Social Work with Families. (3)**

*fall*  
Theory, concepts, and skills for working with diverse family populations. Emphasizes a systems and integrative approach. Prerequisites: SWG 511, 542.

#### **SWG 612 Social Work with Groups. (3)**

*selected semesters*  
Practices applications of knowledge and skill to social work with groups.

#### **SWG 613 Social Work with Individuals. (3)**

*spring*  
Treatment of prevalent disorders encountered by social workers, selected from the following: anxiety disorders, personality disorders, depression, and schizophrenia. Lecture, seminar. Prerequisite: SWG 611.

#### **SWG 614 Social Work with Families in Transition. (3)**

*spring*  
Analyzes the psychosocial dynamics of families disrupted by divorce, separation, or death of a parent. Offers differential social work interventions. Prerequisite: SWG 611.

#### **SWG 616 Social Work with Chemically Dependent Families. (3)**

*spring*  
Examines dynamics of the chemically dependent family and presents clinical approaches for intervening in the family system and subsystems. Prerequisite: SWG 611.

#### **SWG 617 Social Work Practice with Children and Adolescents. (3)**

*spring*  
Theory, research, and intervention that focus on children and adolescents. Prerequisite: SWG 611.

#### **SWG 618 Domestic Violence. (3)**

*spring*  
Theory, research, intervention, and prevention strategies relevant to child maltreatment, partner abuse, and elder abuse. Prerequisite: SWG 611.

#### **SWG 619 Practice-Oriented Research. (3)**

*fall*  
Accelerated course in application of scholarly and scientific principles to field practice, problem formulation, interventional procedures, and impact assessment. Prerequisite: SWG 519.

#### **SWG 621 Integrative Seminar. (3)**

*spring*  
Explores the fit between theoretical frameworks and practice with clients. Requires presentation of empirical studies with clients. Prerequisite: SWG 611. Pre- or corequisite: SWG 641.

#### **SWG 623 Agency and Community-Based Research in Social Work. (3)**

*spring*  
Research design techniques and data collection in human service agencies and communities. Analysis for program evaluation and needs assessment. Prerequisites: SWG 519, 541, 542. Corequisite: SWG 680.

#### **SWG 632 Social Policy and Services II. (3)**

*spring*  
Develops advanced knowledge and skills in social welfare policy analysis, policy formulation, and advocacy and intervention for policy change. Prerequisite: SWG 531.

#### **SWG 633 Child Welfare Services. (3)**

*fall*  
Examines, using ecological and system theories, services which supplement, support, and substitute for parental care of children. Prerequisite: SWG 542.

#### **SWG 641 Advanced Practicum: Direct Practice I. (3)**

*fall and spring*  
With SWG 642, two consecutive semesters (480 hours) of supervised social work practice in an approved placement related to the student's career goal. Prerequisites: SWG 541, 542. Pre- or corequisite: SWG 611.

#### **SWG 642 Advanced Practicum: Direct Practice II. (3)**

*fall and spring*  
See SWG 641. Prerequisites: SWG 541, 542, 611, 641. Pre- or corequisite: SWG 613 or 614 or 616 or 617 or 618.



**SWG 643 Advanced Practicum: Planning, Social Work Administration, and Community Practice I. (3)**

*fall and spring*

With SWG 644, two consecutive semesters (480 hours) in social work practice in an approved placement related to the student's career goal. Prerequisites: SWG 541, 542. Pre- or corequisite: SWG 681 or 682.

**SWG 644 Advanced Practicum: Planning, Social Work Administration, and Community Practice II. (3)**

*fall and spring*

See SWG 643. Prerequisites: SWG 681 (or 682), 643. Pre- or corequisite: SWG 680.

**SWG 680 Program Planning in Social Services. (3)**

*spring*

Social services planning process; includes needs assessment, goals and objectives, program design, budgeting, management information systems, and program evaluation. Prerequisite: SWG 681 or 682. Corequisite: SWG 623.

**SWG 681 Social Work Administration. (3)**

*fall*

Administrative skill building and theory application within human service nonprofit social work settings. Prerequisites: SWG 542, 580.

**SWG 682 Community Participation Strategies. (3)**

*fall*

Reviews strategies to involve citizens and the consumers of social and human services in community decision-making systems. Participation is viewed as means to facilitate the empowerment of oppressed peoples. Prerequisites: SWG 542, 580.

**SWG 683 Developing Grants and Fund Raising. (3)**

*selected semesters*

Identification of potential funding sources, technical and interpersonal/political aspects of proposal development and fund raising.

**SWG 720 Philosophy of Science Issues in Social Work. (3)**

*fall*

Critical examination of social science, social work practice and policy in terms of philosophical assumptions and varying frames of reference.

**SWG 722 Critical Thought in Social Work. (3)**

*spring*

Evaluates and reconstructs social work conceptualizations, research, and practice based on various strains of critical theory. Seminar.

**SWG 731 Social Welfare Policy Analysis and Development. (3)**

*fall*

Methods of policy analysis, critique of social welfare policies against proposed models, and case studies of policy development emphasizing southwestern populations.

**SWG 732 Social Work Administration in a Systems Context. (3)**

*fall*

Case studies of social work administration from initial conceptualization of policy through implementation at national, state, and local levels.

**SWG 741 Integrative Research Seminar. (3)**

*fall*

Integrates theory, research methods, and statistics in community social work topics of specific interest to students.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## Social Work

### Master's Program

ASU West also offers a Master of Social Work (M.S.W.) degree. For more information about the ASU West program, see the *ASU West Catalog*, call 602/543-4679, or access [www.west.asu.edu/chs/msw](http://www.west.asu.edu/chs/msw) on the Web.

## Sociology

### Master's and Doctoral Programs

[www.asu.edu/clas/sociology/graduate](http://www.asu.edu/clas/sociology/graduate)

480/965-3735

SS 321F

Verna M. Keith, Chair

**Professors:** Bolin, Cobas, Hackett, Kronenfeld, Kulis, Thomas, Weitz

**Associate Professors:** Agadjanian, Benin, Harlan, Jacobson, Keith, Miller-Loessi, Sullivan

**Assistant Professors:** Glick, Padilla

**Senior Lecturer:** Fine

**Academic Professional:** Wolf

The faculty in the Department of Sociology offer graduate programs leading to the M.A. and Ph.D. degrees in Sociology.

### MASTER OF ARTS

This degree program provides advanced training for those preparing for teaching, research, or applied careers in sociology, and may be taken either as a terminal program or as a step toward eventual fulfillment of requirements for the Ph.D. A detailed description of the graduate program (including opportunities in teaching and research assistantships) may be obtained from the department chair.

**Admission.** Admission to the program is determined by the following criteria: Graduate Record Examination (GRE) scores (verbal, quantitative, and analytical), three letters of appraisal from persons familiar with the applicant's academic background, valid transcripts of the student's academic record, and a biographical narrative provided by the applicant. Application deadline is February 15.

**Program of Study.** A master's degree in Sociology requires the successful completion of a minimum of 30 semester hours, including a 12-hour core curriculum, six hours of theory (SOC 585 and 586), and six hours of research methods (SOC 500 and 505), two hours of Sociology as a Profession (SOC 503 and 504), with the balance to be drawn from substantive courses and six hours earned through the M.A. thesis (SOC 599).

**Foreign Language Requirements.** None.

**Thesis Requirements.** A thesis is required.

**Final Examination.** A final oral examination in defense of the thesis is required. This oral examination also tests the student's comprehension of the area of sociology exemplified by the thesis.

## GRADUATE PROGRAMS AND COURSES

### DOCTOR OF PHILOSOPHY

This degree provides advanced training in theory, research methodology, and substantive fields to prepare sociologists for teaching and research with special emphasis on urbanism, urbanization, and related issues. A detailed description of this program (including opportunities in teaching and research assistantships) may be obtained from the department chair. See "Doctor of Philosophy," page 96, for general requirements.

**Admission.** Admission to the program is determined by the following criteria: GRE scores (verbal, quantitative, and analytical), three letters of appraisal from persons familiar with the applicant's academic background, valid transcripts of the student's academic record, and a biographical narrative provided by each applicant. Applicants should have an M.A. or its equivalent in Sociology or a related field. Application deadline is February 15.

**Program of Study.** The Ph.D. requires 54 semester hours beyond the master's degree. Three hours each of theory, methods, and statistics are required, and 24 hours are earned through dissertation and research. The remaining 21 hours are in substantive courses reflecting the student's specialization. First-year Ph.D. students are required to take Sociology as a Profession (503 and 504). A minimum of 30 semester hours of the approved Ph.D. program, exclusive of dissertation and research hours, must be completed after admission to the Ph.D. at ASU.

**Foreign Language Requirements.** None.

**Comprehensive Examinations.** Written comprehensive examinations focusing on two areas chosen by the student, and an oral defense of the dissertation proposal are required. After passing the comprehensive examinations and obtaining a formal approval of the dissertation proposal, the student is eligible to apply for candidacy.

**Dissertation Requirements.** A dissertation based on original work demonstrating creativity in research and scholarly proficiency in the subject area is required.

**Final Examination.** A final oral examination in defense of the dissertation is required.

**Research Facilities.** Department research facilities consist of a survey research laboratory, small groups research laboratory, computer terminals and linkages to the mainframe and the supercomputer, computational laboratory, and Gould Memorial Research Archive. The survey research laboratory conducts campus and community surveys. Among the topics studied are transportation, citizen attitudes, recreation, judicial evaluation, occupational destinies of graduate students, academic advisement, student, staff and faculty attitudes, student living arrangements, changing sex roles, and student activism and political involvement.

### SOCIOLOGY (SOC)

#### **SOC 500 Research Methods. (1–12)**

*spring*

#### **SOC 501 Practicum in Survey Research. (3)**

*fall*

Research practicum in survey field work, analysis, and reporting in the Phoenix Area Study. Prerequisite: SOC 391 (or its equivalent).

#### **SOC 502 Practicum in Survey Research. (3)**

*spring*

Continuation of SOC 501. Prerequisite: SOC 501.

#### **SOC 503 Sociology as a Profession I. (1)**

*fall*

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)**

*spring*

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)**

*fall and spring*

Multiple linear regression topics relevant to sociological data analysis. Computer applications. Prerequisites: SOC 390 (or its equivalent); proficiency examination.

#### **SOC 507 Social Statistics IIA: Categorical Data Analysis. (3)**

*fall or spring*

Logistic regression and related topics relevant to categorical data analysis in sociology. Computer applications. Prerequisite: SOC 505 or instructor approval.

#### **SOC 508 Social Statistics IIB: Structural Equation Analysis. (3)**

*fall or spring*

Structural equation models 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 IIC: Event History Analysis. (3)**

*fall or spring*

Proportional hazards models and other methods for analyzing longitudinal data and establishing hazard rates of events for exploratory variables. Prerequisite: SOC 505 (or its equivalent).

#### **SOC 515 Studies of the Family. (3)**

*spring*

Current developments in the study of marriage and the family. Prerequisite: instructor approval.

#### **SOC 585 Development of Sociology. (3)**

*fall*

Major sociological theorists, including Durkheim, Weber, Marx, Parsons, Merton, Dahrendorf, Homans, and Mead. Prerequisite: instructor approval.

#### **SOC 586 Contemporary Sociological Theory. (3)**

*spring*

Analyzes major theories, including structural-functional, conflict, social exchange, symbolic interaction, and role theory. Prerequisite: instructor approval.

#### **SOC 587 Contemporary Issues in Sociology. (3)**

*selected semesters*

Philosophy of social science. Contemporary issues in sociological theory and methods. Prerequisite: instructor approval.

#### **SOC 588 Methodological Issues in Sociology. (3)**

*fall*

Basic methodological issues in the study of human social life. Emphasizes a limited number of key issues and approaches to research.

#### **SOC 599 Thesis. (1–12)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Spanish

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See "Languages and Literatures," page 246.

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## Special Education

### Master's Programs

[coe.asu.edu/programs](http://coe.asu.edu/programs)

480/965-4602

ED 434

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**Professors:** Rutherford, Swadener, Zucker

**Associate Professors:** Cohn, Di Gangi, McCoy

**Assistant Professor:** Lamorey

**Clinical Associate Professor:** Mathur

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The faculty in the Division of Curriculum and Instruction Special Education Program offer graduate programs leading to the M.A. and Master of Education degrees. M.Ed. degree concentrations are available in the education of gifted, mildly disabled, the multicultural exceptional, and severely/multiply disabled.

At the Ph.D. level, a concentration in special education is offered through the interdisciplinary Ph.D. degree program in Curriculum and Instruction. See "Curriculum and Instruction," page 172, for more information on the interdisciplinary Ph.D. in Curriculum and Instruction.

To be considered for admission, applicants must meet all Graduate College requirements. The applicant for master's degree program admission is required to provide the following:

1. Graduate Record Examination test scores or Miller Analogies Test scores, or a 3.00 or higher junior/senior GPA;
2. three letters of recommendation;
3. a summary of professional experiences; and
4. evidence of certification in special education for applicants to the M.Ed. program. (The M.Ed. Initial Teacher Certification sequence must be pursued concurrently with the M.Ed. degree by applicants who do not meet this requirement.)

### MASTER OF ARTS

The M.A. program in Special Education requires at least 36 hours of course work. A thesis is required for the M.A. degree. Candidates are required to take an oral examination in defense of the thesis. For students in the M.Ed. or M.A. program lacking prerequisite courses, additional course work is required.

### MASTER OF EDUCATION

The M.Ed. degree in Special Education requires a minimum of 36 semester hours of course work and a written comprehensive examination paper. The program structure includes a 12-hour methods core, a 12-hour knowledge core, and a 12-hour elective block which includes four con-

tent/theme areas: learning and instruction, diversity, foundations and values, and research and technology.

M.Ed. initial teacher certification sequences leading to standard certificates by the State of Arizona in mental retardation and learning and emotional disabilities, as well as an endorsement in gifted education, are available.

Concurrent admission to the Initial Teacher Certification (ITC) sequence and the M.Ed. degree is required. Students seeking initial certification by the State of Arizona in special education who have already completed a master's degree in another area may enroll for the M.Ed. initial certification sequence without enrolling in a second master's degree program. Further information is available in the Curriculum and Instruction Graduate Advising/Referral Office (480/965-4602).

### RESEARCH ACTIVITY

Current faculty research activities include family-centered early identification of children with learning disabilities and behavior disorders; partnerships in the medical home; bilingual/English as a second language/special education; Arizona behavior initiative creating school environments that support high academic standards for all students; a crossover model of leadership preparation in special education; six interdisciplinary options; and education, disability, and juvenile justice.

### SPECIAL EDUCATION (SPE)

#### **SPE 411 Parent Involvement and Regulatory Issues. (3)**

*fall and spring*

Emphasizes parent and school relations through effective communication and state and federal regulations impacting services for the handicapped. Prerequisite: ITC admission.

#### **SPE 455 Early Childhood and the Handicapped. (3)**

*fall*

Early childhood education as it applies to the handicapped child.

#### **SPE 510 Inclusionary Curriculum for Special Education Teachers. (3)**

*fall and summer*

Curricular practices used in inclusion classrooms.

#### **SPE 511 The Exceptional Child. (3)**

*fall, spring, summer*

Educational needs of exceptional children and adults. Not recommended for students who have completed SPE 311.

#### **SPE 512 Individuals with Mental Retardation. (3)**

*fall, spring, summer*

Etiology, diagnosis, and management of individuals with mental retardation. Current trends in prevention, programming, and teacher preparation. Not recommended for students who have completed SPE 312.

#### **SPE 514 Bilingual/Multicultural Aspects of Special Education. (3)**

*fall, spring, summer*

Theories and issues related to the education of bilingual and culturally diverse exceptional children.

#### **SPE 515 Methods for the Remediation of Learning Problems of Exceptional Children. (3)**

*spring*

Methods and materials for remediating the basic academic problems of exceptional children. Prerequisites: SPE 511; a methods course in teaching reading and mathematics.

#### **SPE 522 Academic Assessment of Exceptional Children. (3)**

*fall*

Normative and criterion-referenced assessment of learning problems in exceptional children. Includes formative evaluation. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511); elementary methods courses; program approval.

## GRADUATE PROGRAMS AND COURSES

### **SPE 523 Prescriptive Teaching with Exceptional Children. (3)**

*fall*

Language, reading, and arithmetic methods, techniques, and materials used in individualized instruction. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511); elementary methods courses; program approval. Pre- or corequisite: SPE 522.

### **SPE 524 Effective Classroom Behavior Management. (3)**

*spring*

Organization and delivery of instruction, including formative evaluation and techniques of academic behavior management for exceptional children. Requires practicum. Lecture, practicum. Prerequisites: SPE 311 (or 511), 522, 523; program approval.

### **SPE 525 Social Behavior Interventions. (3)**

*spring*

Analysis and intervention into social behavior problems of exceptional students. Focuses on strategies to change maladaptive social behavior. Requires practicum. Prerequisites: SPE 311 (or 511 or 522 or 523); program approval.

### **SPE 531 Behavior Management Approaches with Exceptional Children. (3)**

*fall and summer*

Behavior management approaches for classroom behavior of exceptional children. Prerequisite: SPE 511 (or its equivalent).

### **SPE 536 Characteristics of Children with Behavioral Disorders. (3)**

*fall, spring, summer*

Variables contributing to behavior patterns of behaviorally disordered children.

### **SPE 551 Teaching Young Children with Special Needs. (3)**

*spring*

Methods, materials, and curriculum for preschool and primary-aged children with special needs. Prerequisites: SPE 455 and 511 (or their equivalents).

### **SPE 552 Management of Individuals with Severe Handicaps. (3)**

*spring*

Instruction and management of school-aged and adult individuals with severe, physical, or multiple handicaps. Prerequisites: SPE 511 (or its equivalent); instructor approval.

### **SPE 553 Developmental/Functional Assessment. (3)**

*fall*

Teacher-focused developmental/functional assessment of preschool and severely, physically, and multiply handicapped individuals. Requires field experience. Prerequisites: SPE 511 and 512 and 574 (or their equivalents).

### **SPE 554 The Parent/School Partnership. (3)**

*spring*

Includes knowledge and procedures for involvement and training of parents and caregivers of preschool and severely handicapped individuals. Requires field experience. Prerequisites: SPE 455 and 511 (or their equivalents).

### **SPE 561 Characteristics/Diagnosis of Learning Disabilities. (3)**

*fall, spring, summer*

Theories related to learning disabilities, including identification and characteristics.

### **SPE 562 Methods of Teaching Students with Learning Disabilities. (3)**

*selected semesters*

Various methods and intervention strategies for remediating learning disabilities of children and youth. Prerequisite: SPE 361 or 561.

### **SPE 574 Educational Evaluation of Exceptional Children. (3)**

*fall*

Design and statistical considerations of normative and criterion-referenced tests. Collection, recording, and analysis of data from formative evaluation. Prerequisites: SPE 511 (or its equivalent); a methods course in teaching reading and mathematics.

### **SPE 575 Current Issues in the Education of Exceptional Children. (3)**

*fall*

Mainstreaming, noncategorical, financing, legal diagnostic, labeling, legislative, and other critical and controversial issues related to the education of exceptional children.

### **SPE 577 Mainstreaming Methods. (3)**

*spring*

Addresses successful mainstreaming methods, practical problem-solving sessions related to teacher's classroom needs, and individual contracts focusing on mainstreaming issues. General educators encouraged.

### **SPE 578 Student Teaching in Special Education. (3–15)**

*fall and spring*

"Y" grade only. Fee. Prerequisites: completion of specified courses; approval by the special education program coordinator.

### **SPE 582 Classroom Research with Exceptional Children. (3)**

*summer*

Introduces interpreting research. Specific research techniques with primary emphasis on classroom research, including applied behavior analysis.

### **SPE 585 Creativity: Research and Development. (3)**

*spring*

Explores nature of creativity in terms of philosophical underpinnings, empirical evidence, human development, self-actualization, and the ecology surrounding the creative event.

### **SPE 586 Advising the Gifted Child. (3)**

*once a year*

Focuses on educational planning and guidance, social and emotional development, and family problem solving regarding needs of gifted children.

### **SPE 587 Controversies in Educating the Gifted. (3)**

*fall*

In-depth analysis of major controversies in educating the gifted, including nature/nurture, the role of mental tests, and sex differences.

### **SPE 588 The Gifted Child. (3)**

*fall and summer*

Gifted children's characteristics, identification, needs, school and home environments, definitions, and misunderstandings. Research by Pressey, Stanley, Terman, and others.

### **SPE 589 Methods in Teaching the Gifted. (3)**

*spring and summer*

Methods in teaching elementary and secondary school gifted children, including individualized and computer-assisted instruction, team teaching. Prerequisite: SPE 588.

### **SPE 774 Characteristics and Causation of Exceptionality. (3)**

*fall*

In-depth analysis of literature pertaining to causes of exceptionality and learning, educational, personal-social, and cognitive characteristics. Lecture, discussion.

### **SPE 775 Evaluation and Intervention in Special Education. (3)**

*spring*

In-depth analysis of research and literature on evaluation procedures and intervention approaches for exceptional individuals at all age levels. Lecture, discussion.

### **SPE 781 Research and Evaluation in Special Education. (3)**

*spring*

Issues and problems in conducting research and/or evaluation programs involving exceptional children.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Special Education

### Master's Program

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ASU West also offers a Master of Education (M.Ed.) degree in Special Education. For more information about the ASU West program, see the *ASU West Catalog*, call 602/543-4567, or access [www.west.asu.edu](http://www.west.asu.edu) on the Web.

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## Speech and Hearing Science

### Interdisciplinary Doctoral Program

[www.asu.edu/clas/shs](http://www.asu.edu/clas/shs)

480/965-9136

CSB 280

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**Julie M. Liss, Director, Executive Committee**

#### English

Professor: Adams

#### Family and Human Development

Professor: Roosa

#### Psychology

Professors: Killeen, Somerville

Associate Professors: Goldinger, McBeath

#### Speech and Hearing Science

Professors: Bacon, Dorman, Ingram, Sinex, Wilcox

Associate Professor: Liss

Assistant Professors: Azuma, Gray

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The committee on Speech and Hearing Science offers an interdisciplinary graduate program leading to the Ph.D. degree in Speech and Hearing Science.

The program is designed to prepare scholars for careers of basic and applied research in educational, industrial, or health care delivery environments. The student pursues a program with the unifying theme of the influence of the neurologic system on human communication and its disorders. After a core curriculum, which may include aspects of neuroscience, methodology, or speech and hearing science, the student completes a program of study under the guidance of the program committee. As part of the interdisciplinary doctoral program, a programmatic research experience prepares the student for basic or applied research leading to the dissertation.

### DOCTOR OF PHILOSOPHY

See “Doctor of Philosophy,” page 96, for general requirements.

**Admission Requirements.** Admission to the program is competitive; therefore, applications are considered only for fall admission. Applicants typically have completed a master’s degree or equivalent in speech and hearing sciences, psychology, linguistics, or a related discipline. Applicants with a bachelor’s degree and a strong research background are also considered.

Applicants must submit the following materials for admission review:

1. application for admission to the Graduate College and official transcripts of undergraduate and graduate study;

2. verbal, quantitative, and analytical scores of the Graduate Record Examination (GRE);
3. professional résumé;
4. a statement describing academic and professional goals, specifying the focus of study desired in the Ph.D. program; and
5. three letters of recommendation.

All applicants whose native language is not English must submit a score from the Test of English as a Foreign Language (TOEFL) and the Test of Spoken English (TSE). Expected minimum scores are 600 on the TOEFL and 230 on the TSE.

Application materials are reviewed beginning February 1. Applications are reviewed by a three-member interdisciplinary admissions committee. Recommendations for admission or denial are forwarded to the dean of the Graduate College. Criteria for admission include the following:

1. evidence of high scholarship and research potential from GRE scores and previous academic records;
2. professional goals compatible with the degree program; and
3. scholarly interests compatible with one or more of the faculty active in the interdisciplinary degree program.

**Areas of Concentration.** Eighteen semester hours are taken in an area of concentration that focuses on some aspect of human communication. The student’s program committee guides selection of these courses.

**Program Committee.** The purpose of the program committee is to guide the student through the completion of the program of study, the initiation of programmatic research, and the comprehensive examination. The program committee consists of a chair and at least two other members appointed by the dean of the Graduate College upon recommendation of the director of the Committee on Speech and Hearing Science. The committee must consist of members from more than one academic discipline. Upon completion of the comprehensive examination, the student may initiate forming a dissertation committee.

**Dissertation Committee.** Upon completion of the comprehensive examination and based on the recommendation of the director of the Committee on Speech and Hearing Science, the dean of the Graduate College appoints the student’s dissertation committee consisting of a chair and at least two other members. The dissertation committee must consist of members from more than one academic discipline. This committee approves the design and implementation of the dissertation. Members of the program committee also may serve as members of the dissertation committee.

**Preliminary Examination.** The preliminary examination is composed minimally of the first-year research project. This project, to be completed by the end of the second semester of the first year, consists of an oral presentation and defense of the research, as well as a written manuscript. The program committee decides whether an optional written examination is necessary. The format of that examination is determined by the program committee and depends, in part, upon



## GRADUATE PROGRAMS AND COURSES

the background of the student. Results of the preliminary examination are used to determine shortcomings that should be offset by course electives, the level at which the student is capable of pursuing various topic areas, and whether deficiencies are of sufficient magnitude to preclude recommendation for continued doctoral study.

**Research Methods and Statistics.** The student is required to demonstrate proficiency in research methods (research design, statistics, computer languages). Evidence of required proficiency may be demonstrated by examination or by successful completion of a sequence of courses designated by the program committee.

**Program of Study.** The program consists of a minimum of 54 semester hours of graduate work beyond the master's degree or 84 semester hours of graduate work beyond the bachelor's degree. Of the required semester hours, at least 24 must be research (SHS 792) and dissertation (SHS 799) credit completed at ASU. A minimum of 30 hours of the approved Ph.D. program, exclusive of dissertation and research hours, must be completed after admission to the Ph.D. at ASU.

**Comprehensive Examinations.** Near the completion of course work and before commencing dissertation research, the student is given a written examination covering the field of study. The written examination, when passed, may be followed by an oral examination.

**Programmatic Research.** Twelve semester hours of programmatic research (SHS 792) are required before the dissertation prospectus meeting. The student must conduct several studies, each representing a facet of a research problem or a step toward a progressive solution. Each component study must be reviewed by the program committee and conducted in collaboration with a faculty member of the interdisciplinary degree program. This research program allows the doctoral student to use different methodologies in various component studies, to exercise progressively tighter experimental controls as determined by serial investigations, or to pursue significant or unexpected outcomes of a study.

This systematic or serial research program engages the student and faculty in an ongoing research activity, the components of which allow increasing discretion and independence of the student investigator. The program is designed to prepare students for careers in basic or applied research and enhance the quality of the dissertation research.

**Research and Dissertation Proposals.** (1) Before conducting the programmatic research, the student is advised by the program committee on the appropriateness of the planned research. (2) Before conducting the research for the dissertation, each student must submit a dissertation proposal that is defended orally and approved by the dissertation committee.

**Dissertation Requirements.** The dissertation must consist of a fully documented written product of mature and original scholarship. It must be a significant contribution to knowledge that reflects the student's creativity and competence in independent research.

**Final Examination.** A final oral examination in defense of the dissertation, conducted by the dissertation committee, is required.

### COURSES

*For courses, see "Speech and Hearing Science (SHS)," page 153.*

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## Statistics

### Interdisciplinary Master's and Certificate Programs

[www.asu.edu/graduate/statistics](http://www.asu.edu/graduate/statistics)

480/965-5439

BAC 565

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**Richard K. Burdick, Director, Executive Committee**

#### Accountancy and Information Management

Professor: St. Louis

#### Economics

Professors: Burdick, Mayer

Associate Professors: Reiser, Wilson

#### Industrial Engineering

Professors: Hubele, Montgomery, Runger

Assistant Professor: Kulahci

#### Mathematics and Statistics

Professors: Lohr, Young

Associate Professor: Prewitt

Assistant Professor: Oleson

#### Supply Chain Management

Associate Professor: Brooks

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The Committee on Statistics offers a program leading to a graduate Certificate in Statistics and the M.S. degree in Statistics. The program is interdisciplinary in the sense that it draws upon faculty research and teaching interests from a number of academic units so that programs of study can be tailored to reflect individual needs and goals. The committee, which sets program requirements and supervises programs of study, is composed of faculty from several departments in the W. P. Carey School of Business, the College of Engineering and Applied Sciences, and the College of Liberal Arts and Sciences.

**Certificate in Statistics.** This certificate provides statistical training to graduate students at ASU and professionals in the metro-Phoenix area. The certificate requires 15 semester hours of course work selected from approved courses offered in graduate programs at ASU.

To enroll in the certificate program, the applicant must have a bachelor's degree, an introductory applied statistics course, and one semester of calculus. The applicant is also required to have some computer literacy with knowledge of

either a programming language, a spreadsheet program, or a statistical software program.

For more information, access the Web site at [www.asu.edu/graduate/statistics](http://www.asu.edu/graduate/statistics).

## MASTER OF SCIENCE

The program for the M.S. degree in Statistics provides preparation for either a research-oriented or a practice-oriented career. Requirements specific to this program (see “Master’s Degrees,” page 94, for general requirements) ensure balanced attention to the theoretical and applied aspects of the discipline of statistics. Flexibility in the program reflects the fact that statistical analysis is one of the most widely used tools of modern scientific reasoning.

**Admission.** Applicants must satisfy the general requirements for admission to the Graduate College (see “Admission to the Graduate College,” page 84) and must, in addition, have three letters of academic recommendation submitted to the admissions subcommittee of the Committee on Statistics. Although most applicants earn the bachelor’s degree in a quantitative area (such as statistics, quantitative business analysis, mathematics, engineering, or computer science), this is not required for admission to the program.

Applicants should have completed the following courses (equivalents at ASU are given in parentheses): calculus (MAT 270, 271, and 272), advanced calculus (MAT 371), linear algebra (MAT 342), computer programming (CSE 100), and introductory applied statistics (QBA 221 or STP 420). The submission of Graduate Record Examination test scores is strongly recommended, but not necessary.

**Supervisory Committee.** Upon entering the program, the student should contact the program director for assistance in selecting a three-member supervisory committee. (Typically, the student progress subcommittee of the Committee on Statistics serves as the student’s initial supervisory committee.) The faculty member who directs the student’s work on the thesis or applied project must be a member of the Committee on Statistics and serves as the chair of the student’s final supervisory committee.

**Program of Study.** The student’s program of study must contain at least 30 semester hours of credit, none of which may be from the prerequisites and at least 18 of which must be at or above the 500 level. The program must include the nine semester hours from three required theory courses: probability (STP 421), mathematical statistics (STP 427), and theory of statistical linear models (STP 526). The program must also include either three semester hours of applied project (IEE 593, QBA 593, or STP 593) or six semester hours of thesis (IEE 599, QBA 599, or STP 599).

The remaining 15 or 18 semester hours may come from elective courses chosen by the student with the approval of supervising faculty. A maximum of six semester hours may be chosen from a related field on which statistics relies (such as computer science) or in which statistics is an essential tool (e.g., biostatistics, quality control).

The required theory courses are fundamental to the education of statisticians and are necessary for more advanced graduate study. The elective courses allow the student to emphasize a particular area of statistical inference, culminating in an applied project report or a thesis on a topic in that area. The student has considerable flexibility in selecting an area of specialty. Possible areas of specialty include, among others, mathematical statistics, biostatistics, applied data analysis, design of experiments, statistical modeling, time series analysis, statistical process control, variance components analysis, statistical computing, and survey research. Sample programs of study for such areas of specialty may be obtained from the director of the program.

**Foreign Language Requirements.** None.

**Comprehensive Examination.** None.

**Thesis Requirements.** Either an applied project or a thesis is required. The content of the applied project report or thesis must, in its final form, be suitable for submission to an academic journal or conference proceedings. The thesis must conform to Graduate College format requirements.

**Final Examination.** An oral examination in defense of the applied project or thesis is required.

## RESEARCH ACTIVITY

Research interests of current members of the Committee on Statistics include the following: nonparametric regression, variance components, generalized linear models; multivariate analysis, latent structure models, categorical data analysis; biostatistics, biomedical research; time series analysis and forecasting, econometrics, statistical process control, statistical decision support systems; statistical computing, statistical graphics; panel data analysis, complex sampling designs; decision-theoretic methods, risk assessment, robust statistical methods; design of experiments; process optimization; and response surface methodology. Students and faculty have access to excellent computing facilities, including servers, work stations, and personal computers running a broad selection of statistical software.

## COURSES

*For courses, see “Industrial Engineering (IEE),” page 237, “Quantitative Business Analysis (QBA),” page 138, and “Statistics and Probability (STP),” page 265.*



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## Taxation

### Master's Program

[wpcarey.asu.edu/acct](http://wpcarey.asu.edu/acct)

480/965-3631

BA 223

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**Charles Christian, Interim Codirector**

**Robert St. Louis, Interim Codirector**

**Professors:** J.R. Boatsman, Boyd, Christian, Goul, Johnson, Kaplan, Pany, Pei, Philippakis, Reckers, Roy, Schultz, Smith, St. Louis, Steinbart, Vinze, Wyndelts

**Associate Professors:** David, Golen, Gupta, Hwang, Iyer, Keim, Kulkarni, O'Dell, O'Leary, Regier, Whitecotton

**Assistant Professors:** Chen, Chenoweth, Comprix, Dowling, Lee, O'Donnell, Petersen, Ravindran, Robinson, Roussinov, Rowe, Santanam, Shao, Weiss

**Senior Lecturers:** Goldman, Maccracken, Shrednick

**Lecturers:** J.L. Boatsman, Geiger, Hayes

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## MASTER OF TAXATION

The faculty in the School of Accountancy and Information Management offer specialized professional programs leading to the Master of Taxation and Master of Accountancy and Information Systems degrees (see "Accountancy and Information Systems," page 99) and the Master of Science degree in Information Management (see "Information Management," page 239). The M.Tax. is a specialized degree program designed to equip students with the highly technical and demanding skills required to provide tax and business advice in the private sector and to administer the tax laws in the public sector of the economy. The program prepares students for entry-level positions in taxation and provides graduate-level education for tax professionals who desire to enhance their skills.

The faculty also participate in offering the program leading to the Master of Business Administration degree (see "Master of Business Administration," page 132) and Ph.D. degree in Business Administration (see "Doctor of Philosophy," page 133).

For more information on faculty, programs, and courses, access the school's Web site at [wpcarey.asu.edu/acct](http://wpcarey.asu.edu/acct).

**Admission.** All applicants are required to submit the supplemental application materials required from the school. Complete application packets and instructions may be obtained from the school's Web site.

Students applying to this program must submit scores from the Graduate Management Admission Test (GMAT). International applicants whose native language is not English must submit scores from the Test of English as a

Foreign language (TOEFL) and the Test of Spoken English (TSE) exams. Preference in admission is given to those with degrees in accounting and business, although other exceptional candidates are considered.

**Prerequisites.** Access the school's Web site for a current list of the program prerequisites.

**Program of Study.** The program of study consists of a minimum of 30 semester hours and is continually updated. The program of study must include a minimum of 15 semester hours in graduate-level accounting courses and a minimum of 24 semester hours of resident credit in courses open only to graduate students. A maximum of six hours may be taken outside the W. P. Carey School of Business. Visit the school's Web site for a current program of study.

**Course Load.** Students are limited to 12 hours per trimester.

**Foreign Language Requirements.** None.

**Thesis Requirements.** None.

**Final Examination.** A final comprehensive written examination is required of all candidates.

## RESEARCH ACTIVITY

For current information about research activity, access the School of Accountancy and Information Management Web site at [wpcarey.asu.edu/acct](http://wpcarey.asu.edu/acct).

## COURSES

*For courses, see "Accountancy (ACC)," page 100.*

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## Teaching English as a Second Language

### Master's Program

[www.asu.edu/clas/english/linguistics](http://www.asu.edu/clas/english/linguistics)

480/965-2563

LL 226C

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**Elly van Gelderen, Director**

**Professors:** Adams, Major, Nilsen

**Associate Professors:** Bates, van Gelderen

**Assistant Professor:** Johnson

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The faculty in the Department of English offer a professional program leading to the Master of Teaching English as a Second Language (M.TESL) degree. This specialized degree program provides students with the knowledge and the skills necessary to teach English as a second language.

**Admission Requirements.** Applicants for the M.TESL degree may have undergraduate majors in fields such as, but not limited to, anthropology, applied linguistics, cognitive science, communication, comparative languages and literatures, education, English literature, history, law, linguistics, modern languages, philosophy, political science, psychology, religion, rhetoric/composition, sociology, and speech and hearing science. Students should consult with an advisor to determine whether their preparation is deficient in any area. Applicants must submit three letters of recommendation and a personal statement of aims and purposes. All applicants must meet the general requirements for admission to the Graduate College (see “Admission to the Graduate College,” page 84). International students must submit a TOEFL score of at least 600.

**Program of Study.** The program requires a minimum of 30 hours of approved graduate course work and must include LIN 500 Research Methods, LIN 510 English Linguistics, LIN 572 Theories Underlying the Acquisition of English as a Second Language, LIN 574 The Teaching of English as a Second Language, and a three-hour applied project (LIN 593) overseen by the supervisory committee.

**Foreign Language Requirements.** A foreign language is required. International students whose native language is not English may fulfill the foreign language requirement by (1) providing evidence that English is not the medium of instruction at their native-language universities and (2) satisfactory completion of the TSE.

**Applied Project.** A three-hour applied project (LIN 593) which is overseen by the director, chosen from the English department linguistics/TESL faculty, is required. Two additional faculty members serve with the director to form a committee for the final oral examination on the project.

**Final Examination.** An oral examination on the applied project is required.

### COURSES

For courses, see “Linguistics (LIN),” page 203.

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## Technology

### Master’s Programs

#### Department of Aeronautical Management Technology

[eastair.east.asu.edu](http://eastair.east.asu.edu)

480/727-1381

SIM 205

#### Department of Electronics and Computer Engineering Technology

[www.east.asu.edu/ctas/ecet](http://www.east.asu.edu/ctas/ecet)

480/727-1137

TECH 101

#### Department of Information and Management Technology

[www.east.asu.edu/ctas/imt](http://www.east.asu.edu/ctas/imt)

480/727-1781

TECH 102

#### Department of Mechanical and Manufacturing Engineering Technology

[www.east.asu.edu/ctas/mmet](http://www.east.asu.edu/ctas/mmet)

480/727-1584

SIM 295

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**William K. McCurry, Chair,**

**Department of Aeronautical Management Technology**

**Professors:** Gesell, McCurry

**Associate Professors:** Jackson, Karp, Turney

**Assistant Professor:** Pearson

**Lecturers:** O’Brien, Tripp

**Timothy E. Lindquist, Chair,**

**Department of Electronics and Computer Engineering Technology**

**Professors:** Lindquist, McHenry, Munukutla, Robertson

**Associate Professors:** Koehnemann, Macia, Millard, Sundararajan, Zeng

**Assistant Professor:** Gannod

**Senior Lecturer:** Whitehouse

**Thomas E. Schildgen, Chair,**

**Department of Information and Management Technology**

**Professors:** Duff, Hild, Sadowski, Schildgen

**Associate Professors:** Grossman, Hirata, Humble, Matson, Olson

## GRADUATE PROGRAMS AND COURSES

**Assistant Professor:** Kime

**Senior Lecturer:** Wilson

**Lecturers:** Dolin, Harris, Lestar

**Scott G. Danielson, Chair,  
Department of Mechanical and Manufacturing  
Engineering Technology**

**Professor:** Collins

**Associate Professors:** Biekert, Danielson, Nam, Palmgren, Rajadas, Rogers

**Assistant Professor:** Post

The Master of Science in Technology (M.S.Tech.) degree program is offered by the faculty in four departments of the College of Technology and Applied Sciences: Aeronautical Management Technology, Electronics and Computer Engineering Technology, Information and Management Technology, and Mechanical and Manufacturing Engineering Technology. Courses are offered at ASU East. Both a thesis and applied project option are available.

The professional programs leading to the M.S.Tech. degree are intended as preparation for a career in a selected branch of technology or as the foundation for further advanced study. Graduates of this program are provided with technical and professional skills for use in leadership positions in industry and education.

Faculty members administering the program have been selected because of relevant backgrounds in industry and business along with their academic training and teaching experience.

**Admission.** Admission to the degree program requires the completion of all general admission requirements and procedures set forth by the Graduate College. The College of Technology and Applied Sciences also requires an appropriate baccalaureate degree from an accredited college or university, with a minimum of 30 semester hours in technology or equivalent and 16 hours of physical science and mathematics appropriate to the program pursued. The specific requirements vary within each department.

Graduate work presupposes an adequate technical preparation in a selected technology at the undergraduate level. Deficiencies for admission to the graduate program, if any, are specified at the time of admission. The applicant's past work and professional experience are also evaluated and taken into consideration when determining admission classification.

To be considered for regular admission, a 3.00 GPA or higher, as determined by the department, is required.

**Program of Study.** The program of study is designed to promote greater depth of understanding and preparation in technology as it can be applied to industry and education. The program of study is planned in consultation with a supervisory committee. It is designed for flexibility, permitting the student to select a combination of courses in a tech-

nological area and a supporting area to meet individual career goals.

A minimum of 33 semester hours is required for the degree program. Of these, a minimum of 15 semester hours must be 500-level courses and part of the approved program. Specific credit requirements vary within each department. The minimum requirements are as follows:

### Thesis Option

Technical area of emphasis .....	15–18
Supporting area .....	6–9
Thesis writing course .....	3
Research .....	6
Total .....	33

### Applied Project Option

Technical area of emphasis .....	15–18
Supporting area .....	9–12
Research writing course .....	3
Research/Applied project .....	3
Total .....	33

A maximum of nine semester hours of appropriate course work completed before admission may be included in the program of study.

A master's degree candidate forms a supervisory committee, the chair of which is from one of the four technology departments within the College of Technology and Applied Sciences. The chair and the committee members assist the student in selecting appropriate courses to meet the degree requirements and the student's goals. Specific program patterns are approved by the committee.

The Department of Aeronautical Management Technology provides students the opportunity to select courses, to be included in the technical area of their program of study, in aviation management technology and aviation human factors.

The Department of Electronics and Computer Engineering Technology offers concentrations in computer systems engineering technology, electronics systems engineering technology, instrumentation and measurement technology, and microelectronics engineering technology.

The Department of Information and Management Technology provides students the opportunity to study environmental technology management, fire service administration, graphic information technology, and management of technology.

The Department of Mechanical and Manufacturing Engineering Technology offers concentrations in aeronautical engineering technology, manufacturing engineering technology, and mechanical engineering technology.

The College of Technology and Applied Sciences offers two concentrations: global technology and development (GTD) and security engineering technology (SET). The GTD concentration gives students a comprehensive understanding of technological systems, how they interface with society, and their role in global development and change. The GTD concentration integrates the study of economic, social, and political development with technology course work to explore issues critical to 21st-century globalization and the role and impact of technological innovations on

societies around the world. Students completing the GTD concentration will gain the knowledge and skills to become “technology interpreters” for careers in technology-related public policy, government service, international development, and international management.

The GTD concentration consists of two seminars: global technology and development and technology and the international political system. It also includes one core course in each of the four GTD technology content areas: telecommunications, transportation, commerce, and sustainable development. Students may select elective courses from a wide range of topics in social science and/or technology to create their own individualized specialization. An emphasis is placed on the acquisition of solid research skills with a required sequence in applied research methodologies and tools. A minimum of 33 semester hours is required (24 of which must be at the 500 level or above), including an applied project or thesis. The exact program of study, including elective courses leading to an area of specialization, and the applied project or thesis, is planned in consultation with a faculty advisor from the GTD faculty committee.

**Final Examination.** A final oral examination in defense of the applied project or thesis is required.

#### GLOBAL TECHNOLOGY AND DEVELOPMENT (GTD)

##### GTD 501 Global Technology and Development I. (1)

*fall and spring*

Major theories of economic, political, and social development, with particular emphasis on the impact of current technologies and globalization. Seminar. Prerequisite: admission to M.S. in Technology degree with a concentration in global technology and development or instructor approval.

##### GTD 502 Global Technology and Development II. (1)

*fall and spring*

Continued study of theories of development, emphasizing role of technology in historical perspective. Seminar. Prerequisite: GTD 501.

##### GTD 503 Technology and the International Political System I. (1)

*fall and spring*

Historical development of international political system, with emphasis on role of technology. Seminar. Prerequisite: GTD 502 or instructor approval.

##### GTD 504 Technology and the International Political System II. (1)

*fall and spring*

Continuing themes of GTD 503, exploring current impact of technology on international system and future trends. Seminar. Prerequisite: GTD 503.

##### GTD 505 Quantitative Methods in Technology and Development. (2)

*fall and spring*

Emphasizes techniques of primary data collection, effective uses of secondary sources, for qualitative and quantitative applications. Prerequisite: admission to M.S. in Technology degree with a concentration in global technology and development or instructor approval.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

#### SECURITY ENGINEERING TECHNOLOGY (SET)

##### SET 540 Explosives Surety. (3)

*fall*

Physical and chemical nature of explosives; detonation models; initiating systems; commercial, military, and improvised explosives; investigations; and counter measures. Lecture, lab. Prerequisite: graduate standing.

##### SET 560 Physical Security I. (3)

*spring*

Systems engineering principles and concepts to guide the design, analysis, and implementation of protection systems. Lecture, lab. Prerequisite: graduate standing.

##### SET 561 Physical Security II. (3)

*fall*

Scientific theory behind analysis of physical protection systems. Includes probability and statistics, data collection techniques, algorithm processing. Lecture, lab. Prerequisite: SET 560.

##### SET 570 Security System Instrumentation. (3)

*fall*

Operating principles, limitations, and test procedures of security instrumentation and sensors. Lecture, lab. Prerequisite: SET 560.

##### SET 592 Research. (1–12)

*selected semesters*

##### SET 598 Special Topics. (1–4)

*selected semesters*

##### SET 599 Thesis. (1–12)

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

## Department of Aeronautical Management Technology

**Admission.** Applicants are expected to satisfy all requirements for admission to the Graduate College. Industrial experience beyond completion of a baccalaureate degree is strongly recommended. Applicants having deficiencies or not meeting the prerequisites may be required to complete them before being admitted to the M.S.Tech. degree program.

**Program of Study.** All candidates for the degree program are required to complete a minimum of 33 semester hours of approved courses. Additional courses may be assigned by the supervisory committee depending on the background of the candidate.

An applied project or thesis is required. Upon completion of the approved course of study or during the last semester, an oral defense of the applied project or thesis is required.

The program is designed for flexibility, permitting the student to select a combination of courses in a technical area and supporting area to meet individual goals.

Students may take courses in two areas of interest: aviation management and aviation human factors. Students will work with a faculty advisor to define specific courses that satisfy degree requirements.

**Final Examination.** A final oral examination in defense of the applied or research project is required.

#### RESEARCH ACTIVITY

The Department of Aeronautical Management Technology has established a broad research agenda that includes both technical and management disciplines. Current research initiatives include: aviation education and training; human factors in aviation; aviation physiology; hypobarics; hyperbarics; retention of women in aviation; air traffic control enhancement; runway incursion analyses; human factors in aviation maintenance; and the development of broad-based industrial partnerships through teaming arrangements, internships, and capstone course participation.

## GRADUATE PROGRAMS AND COURSES

### AERONAUTICAL MANAGEMENT TECHNOLOGY (AMT)

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**AMT Note 1.** Flight instruction costs are not included in university tuition and fees.

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#### **AMT 410 Aviation Safety and Human Factors. (3)**

*fall*

Aviation accident prevention, human factors, life support, fire prevention, accident investigation, and crash survivability. Development and analysis of aviation safety programs. Prerequisites: junior standing; completion of 1 semester of General Studies L requirement.

#### **AMT 442 Aviation Law/Regulations. (3)**

*fall*

Aviation within context of U.S. Common Law system. Public law, administrative rule making, sovereignty, enforcement, and case law analysis. Prerequisite: junior standing.

#### **AMT 444 Airport Management and Planning. (3)**

*spring*

Orientation to administration and management of modern public airports, including overview of planning, funding, and development of airport facilities. Prerequisite: junior standing.

#### **AMT 482 Airline Instrument Procedures. (3)**

*fall*

Advanced instrument flight using airline instrument procedures and airline crew and cockpit resource management. Lecture, lab. Prerequisites: a combination of AMT 200 and 322 and 382 or only instructor approval.

#### **AMT 484 Aeronautical Internship. (1–12)**

*fall, spring, summer*

Work experience assignment with aerospace industry commensurate with student's program. Special project guidance by industry with university supervision. Prerequisites: advisor approval; junior standing.

#### **AMT 489 Airline Administration. (3)**

*spring*

Administrative organizations, economics of airline administration, operational structure, and relationship with federal government agencies. Prerequisite: junior standing.

#### **AMT 491 Aviation Management Capstone. (3)**

*spring*

Integration and overview of management tools, current business problems and topics related to aviation industry. Group project with industry and government and business partners. Prerequisite: senior standing.

#### **AMT 496 Airline Aircraft Systems Capstone. (3)**

*spring*

Commercial airline aircraft systems and flight procedures. Includes theoretical education for large, commercial passenger aircraft. Lecture, lab. Prerequisite: senior standing.

#### **AMT 521 Air Transportation Regulation. (3)**

*selected semesters*

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 its equivalent).

#### **AMT 523 Aviation Systems Management. (3)**

*selected semesters*

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 its equivalent).

#### **AMT 525 Airport Planning and Design. (3)**

*selected semesters*

Completion of various phases of airport master planning process. Provides guidance for logical and timely development of airports. Project work groups assigned. Prerequisite: AMT 444 or 489 (or its equivalent).

#### **AMT 527 Airline Management Strategies. (3)**

*selected semesters*

Since deregulation, 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 its equivalent).

#### **AMT 528 International Aviation. (3)**

*selected semesters*

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 its equivalent).

#### **AMT 529 Fixed-Base Operations Management. (3)**

*selected semesters*

Examines FBO role in the national aviation system. Organization of flight line operations, aircraft maintenance, and administration for multiple aircraft types. Prerequisite: AMT 444 or 489 (or its equivalent).

#### **AMT 541 Aviation Physiology. (3)**

*selected semesters*

Surveys human physiology and human performance principles related to modern aircraft and aircraft systems operating in multiple environments. Prerequisite: AMT 410 (or its equivalent).

#### **AMT 543 Ergonomics in High-Technology Environments. (3)**

*selected semesters*

Examines ergonomic design principles regarding man-machine interface requirements of high-technology workstations. Emphasizes computer workstation design issues. Prerequisite: AMT 410 (or its equivalent).

#### **AMT 545 Human Factors in Aviation. (3)**

*selected semesters*

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 its equivalent).

#### **AMT 546 Crew Resource Management/Line-Oriented Flight Training. (3)**

*spring*

Evaluates in-depth, multicrew coordination issues for commercial aviation pilots. Stresses importance of critical thinking, decision making, integrated resource utilization. Prerequisite: AMT 410 (or its equivalent).

#### **AMT 547 Modern Human Factors Design Issues. (3)**

*selected semesters*

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 its equivalent).

#### **AMT 549 Human Factors Research. (3)**

*selected semesters*

Aviation human factors research principles applied and tested in operational settings. Group projects assigned in conjunction with industry partners. Prerequisite: AMT 410 (or its equivalent).

#### **AMT 580 Practicum. (1–12)**

*selected semesters*

#### **AMT 584 Internship. (1–12)**

*selected semesters*

#### **AMT 590 Reading and Conference. (1–12)**

*selected semesters*

#### **AMT 591 Seminar. (1–12)**

*selected semesters*

Topics may include the following:

- Transportation Systems Pro-Seminar

#### **AMT 592 Research. (1–12)**

*selected semesters*

#### **AMT 593 Applied Project. (1–12)**

*selected semesters*

#### **AMT 595 Continuing Registration. (1)**

*selected semesters*

#### **AMT 598 Special Topics. (1–4)**

*selected semesters*

Topics may include the following:

- Airport Systems

#### **AMT 599 Thesis. (1–12)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## Department of Electronics and Computer Engineering Technology

The faculty in the Department of Electronics and Computer Engineering Technology offer a graduate program leading to the M.S.Tech. Four concentrations are available: computer systems engineering technology, electronics systems engineering technology, instrumentation and measurement technology, and microelectronics engineering technology. The instrumentation and measurement technology concentration is offered in conjunction with the Department of Mechanical and Manufacturing Engineering Technology.

**Admission and Proficiency Requirements.** For general admission requirements, see "Admission to the Graduate College," page 84, and "Technology," page 333. Admission and proficiency requirements and course work may be obtained from the department or from the department Web site at [www.east.asu.edu/ctas/ecet](http://www.east.asu.edu/ctas/ecet).

**Program of Study.** The minimum requirements for the M.S.Tech. degree offered by the Department of Electronics and Computer Engineering Technology are as follows:

### Thesis Option

Concentration .....	15–18
Supporting area .....	6–9

### Research Methods Courses

EET 500 Research/Writing .....	2
EET 591 Graduate Seminar .....	1
EET 592 Research .....	3
or CET 592 Research (3)	
EET 599 Thesis .....	3
or CET 599 Thesis (3)	
<hr/>	
Total minimum semester hours .....	33

A minimum of 20 semester hours must be 500-level courses. At least nine hours of 500-level course work must be included in the concentration. Students may take up to 12 semester hours of 400-level course work to broaden their technical knowledge within the technical concentration or the supporting area. Students are required to complete EET 592 or CET 592 (three semester hours) and EET 599 or CET 599 (three semester hours), write a thesis, and present an oral defense.

### Applied Project Option

Concentration .....	15–18
Supporting area .....	9–12

### Research Methods Courses

EET 500 Research/Writing .....	2
EET 591 Graduate Seminar .....	1
EET 593 Applied Project .....	3
or CET 593 Applied Project (3)	
<hr/>	
Total minimum semester hours .....	33

A minimum of 20 semester hours must be 500-level courses. At least nine hours of 500-level course work must be included in the technical concentration. A maximum of three semester hours of applied project (EET 593) may be applied toward the 20 semester hour 500-level minimum. The applied project requires a supporting report; the project

and report are defended in a final oral examination. All course work applied toward the minimum 33 semester hour total must be at the 400 level or higher.

All course work outside the Department of Electronics and Computer Engineering Technology must be preapproved. Completion of deficiencies or prerequisites may be required before admission to the M.S.Tech. degree program.

For more information concerning the M.S.Tech. degree, see "Technology," page 333.

## RESEARCH ACTIVITY

Research activities in the Department of Electronics and Computer Engineering Technology include systems, circuit applications, and hardware design. Teaching and research are conducted in microelectronics fabrication, utilizing the clean-room facilities of the College of Technology and Applied Sciences Teaching Factory. Various aspects of computer systems are under investigation within the department, such as networking, internet activities, distributed Web-based software applications, and embedded systems. Electronic systems and telecommunications are also topics of research by department faculty and graduate students.

M.S.Tech. degree candidates will find a broad range of research that can lead to an applied project or thesis. For more information on research areas and laboratories, access the department's Web site at [www.east.asu.edu/ctas/ecet](http://www.east.asu.edu/ctas/ecet).

Faculty research interests are concentrated in, but not limited to, the following general areas and topics.

**Computers and Digital Systems.** Digital systems design and applications; digital switching circuits; microcomputer hardware and interfacing; computer networks; digital testing; computer process control hardware, techniques, and applications; and computer architecture.

**Software Systems and Distributed Applications.** Studies emphasizing software design and architecture for distributed and Web-based applications; embedded and networked systems; software engineering tools and methods supporting system analysis, project management, and software testing; software systems for limited, wireless, and network enabled devices; reconfigurable Web services and client-server software applications; databases and their application in distributed and Web-based systems.

**Microelectronics.** Solid-state device fabrication, testing, and design; monolithic bipolar and MOS device fabrication and manufacturing techniques; vacuum vapor deposition and sputtering techniques and applications; new photolithography processes; device and system packaging.

**Systems Control and Instrumentation.** Electrical power equipment and systems, insulator testing, control and distribution; direct solar energy conversion; analog and digital process control components, instrumentation, systems, and process applications; electronic measurements and instrumentation circuits, systems, and applications; automatic test systems, test programming, and failure tolerant design; computer-aided design; analog and digital simulation.

## GRADUATE PROGRAMS AND COURSES

### COMPUTER ENGINEERING TECHNOLOGY (CET)

#### CET 400 Software Engineering Technology. (3)

*spring*

Software life-cycle models; project management; team development environments; software specification, design, implementation techniques and tools, validation, and maintenance; user documentation. Prerequisite: CET 326.

#### CET 401 Digital Signal Processing for Multimedia. (3)

*fall*

Applies DSP techniques to multimedia. Digital filter analysis and design. Time and frequency techniques. Computer applications. Cross-listed as EET 401. Credit is allowed for only CET 401 or EET 401. Prerequisites: EET 301; MAT 262.

#### CET 420 Foundations of Distributed Web-Based Applications in Java. (3)

*fall and spring*

Principles underlying design and implementation of distributed software components; sockets, protocols, threads, XML, serialization, reflection, security, and events. Prerequisites: CET 230, 386.

#### CET 425 Server Software Programming. (3)

*once a year*

Design and implementation of software servers, threaded socket servers, servers for distributed Web-based applications; security for the Web. Prerequisite: CET 420 or instructor approval.

#### CET 427 Distributed Object Systems. (3)

*spring*

Distributed applications with Web services, RMI and CORBA; concepts and frameworks for managing registering, locating and securing distributed object applications. Prerequisite: CET 420 or instructor approval.

#### CET 428 Web-Client User Interface Programming. (3)

*fall*

Client-server model for window interfaces. Java Swing, Applets, markup and scripting languages; Web tools and related technologies. Prerequisite: CET 420 or instructor approval.

#### CET 433 Database Technology. (3)

*fall*

Introduces database technologies and DBMS, data models, and languages. Prerequisites: CET 230, 326.

#### CET 441 Software for Personal Digital Assistants. (3)

*fall*

Mobile computing using Java's K, Virtual Machine, MIDP for wireless applications; user interfaces, persistent data storage, and networking. Prerequisite: CET 420.

#### CET 452 Digital Logic Applications. (4)

*spring*

Design of sequential machines using system design techniques and complex MSI/LSI devices with lab. Prerequisite: CET 350.

#### CET 456 Assembly Language Applications. (3)

*fall*

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)

*spring*

Applications of microcomputer hardware and software. Special purpose controllers, interface design. Lecture, lab. Prerequisites: CET 354; EET 310.

#### CET 458 Digital Computer Networks. (3)

*spring*

Network hardware and software, topologies, protocols, OSI model, LANs, WANs Internet; basic concepts of packet switching, routing, error controlling. Prerequisites: CET 354; EET 372.

#### CET 459 Internet Networking Protocols. (3)

*fall*

Computer networking for application, transmission control and network layers using the Internet protocols as a model; reliability and security. Prerequisites: CET 200 (or 256), 354.

#### CET 473 Digital/Data Communications. (4)

*fall*

Signals, distortion, noise, and error detection/correction. Transmission and systems design. Interface techniques and standards. Lecture, lab. Prerequisites: CET 354; EET 372.

#### CET 486 Hardware Description Languages: VHDL. (3)

*spring*

Introduces hardware description languages using VHDL. Techniques for modeling and simulating small digital systems using a VHDL simulator. Prerequisites: CET 350, 383.

#### CET 488 Systems Administration of UNIX. (3)

*fall*

Administration of UNIX, its processes, system calls, kernel, file structure, and interprocess communication using command line tools. Lecture, lab. Prerequisites: CET 383, 386.

#### CET 489 Network Administration with TCP/IP. (3)

*spring*

Writing C programs and shell scripts to create, control, and administer computer networks. Installation and maintenance of computer networks. Prerequisites: CET 383, 459.

#### CET 494 Special Topics. (1–4)

*selected semesters*

Topics may include the following:

- Computer Project

#### CET 501 Digital Signal Processing Applications. (3)

*fall*

Applies DSP techniques to the design and analysis of digital filters. Solution of filtering problems using computer techniques. Cross-listed as EET 501. Credit is allowed for only CET 501 or EET 501. Prerequisite: EET 401 or instructor approval.

#### CET 520 Computer Architecture. (3)

*fall*

Basics of computer architecture. RTN, RISC, CISC concepts; computer arithmetic; ALUs; memory systems; I/O. Prerequisite: CET 354.

#### CET 533 Database Management Systems. (3)

*fall*

Systems aspects of relational databases: relational database design, index and access structures, implementation and performance evaluation, query processing and optimization. Prerequisite: CET 433.

#### CET 540 Internet-Enabled Embedded Devices. (3)

*spring*

Accessing hardware devices through Internet, including Applets, HTTP, custom byte streams, XML-RPC, SOAP. Building network-based applications that interface hardware. Prerequisite: CET 420.

#### CET 552 Digital Systems Design. (3)

*spring*

Digital system design techniques and applications. Prerequisite: CET 452 or instructor approval.

#### CET 554 Distributed Computing. (3)

*spring*

Topics in distributed systems, including communications, distributed operating systems, fault-tolerance, and performance issues. Prerequisites: CET 354, 386.

#### CET 556 Distributed Applications for Windows Platforms. (3)

*fall*

Distributed Web-based applications using Windows frameworks such as .NET. Essential components, XML, remoting, Web services, windows services, user interfaces. Prerequisite: CET 420.

#### CET 557 Microcomputers and Applications. (3)

*fall*

Applications of small computer systems, mini- and microcomputer hardware and software. Prerequisites: CET 354; CSE 100; EET 310.

#### CET 566 Principles and Practices of Operating Systems. (3)

*spring*

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)

*fall*

Topics in real-time embedded operating systems such as synchronization, communications, file systems, and memory sharing. Prerequisite: CET 420.

#### CET 580 Practicum. (1–3)

*selected semesters*

**CET 583 Network Administration with TCP/IP. (3)***spring*

Writing C programs and shell scripts to create, control, and administer computer networks. Installation and maintenance of computer networks. Lecture, project. Prerequisites: CET 383, 458, 473.

**CET 584 Internship. (1–3)***selected semesters***CET 586 Digital Modeling Techniques. (3)***spring*

Digital system modeling and simulation using hardware description languages. Prerequisites: CET 350, 354.

**CET 590 Reading and Conference. (1–3)***selected semesters***CET 591 Seminar. (1–3)***selected semesters***CET 592 Research. (1–3)***selected semesters***CET 593 Applied Project. (1–3)***selected semesters***CET 594 Conference and Workshop. (1–3)***selected semesters***CET 595 Continuing Registration. (1)***selected semesters***CET 598 Special Topics. (1–4)***selected semesters***CET 599 Thesis. (1–3)***selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

**ELECTRONICS ENGINEERING TECHNOLOGY (EET)****EET 401 Digital Signal Processing for Multimedia. (3)***fall*

Applies DSP techniques to multimedia. Digital filter analysis and design. Time and frequency techniques. Computer applications. Cross-listed as CET 401. Credit is allowed for only CET 401 or EET 401. Prerequisites: EET 301; MAT 262.

**EET 403 PLCs, Sensors, and Actuators. (3)***spring*

Applications, programming, and troubleshooting using PLCs. Interfacing to motors, sensors, and actuators. Fluid power principles. Lecture, lab, projects. Prerequisite: EET 208 (or equivalent electrical science course).

**EET 406 Control System Technology. (4)***spring*

Control system components, analysis of feedback control systems, stability, performance, and application. Lecture, lab, computer simulations. Prerequisites: EET 301; MAT 262.

**EET 407 Energy Conversion and Applications. (4)***fall*

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. (4)***fall and spring*

Analysis and design of OP-amps, power amplifiers, and digital logic families. Feedback design using frequency response. Computer analysis and design. Lecture, lab. Prerequisites: EET 301, 310.

**EET 422 Electronic Switching Circuits. (4)***once a year*

Analysis and design of electronic circuits operating in a switching mode. Waveshaping, timing, and logic. Computer simulation. Lecture, lab. Prerequisites: CET 350; EET 301, 310.

**EET 430 Instrumentation Systems. (4)***fall*

Measurement principles and instrumentation, techniques. Signal and error analysis. Lecture, lab. Prerequisites: EET 301, 310.

**EET 460 Power Electronics. (4)***spring*

Analyzes circuits for control and conversion of electrical power and energy. Lecture, lab. Prerequisites: EET 301, 310, 407.

**EET 470 Communication Circuits. (4)***spring*

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 500 Research/Writing. (2)***fall and spring*

Designed to help master's students develop their projects and write the first three chapters of their projects. Lecture, seminar. Prerequisite: instructor approval.

**EET 501 Digital Signal Processing Applications. (3)***fall*

Applies DSP techniques to the design and analysis of digital filters. Solution of filtering problems using computer techniques. Cross-listed as CET 501. Credit is allowed for only CET 501 or EET 501. Prerequisite: EET 401 or instructor approval.

**EET 506 System Dynamics and Control. (3)***spring*

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)***once a year*

Sample data control techniques and applications to process control. Prerequisites: CET 354; EET 406.

**EET 522 Digital Integrated Circuits and Applications. (3)***spring*

Analysis, design, and application of integrated circuits and systems. Prerequisites: CET 350; EET 301, 310.

**EET 530 Electronic Test Systems and Applications. (3)***fall*

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)***spring*

Analysis, design, and application of special electronic devices and systems to industrial control, power, communications, and processes. Prerequisites: CET 350; EET 301, 310, 407.

**EET 578 Digital Filter Hardware Design. (3)***spring*

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)***spring*

Image capture, transform, compression, storage, and transmission. Provides computer environment (software and hardware) to emphasize the practical aspect. Prerequisite: EET 401 or instructor approval.

**EET 580 Practicum. (1–3)***selected semesters***EET 584 Internship. (1–3)***selected semesters***EET 590 Reading and Conference. (1–3)***selected semesters***EET 591 Graduate Seminar. (1–3)***selected semesters***EET 592 Research. (1–3)***selected semesters***EET 593 Applied Project. (1–3)***selected semesters***EET 594 Conference and Workshop. (1–3)***selected semesters***EET 595 Continuing Registration. (1)***selected semesters*



## GRADUATE PROGRAMS AND COURSES

### EET 598 Special Topics. (1–4)

*selected semesters*

### EET 599 Thesis. (1–3)

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

## MICROELECTRONICS ENGINEERING TECHNOLOGY (UET)

### UET 411 Layer Deposition Technology. (3)

*spring*

Fundamentals, applications, and vacuum technology of layer deposition processes used in IC fabrication. Lecture with Web support. Credit is allowed for only UET 411 or 511. Prerequisite: UET 331. Corequisite: UET 417.

### UET 416 Dopant Control Technology. (3)

*fall*

Design and practical realization of charge distribution in microelectronic devices, including ion implantation and diffusion processes. Lecture with Web support. Credit is allowed for only UET 416 or 516. Prerequisite: UET 331. Corequisite: UET 417.

### UET 417 Semiconductor Technology Practice. (3)

*fall*

Lab-based design and execution of safe and effective semiconductor fabrication operations. Lab with Web and simulation support. Prerequisite: UET 331 (or its equivalent). Corequisites: UET 411 and 416 and 424 (or their equivalents).

### UET 418 Systems on Silicon. (4)

*spring*

Factors that drive integration on silicon, including logic, memory, and interfaces. Economics of system-level solutions. Lecture with Web support, lab, practical project. Credit is allowed for only UET 418 or 518. Prerequisite: UET 331.

### UET 421 IC Device Characterization. (3)

*fall*

Design and operation of the major classes of semiconductor devices. Characterization by parameters and their extraction. Future technology trends. Lecture with Web support. Prerequisite: UET 331.

### UET 424 Pattern Transfer Technology. (3)

*spring*

Maskmaking, lithography, and etch processes for integrated circuit fabrication. Lecture with Web support. Prerequisite: UET 331. Corequisite: UET 417.

### UET 426 Software Tools for the Semiconductor Industry. (3)

*spring*

Introduces software tools commonly used in the semiconductor industry, such as SUPREM IV, PSPICE, VIEWLOGIC, and ICED. Prerequisite: UET 331.

### UET 432 Semiconductor Packaging and Heat Transfer. (3)

*spring*

Packaging theory and techniques; hermetic and plastic assembly; thermal management; electrical characteristics and reliability. Prerequisites: ETC 340 and UET 331 (or their equivalents).

### UET 437 Process Control and Validation. (3)

*spring*

Statistical process control and its application to IC fabrication. Design, control, and performance validation techniques throughout the manufacturing process. Lecture with Web support. Prerequisite: 300-level statistics course. Corequisite: UET 417.

### UET 485 Digital Testing Techniques. (3)

*once a year*

Hardware/software aspects of digital testing technology; systems, board, and logic testing and equipment. Lecture, lab. Prerequisites: CET 350; EET 310.

### UET 511 Layer Deposition Technology. (3)

*spring*

Fundamentals, applications, and vacuum technology of layer deposition processes used in IC fabrication. Lecture with Web support. Credit is allowed for only UET 511 or 411. Corequisite: UET 417.

### UET 513 VLSI Circuit Design and Layout. (3)

*fall*

Techniques and practice for the design and layout of very large-scale integrated (VLSI) circuits. Emphasizes “system on silicon” using tools for computer-aided design layout. Seminar. Prerequisite: UET 416.

### UET 516 Dopant Control Technology. (3)

*spring*

Design and practical realization of charge distribution in microelectronic devices, including ion implantation and diffusion processes. Lecture with Web support. Credit is allowed for only UET 516 or 416. Prerequisite: UET 331 (or its equivalent). Corequisite: UET 417.

### UET 518 Systems on Silicon. (3)

*spring*

Factors that drive integration on silicon, including logic, memory, and interfaces. Economics of system-level solutions. Lecture with Web support. Credit is allowed for only UET 518 or 418. Prerequisite: UET 305 (or its equivalent). Pre- or corequisite: UET 417.

### UET 521 Device Physics. (3)

*fall*

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)

*spring*

IC packaging theory and techniques; assembly techniques, material issues; thermal management; electrical performance and reliability. Lecture, lab. Prerequisites: ETC 340 and UET 331 (or their equivalents).

### UET 580 Practicum. (1–3)

*selected semesters*

### UET 584 Internship. (1–3)

*selected semesters*

### UET 590 Reading and Conference. (1–3)

*selected semesters*

### UET 591 Seminar. (1–3)

*selected semesters*

### UET 592 Research. (1–3)

*selected semesters*

### UET 593 Applied Project. (1–3)

*selected semesters*

### UET 594 Conference and Workshop. (1–3)

*selected semesters*

### UET 595 Continuing Registration. (1)

*selected semesters*

### UET 598 Special Topics. (1–4)

*selected semesters*

### UET 599 Thesis. (1–3)

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

## Department of Information and Management Technology

The faculty in the Department of Information and Management Technology through the College of Technology and Applied Sciences at ASU East offer the M.S.Tech. degree. The student may select one of four technical concentrations: environmental technology management, fire service administration, graphic information technology, or management of technology.

**Graphic Information Technology.** The graphic information technology concentration provides students with a seamless graphic user interface from traditional printing and publishing applications to digital/printing/photography/multimedia, 3-D modeling, animation, database management, and Internet/Intranet Web development. Computer hard-

ware/software configurations, information protocols, and networks provide students with an applications-level working knowledge of the different facets of the graphic information industry.

**Environmental Technology Management.** The environmental technology management concentration for the M.S.Tech. degree provides three areas of study: environmental management, emergency management, and international environmental management. Classes are scheduled to minimize disruption of work schedules by meeting six times a semester on alternating Fridays and Saturdays. A Web-based distance learning format is also available. For more information, access the program Web site at [www.east.asu.edu/ctas/imt/etm](http://www.east.asu.edu/ctas/imt/etm).

**Fire Service Administration.** The fire service administration concentration is the advanced study of fire administration and leadership concepts. Students learn concepts and develop skills needed to be effective fire administrators. This program is designed to build a bridge between grounded theory and applied practice. Students completing this program are able to perform the functions of a fire chief in any size public sector fire department, administer fire related programs in the private sector, and conduct meaningful research applicable to fire service programs. The technical concentration is 21 semester hours and includes an applied research project. Students select from the list of technical classes or related support electives to complete the balance of the 33 required hours. Course work in the related area of support cannot exceed six semester hours.

**Management of Technology.** The management of technology concentration provides the necessary content and technical knowledge to improve management functions in industry, manufacturing, and public service organizations. The curriculum addresses topics to include data analysis, ethical issues, project management, organizational effectiveness, personnel development, project management, quality assurance, and technological advancements that impact a global marketplace.

**Admission.** Applicants are expected to satisfy all requirements for admission to the Graduate College. Industrial experience beyond completion of a baccalaureate degree is strongly recommended. Applicants who have deficiencies or who do not meet the prerequisites may be required to complete them before being admitted to the degree program.

**Program of Study.** All candidates for the M.S.Tech. degree program are required to complete a minimum of 33 semester hours of graduate credit. Additional courses may be assigned by the faculty supervisory committee depending on the background of the candidate.

**Final Examination.** Either an applied project or thesis is required. Upon completion of the approved course of study or during the last semester, an oral defense of the applied project or thesis is required.

Master's degree candidates are required to complete either a six-semester-hour research block for the applied project option (that includes ITM 549 Research Techniques and Applications and IMC 593 Applied Project) or six hours

of 592 Research and three hours of 599 Thesis for the thesis option. The program of study is designed for flexibility, permitting the student to select a combination of courses in a technical area and supporting area to meet individual goals.

For more information concerning the M.S.Tech. degree, see "Technology," page 333.

## RESEARCH ACTIVITY

Research interests of faculty in the Department of Information and Management Technology include digital imaging, digital publishing, internet development/e-commerce, information databases, multimedia, animation, 3-D modeling, perishability studies of technology, hazardous materials and waste management, environmental regulations, remediation processes, operations management, quality assurance, industrial training, public policy for fire service, emergency management, fire prevention, and incident command.

## ENVIRONMENTAL TECHNOLOGY MANAGEMENT (ETM)

### ETM 401 Hazardous Waste Management. (3)

*fall and spring*

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)

*spring*

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)

*fall and spring*

Examines reactions, transport, and fates of hazardous chemicals in water, soil, air, and living organisms. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170.

### ETM 407 Occupational Hygiene. (3)

*spring*

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)

*summer*

Addresses theory and management techniques for emergency preparedness, including mitigation, preparedness, response, and recovery. Pre- or corequisite: ETM 301.

### ETM 426 Environmental Issues. (3)

*spring*

Explores the science and policy implications of contemporary problems that threaten the environment. Pre- or corequisites: CHM 113; MAT 170.

### ETM 428 International Environmental Management. (3)

*summer*

Emphasizes technological and economic pressures experienced by developing countries. Prerequisite: ETM 301.

### ETM 501 Principles of Hazardous Materials and Waste Management. (3)

*fall*

Foundation for courses in curriculum. Topics include definitions of toxic and hazardous substances and wastes, RCRA classification, and OSHA criteria. Pre- or corequisites: both CHM 113 and 115 or only CHM 114.

### ETM 502 Regulatory Framework for Toxic and Hazardous Substances. (3)

*fall*

Examines federal, state, and local regulations for hazardous materials and wastes. Includes history and trends in regulatory development. Prerequisite: ETM 501.

## GRADUATE PROGRAMS AND COURSES

### **ETM 503 Principles of Toxicology. (3)**

*spring*

Interaction of chemicals with life and environment. Mechanisms of toxic action, dose-response relationships, toxicity testing models, predictive toxicology, and epidemiology. Prerequisites: both CHM 113 and 115 or only CHM 114.

### **ETM 504 Technology for Storage, Treatment, and Disposal of Hazardous Materials. (3)**

*fall*

Current and state-of-the-art technologies and future trends for storage, treatment, and disposal of hazardous materials and waste. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501.

### **ETM 505 Quantitative Analysis and Practical Laboratory Techniques. (3)**

*fall and spring*

EPA methodologies for sampling and analysis of soils and water. Includes quality assurance and regulatory requirements. Lab is arranged off site. Prerequisites: CHM 114 (or 113 and 115), 231; MAT 170.

### **ETM 506 Chemistry of Hazardous Materials. (3)**

*fall*

Chemistry and toxicology of hazardous chemicals. Topics include proper handling, storage, transportation, and disposal. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170. Corequisite: CHM 231.

### **ETM 507 Industrial Hygiene. (3)**

*selected semesters*

Emphasizes chemical hazards in industrial settings. Topics include recognizing and measuring hazards, control techniques, and regulatory standards. Prerequisites: both CHM 113 and 115 or only CHM 114; MAT 170.

### **ETM 522 Air Pollution and Toxic Chemicals. (3)**

*fall*

Examines issues in the measurement analysis and control of toxic chemicals in air pollution. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170.

### **ETM 523 Soils and Groundwater Contamination. (3)**

*fall*

Theoretical and practical hydrogeology as it applies to cleaning up contamination. Investigative techniques, monitoring, risk assumptions, and assessment methodology. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170. Corequisite: CHM 231.

### **ETM 524 Integrated Emergency Management. (3)**

*selected semesters*

Theory and practice of comprehensive emergency management. Explores scope and function of Department of Homeland Security. Prerequisites: CHM 101; MAT 170.

### **ETM 525 Risk Assessment for Hazardous Materials. (3)**

*spring*

Applies the risk assessment process in situations ranging from hazardous facilities regulation to toxic substances in the environment. Prerequisites: both CHM 113 and 115 or only CHM 114; ETM 501; MAT 170.

### **ETM 526 Current Environmental Technology Issues. (3)**

*fall*

In-depth study of current issues in environmental technology facing both the private and public sectors.

### **ETM 527 Environmental/Resources Regulations Concepts. (3)**

*spring*

Develops environmental regulations from common law to statutory requirements. Emphasizes Superfund, hazardous materials, toxics, and liability contracts. Pre- or corequisite: ETM 501.

### **ETM 560 Terrorism and Weapons of Mass Destruction. (3)**

*selected semesters*

Historical evolution of terrorism and weapons of mass destruction. Analyzes current theories and mitigation, preparedness, and response tactics. Prerequisite: MAT 170.

### **ETM 567 Information Technology in Emergency Management. (3)**

*selected semesters*

Provides theory and application of computer-based programs in emergency management and the use of various emergency modeling programs. Prerequisites: CHM 101; MAT 170.

### **ETM 592 Research. (1–12)**

*selected semesters*

### **ETM 598 Special Topics. (1–4)**

*spring*

Topics may include the following:

- **Advanced Bioremediation. (3)**  
Management and policy issues related to bioremediation of metalting and animal waste and replacement of chemical control with biological methods. Lecture, case studies.

### **ETM 599 Thesis (1–12)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## **FIRE SERVICE ADMINISTRATION (FSA)**

### **FSA 500 Research Methods. (1–12)**

*selected semesters*

Topics may include the following:

- **Fire Administration. (3)**  
Relationship of fire administration and the role of executive fire administrator in administration of complex issues in a dynamic environment.

### **FSA 502 Managing Change in the Fire Service. (3)**

*selected semesters*

Dynamics of organizational change and the effect change has on the delivery of fire services to the community.

### **FSA 503 Fire Service and the Community. (3)**

*selected semesters*

Theoretical concepts of public service to build an understanding of how the fire service fits within the community.

### **FSA 510 Fire Department Budgeting and Finance. (3)**

*selected semesters*

Functions of budgeting and finance in fire departments within the context of the public sector.

### **FSA 522 Leadership in the Fire Service. (3)**

*selected semesters*

Leadership theories analyzed in a variety of contexts within public and private organizations, then applied to the leadership challenges in the fire service.

### **FSA 530 Public Policy in the Fire Service. (3)**

*selected semesters*

Public policy and the fire services' role in the making of public policy in the community.

### **FSA 540 Applied Research Methods in the Fire Service. (3)**

*selected semesters*

Research methods applicable to problems that arise in the fire service, including assessments of programs and customer service research.

### **FSA 550 Fire Service Program Management. (3)**

*selected semesters*

Functions of developing and managing fire service programs. Designed for advanced students of fire service administration.

### **FSA 551 Fire Prevention and Public Fire Education. (3)**

*selected semesters*

Managing fire prevention organizations and administering fire prevention programs in a contemporary society.

### **FSA 552 Emergency Medical Services Administration. (3)**

*selected semesters*

Complex issues of administering an Emergency Medical Services (EMS) division in a fire department.

### **FSA 553 Special Operations in the Fire Service. (3)**

*selected semesters*

Focuses on the variety of special emergency services operations provided by contemporary fire departments.

### **FSA 554 Emergency Fire Operations Administration. (3)**

*selected semesters*

Delivery of emergency services to a community by a contemporary fire department.

### **FSA 580 Practicum. (1–12)**

*selected semesters*

Topics may include the following:

- Fire Service Practicum. (3)  
Structured practical fire service research experience that is supervised by an approved fire service professional or faculty member.

**FSA 598 Special Topics. (1–4)**  
*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

### FIRE SERVICE MANAGEMENT (FSM)

**FSM 598 Special Topics. (1–4)**  
*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

### GRAPHIC INFORMATION TECHNOLOGY (GIT)

**GIT 411 Computer Animation. (3)**

*fall and spring*

2D and 3D computer animation methods: project planning, scripting, storyboards, advanced modeling, lighting, materials mapping, and motion. Lecture, lab. Prerequisites: GIT 312, 334.

**GIT 412 Multimedia Authoring, Scripting, and Production. (3)**

*fall and spring*

Production of multimedia projects using industry-standard authoring applications: project management, client considerations, and project documentation; user interface design, interactivity, media, and databases. Lecture, lab. Prerequisite: GIT 314.

**GIT 413 Professional Portfolio Design and Presentation. (3)**

*spring*

Digital media portfolio design and production: planning, audience analysis, media selection, authoring, media formats, production, copyright considerations, marketing, and delivery. Lecture, lab. Prerequisites: GIT 314, 334.

**GIT 414 Web Site Design and Internet/Web Technologies. (3)**

*spring*

Web site design, authoring, standards, protocols, tools, and development techniques for commercial client-sided Web-based graphic information systems. Lecture, lab. Prerequisites: GIT 334, 337.

**GIT 415 Computer Graphics: Business Planning and Management. (3)**

*spring*

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: senior standing in Information Technology (graphic information technology concentration).

**GIT 417 Advanced Internet Programming. (3)**

*fall*

Uses industry-standard programming languages and techniques to create interactive graphic information Web sites and applications. Lecture, lab. Prerequisite: GIT 414.

**GIT 432 Graphic Industry Business Practices. (3)**

*selected semesters*

Business practices related to press/prepress/Web industries; trade customs, cost analysis, marketing and management approaches. Lecture, lab, field trips. Prerequisite: GIT 414.

**GIT 435 Web Management and E-commerce. (3)**

*spring*

Internet Web site management, security, online databases, and new e-commerce business models. Lecture, lab. Prerequisite: GIT 414.

**GIT 436 Gravure Technology. (3)**

*spring*

In-depth study of the market profile and production sequences related to the gravure method of printing. Prerequisite: GIT 135.

**GIT 437 Color Reproduction Systems. (3)**

*fall*

Scientific analysis for the engineering of color reproduction systems and color models used in the graphics industry. Prerequisite: GIT 334.

**GIT 441 Graphic Information Systems. (3)**

*selected semesters*

Graphic information systems common to the workplace: graphic user interfaces for online databases, geographic, industrial, architectural, and management applications. Lecture, lab. Prerequisite: senior standing in Information Technology (graphic information technology concentration).

**GIT 450 Digital Workflow in Graphic Industries. (3)**

*fall*

Analyzes digital production systems for input, assembly, and output of graphic information to print and Web, including networking and job tracking. Lecture, lab. Prerequisite: GIT 334.

**GIT 510 Computer Graphics Programming: Design, Customization, and Development. (3)**

*selected semesters*

Advanced design, development, and documentation of graphic application programs. Lecture, lab.

**GIT 512 Multimedia-Based Education and Training. (3)**

*fall*

Creative design, planning, development, documentation, and production of technology-based learning and multimedia-based education and training materials and programs. Lecture, lab. Prerequisite: GIT 412.

**GIT 537 Current Issues in Quality Assurance. (3)**

*selected semesters*

Directed group study of selected issues relating to quality assurance in the printing, publishing, and information industry.

**GIT 538 Personnel Development for the Graphics Industry. (3)**

*selected semesters*

Employee training and development specific to production and management in the graphics industry.

**GIT 590 Reading and Conference. (1–12)**

*selected semesters*

**GIT 598 Special Topics. (1–4)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

### INFORMATION AND MANAGEMENT CORE (IMC)

**IMC 470 Project Management. (3)**

*spring*

Introduces techniques for managing small groups within larger organizations, including team building, motivating, planning, tracking activities, and computer tools. Prerequisites: ECN 111; IMC 346; ITM 344.

**IMC 584 Internship. (1–3)**

*selected semesters*

**IMC 590 Reading and Conference. (1–12)**

*selected semesters*

**IMC 592 Research. (1–12)**

*selected semesters*

**IMC 593 Applied Project. (1–12)**

*fall and spring*

**IMC 595 Continuing Registration. (1)**

*selected semesters*

**IMC 599 Thesis. (1–12)**

*fall and spring*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

### INDUSTRIAL TECHNOLOGY MANAGEMENT (ITM)

**ITM 402 Legal Issues for Technologists. (3)**

*fall*

American legal system and impact on technology management issues: contracts, torts, intellectual property, white collar crime, anti-trust, environmental, and employment.

**ITM 405 Forecasting and Evolution of Technology. (3)**

*selected semesters*

History and evolutionary nature of selected technologies, issues in the management of emerging technologies, and methods of technological forecasting. Prerequisite: IMC 346 (or its equivalent).

## GRADUATE PROGRAMS AND COURSES

### **ITM 430 Ethical Issues in Technology. (3)**

*spring*

Topics in social responsibility for industrial technology and engineering. Prerequisite: IMC 346.

### **ITM 440 Introduction to International Business. (3)**

*spring*

International business principles and operations, including partnerships, trade agreements, currency issues, international sales, and cultural differences between countries. Prerequisite: IMC 346.

### **ITM 445 Industrial Internship. (1–10)**

*fall, spring, summer*

Work experience assignment in industry commensurate with student's program. Specialized instruction by industry with university supervision. Pass/fail. Prerequisites: advisor approval; junior standing; 2.50 GPA.

### **ITM 451 Industrial Distribution and Materials Management. (3)**

*selected semesters*

Surveys topics in industrial distribution including, but not limited to, materials handling, purchasing, receiving, warehousing, traffic, inventory control, and shipping. Prerequisite: IMC 346 or ITM 343.

### **ITM 452 Industrial Human Resource Management. (3)**

*fall*

Concepts and practices of human resource management in a global industrial environment. Prerequisite: IMC 346.

### **ITM 453 Safety Management. (3)**

*selected semesters*

Development and management of safety programs, education and training, and relationships within an organization. Prerequisite: ITM 343 or instructor approval.

### **ITM 455 Industrial Marketing Concepts. (3)**

*selected semesters*

Customer and sales strategies for industrial organizations, including current practice and future planning. Prerequisites: ECN 111; IMC 346; junior standing.

### **ITM 456 Introduction to Organized Labor. (3)**

*spring*

Introduces labor relations, unions, federations, collective bargaining, grievances, and labor legislation. Prerequisites: IMC 346; ITM 344.

### **ITM 461 Operations Management. (3)**

*fall*

Introduces supervisory principles as applied to production of goods and services. Prerequisites: IMC 346; ITM 344.

### **ITM 480 Organizational Effectiveness. (3)**

*spring*

Human aspects of supervisory behavior in the industrial setting and how they influence efficiency, morale, and organizational practices. Prerequisite: IMC 346.

### **ITM 502 Financial Management. (3)**

*selected semesters*

Examines corporate financial and managerial accounting systems, budgeting, and financial policy, using microcomputers to analyze, forecast, and report information.

### **ITM 503 Marketing Management. (3)**

*selected semesters*

Modern methods and industrial case studies of planning, pricing, promoting, and distributing goods and services in the global marketplace. Prerequisites: ITM 480 (or its equivalent); instructor approval.

### **ITM 504 Law and Ethics for Technical Professionals. (3)**

*selected semesters*

Analyzes 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)**

*selected semesters*

Analyzes entrepreneurial dynamics and technology development, methods of research and development management, new technology implementation, and start-up organization. Prerequisites: ITM 480 (or its equivalent); instructor approval.

### **ITM 540 International Management. (3)**

*selected semesters*

Practices and procedures for effective management of multinational business organizations, including partnerships, joint ownerships, and global subsidiaries.

### **ITM 548 Statistical Methods for Research. (3)**

*selected semesters*

Multivariate statistical techniques to analyze research data. Uses statistical software and applications. Prerequisite: STP 420 (or its equivalent).

### **ITM 549 Research Techniques and Applications. (3)**

*fall and spring*

Selection of research problems, analysis of literature, individual investigations, preparing reports, and proposal writing. Prerequisite: STP 420 (or its equivalent).

### **ITM 550 Industrial Training and Development. (3)**

*selected semesters*

Training techniques and learning processes. Planning, developing, evaluating, and managing industrial and governmental programs. Prerequisite: ITM 480.

### **ITM 552 Global Management Philosophies. (3)**

*selected semesters*

Analyzes and compares significant supervision philosophies developed in various industrial nations and their potential application in the United States.

### **ITM 560 Managerial Decision Making. (3)**

*fall*

Analyzes common decision-making biases and techniques to overcome them. Uses both subjective quantitative decision tools and computerized decision aids.

### **ITM 570 Advanced Project Management. (3)**

*spring*

Planning, organizing, coordinating, and controlling staff and project groups to accomplish the project objective.

### **ITM 593 Applied Project. (1–12)**

*selected semesters*

#### **ITM 598 Special Topics. (1–4)**

*selected semesters*

Topics may include the following:

- Quantitative Research Analysis

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

## Department of Mechanical and Manufacturing Engineering Technology

The faculty in the Department of Mechanical and Manufacturing Engineering Technology (MMET) in the College of Technology and Applied Sciences, ASU East, offer the M.S.Tech. degree. A minimum of 33 semester hours of approved courses is required. Both a thesis and applied project option are available. The flexible program permits the student to select a combination of courses in the relevant concentration and supporting areas to meet individual career goals in technology or to provide the foundation for further advanced study.

The department provides the student with a number of program of study options that presuppose a sound technical undergraduate degree. The options are designed to provide graduates with technical and professional skills that will facilitate preparation for, and advancement in, leadership positions in industry, education, government, and military. Laboratories and classrooms are well equipped, and the faculty members teaching the classes have relevant teaching, research, industry and training experience and background. Areas of concentrations include aeronautical engineering technology, instrumentation and measurement technology, manufacturing engineering technology, and mechanical engineering technology. The instrumentation and measurement technology concentration is offered jointly with the

Department of Electronics and Computer Engineering Technology.

The student may select one of the areas to meet the emphasis area requirement of 18 semester hours. Careful course selection in coordination with a faculty advisor and/or advisory committee is an essential aspect of building a focused program for the student. The selection process also facilitates the potential for expanding the depth and breadth of education the student receives in related areas. The supporting area (six to nine semester hours) may be selected from outside the department upon approval from the supervisory committee. The thesis option includes six hours of research credits spread over at least two semesters.

**Admission.** Applicants are expected to satisfy all requirements for admission to the Graduate College. Industrial experience beyond completion of a baccalaureate degree is strongly recommended. Applicants with deficiencies or those not meeting the prerequisites may be required to complete them before being admitted to the degree program. A statement of purpose and current résumé should also be submitted to the department.

**Program of Study.** All candidates for the M.S.Tech. degree program are required to complete a minimum of 33 semester hours of graduate credit as follows:

**Thesis Option**

Technical area of emphasis .....	18
Supporting area .....	6
Research writing course .....	3
Research/Thesis .....	6
Total .....	33

**Applied Project Option**

Technical area of emphasis .....	18
Supporting area .....	9
Research writing course .....	3
Research/Applied project .....	3
Total .....	33

Additional courses may be assigned by the supervisory committee depending on the background of the candidate. The program is designed for flexibility, permitting the student to select a combination of courses in a technical area and supporting area to meet individual goals.

**RESEARCH ACTIVITY**

Department faculty are engaged in both theoretical and applied research projects, involving undergraduate and graduate students in both manufacturing and aeronautical-related topic areas. Graduate students employed in local industry are encouraged to develop research topics that address problems of interest to their employers.

Current research interests of the faculty include manufacturing modeling and simulation—with a particular focus on the semiconductor fabrication process, “smart” materials—especially composite materials, hydrogen power and fuel cells, optimization of turbine engines, machinability and manufacturing processes, manufacturing and program management, manufacturing cost economics, and design.

Applied research projects are carried out in a number of well-equipped laboratories and facilities: computer-aided design and computer-aided manufacturing laboratory, machining center laboratory, composite materials laboratory, energy conversion and combustion laboratory, automation laboratory, welding and casting laboratory, materials inspection and metrology laboratory, and metallurgy/materials testing laboratory.

For more information on research areas and laboratories, access the department Web site at [www.east.asu.edu/ctas/mmet](http://www.east.asu.edu/ctas/mmet).

**AERONAUTICAL ENGINEERING TECHNOLOGY (AET)**

**AET 415 Gas Dynamics and Propulsion. (3)**

*spring*

Introduces compressible flow, internal and external flow, and aerothermodynamic analysis of propulsion systems. Prerequisite: MET 434.

**AET 417 Aerospace Structures. (3)**

*fall*

Analysis and design of aircraft and aerospace structures. Shear flow. Semimonocoque structures. Effects of dynamic loading. Prerequisites: AET 300, 312; MET 313.

**AET 420 Applied Aerodynamics and Wind Tunnel Testing. (3)**

*fall*

Introduces viscous and inviscid flow and their relationship to aircraft lift and drag. Wind tunnel design and testing. Lecture, lab. Prerequisites: AET 300; MET 434.

**AET 432 Applied Heat Transfer. (3)**

*fall*

Heat transfer by conduction, convection, and radiation. Applies heat transfer to engineering design problems. Prerequisite: ETC 340. Pre- or corequisite: MET 434 or instructor approval.

**AET 487 Aircraft Design II. (3)**

*spring*

Basic aerodynamics and airplane performance analysis methods applied to practical design project. Prerequisite: AET 300.

**AET 500 Research Methods. (1–12)**

*selected semesters*

**AET 524 Application of Heat Transfer. (3)**

*fall*

Energy conservation, steady-state and transient conduction, convection transfer, free and forced convection Reynolds analogy, blackbody and environmental radiation. Prerequisite: MET 434 or instructor approval.

**AET 525 Advanced Propulsion. (3)**

*spring*

Mechanics and thermodynamics of propulsion systems. Solid, liquid propellant rocket design performance. Electrical nuclear propulsion systems. Space missions. Prerequisites: both AET 415 and 420 (or MET 434) or only instructor approval.

**AET 560 Numerical Methods in Engineering Technology. (3)**

*selected semesters*

Analyzes problems in physical sciences, models physical problems, perturbation techniques, curvefitting, data analysis, numerical solutions, ordinary and partial differential equations.

**AET 580 Practicum. (1–12)**

*selected semesters*

**AET 583 Field Work. (1–12)**

*selected semesters*

**AET 584 Internship. (1–12)**

*selected semesters*

**AET 590 Reading and Conference. (1–12)**

*selected semesters*

**AET 591 Seminar. (1–12)**

*selected semesters*

**AET 592 Research. (1–12)**

*selected semesters*

**AET 593 Applied Project. (1–12)**

*selected semesters*



## GRADUATE PROGRAMS AND COURSES

### **AET 594 Conference and Workshop. (1–12)**

*selected semesters*

### **AET 595 Continuing Registration. (1)**

*selected semesters*

### **AET 598 Special Topics. (1–4)**

*selected semesters*

### **AET 599 Thesis. (1–12)**

*selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

## **MECHANICAL AND MANUFACTURING ENGINEERING TECHNOLOGY (MET)**

### **MET 401 Quality Assurance. (3)**

*spring*

Introduces statistical quality control methods design of experiments, sampling, gauge requirements, specifications, quality assurance tools emphasizing CNC-CMM programming. Lecture, lab. Prerequisite: junior standing.

### **MET 416 Applied Computer-Integrated Manufacturing. (3)**

*fall*

Techniques and practices of computer-integrated manufacturing, with emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 345.

### **MET 432 Thermodynamics. (3)**

*spring*

Thermodynamics of mixtures. Combustion process. Applies thermodynamics to power and refrigeration cycles. Prerequisite: ETC 340.

### **MET 433 Thermal Power Systems. (4)**

*selected semesters*

Analyzes gas power, vapor power, and refrigeration cycles. Components of air conditioning systems. Direct energy conversion. Psychrometry. Analyzes internal combustion engines and fluid machines. Lecture, lab. Prerequisite: MET 432 or instructor approval.

### **MET 434 Applied Fluid Mechanics. (3)**

*spring*

Fluid statics. Basic fluid flow equations. Viscous flow in pipes and channels. Compressible flow. Applies fluid measurement and flow in conduits. Prerequisite: ETC 340.

### **MET 435 Alternate Energy Sources. (3)**

*selected semesters*

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)**

*selected semesters*

Applies thermodynamics and fluid mechanics to the analysis of machinery design and power cycle performance predictions. Prerequisites: ETC 340; MET 434.

### **MET 438 Machine Design II. (3)**

*spring*

Applies mechanics to the design of machine elements and structures. Emphasizes basics of gears, springs, brakes, clutches, and bearings. Prerequisite: AET 312; MET 331.

### **MET 442 Specialized Production Processes. (3)**

*fall*

Nontraditional manufacturing processes, emphasizing EDM, ECM, ECG, CM, PM, HERF, EBW, and LBW. Prerequisite: MET 231.

### **MET 443 CNC Computer Programming. (3)**

*fall*

Theory and application of N/C languages using CAM software and CNC machine tools. Lecture, lab. Prerequisite: MET 345 or instructor approval.

### **MET 444 Production Tooling. (3)**

*fall*

Design and fabrication of jigs, fixtures, and special industrial tooling related to manufacturing methods. Lecture, lab. Prerequisite: MET 345.

### **MET 451 Introduction to Automation. (3)**

*spring*

Introduces automation. Topics include assembly techniques, fixed and flexible automation systems, robots, material-handling systems, sensors, and controls. Lecture, lab. Prerequisite: MET 345.

### **MET 452 Implementation of Robots in Manufacturing. (3)**

*selected semesters*

Robotic workcell design, including end effectors, parts presenters, and optimum material flow. Prerequisite: MET 451 or instructor approval.

### **MET 460 Manufacturing Capstone Project I. (3)**

*fall*

Group project designing, evaluating, and analyzing components, assemblies, and systems. Develop products/manufacturing techniques demonstrating state-of-the-art technology. Lecture, lab. Prerequisites: MET 331, 341; senior standing.

### **MET 461 Manufacturing Capstone Project II. (3)**

*spring*

Small-group projects applying manufacturing techniques, with emphasis on demonstrating state-of-the-art technology. Lecture, lab. Prerequisite: MET 460 or instructor approval.

### **MET 500 Research Methods. (1–12)**

*selected semesters*

### **MET 501 Statistical Quality Control Applications. (3)**

*spring*

SPC problem-solving techniques for implementation in industrial setting; design and analysis of experiments. Prerequisite: instructor approval.

### **MET 502 Specialized Production Processes. (3)**

*fall*

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)**

*fall*

Design and fabrication of fixtures, jigs, templates, and specialized industrial tooling for manufacturing. Lecture, lab. Prerequisite: instructor approval.

### **MET 507 Manufacturing Enterprise. (3)**

*fall and spring*

Organization and project management of cellular manufacturing methods, including IIT and lean manufacturing. Prerequisite: instructor approval.

### **MET 509 Applied Engineering Economics. (3)**

*spring*

Fundamentals of engineering economics in a practical, industry-based approach. Includes effects of depreciation, taxes, inflation, and replacement analysis. Lecture, computer lab experiences.

### **MET 512 Introduction to Robotics. (3)**

*selected semesters*

Introduces 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)**

*fall*

Analysis and design of hard and flexible automation systems. Particular attention to material-handling technology. Prerequisite: instructor approval.

### **MET 514 CNC Computer Programming. (3)**

*fall*

Theory and application of N/C languages using CAM software and CNC machine tools. Lecture, lab. Prerequisite: instructor approval.

### **MET 515 Manufacturing Simulation. (3)**

*spring*

Computer simulation of manufacturing operations. Discrete event simulation models range from individual processes to whole factories. Lecture, computer lab experiences.

### **MET 517 Applied Computer-Integrated Manufacturing. (3)**

*fall*

Techniques and practices of computer-integrated manufacturing, with emphasis on computer-aided design and computer-aided manufacturing. Prerequisite: MET 345 or instructor approval.

**MET 518 Composites Materials Manufacturing. (3)***spring*

Introduces composite materials and associated manufacturing issues, including tooling, processes, and quality control. Related issues, including testing and joining. Lecture, lab. Credit is allowed for only MET 518 or 418. Prerequisite: instructor approval.

**MET 571 Waste Minimization and Waste Prevention. (3)***selected semesters*

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 580 Practicum. (1–12)***selected semesters***MET 584 Internship. (1–12)***selected semesters***MET 590 Reading and Conference. (1–12)***selected semesters***MET 591 Seminar. (1–12)***selected semesters***MET 592 Research. (1–12)***selected semesters***MET 593 Applied Project. (1–12)***selected semesters***MET 594 Conference and Workshop. (1–12)***selected semesters***MET 595 Continuing Registration. (1)***selected semesters***MET 598 Special Topics. (1–4)***selected semesters***MET 599 Thesis. (1–12)***selected semesters*

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see “Omnibus Courses,” page 50.

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## Theatre

**Master’s and Doctoral Programs**

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480/965-5337

GHALL 232

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**Professors:** Barker, Bedard, Eckard, Giner, Knapp, Mason, Saldaña, Thomson, Wills

**Associate Professors:** Acker, Edwards, Holloway, Reyes, Riske, Vining

**Assistant Professors:** Furr-Solomon, Gharavi, Steenerson, Sterling, Underiner, Woodson

**Senior Lecturer:** McMahon

**Lecturers:** Irvine, Tongret

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The faculty in the Department of Theatre offer graduate programs leading to the M.A., the Master of Fine Arts, and the Ph.D. degrees in Theatre. Areas of concentration are performance, scenography and theatre for youth at the M.F.A. level and theatre for youth at the Ph.D. level. Stu-



Cast members perform in a production of *Amahl and the Night Visitors*.

Tim Trumble photo

dents may also pursue an interdisciplinary program in playwriting leading to the M.F.A. degree in Creative Writing. This program is offered by the faculties in the Departments of English and Theatre (see “English,” page 199).

**MASTER OF ARTS**

The M.A. degree in Theatre is a flexible program of advanced theatre studies that prepares students for graduate study beyond the master’s level. The program primarily emphasizes theoretical studies.

See “Master’s Degrees,” page 94, for general requirements.

**Admission.** Applicants must meet all admission requirements of the Graduate College. In addition, the Department of Theatre requires comprehensive undergraduate preparation in theatre (at least a Theatre minor or its equivalent), acceptable scores on either the Graduate Record Examination (GRE) or Miller Analogies Test, three letters of recommendation, and an undergraduate GPA of 3.00.

**Application Deadline.** The first deadline for receipt of applications and test scores is March 1 (February 1 for Creative Writing). After that date, admission is subject to space availability.

**Deficiencies.** Deficiencies in undergraduate preparation (not to exceed 12 hours) may be removed while pursuing the M.A. degree; courses taken to remove deficiencies may not be counted toward the degree.

## GRADUATE PROGRAMS AND COURSES

**Program of Study.** The required courses are THE 500, 504, 505, 520, and 521. Additional course work to complete the degree is selected by the student with the approval of the supervisory committee. Theatre courses must be completed with a grade of “B” or higher. A thesis or equivalent is required.

**Foreign Language Requirements.** None.

**Thesis or Equivalent Requirements.** For students electing to prepare a thesis, the program consists of a minimum of 24 semester hours of graduate work and three hours each of thesis (599) and research (592) credit. A research thesis is especially recommended for students planning to continue graduate study beyond the master’s degree and may be elected with the approval of the supervisory committee.

In consultation with their supervisory committee, students may elect to prepare a thesis equivalent. This option consists of 36 semester hours of graduate work, of which six hours are research (592) credit, and three hours of THP 593 Applied Project. Each student develops an approved project and supports this project with a written document. In addition, at least 18 semester hours of course work on the program of study must be 500-level courses and 20 semester hours must be in the major field.

**Final Examinations.** Both final written and oral examinations are required of all candidates. The written examination is based on the required courses; the oral examination is a defense of the thesis or equivalent.

### MASTER OF FINE ARTS

The M.F.A. degree in Theatre is a 60-semester-hour professional program with concentrations in performance, scenography, and theatre for youth.

The concentration in performance is focused on developing performers as creative artists. It emphasizes skills for approaching and creating new work and developing entrepreneurship, performance applications in multimedia, interdisciplinary collaboration, artistic integrity, and social responsibility.

In the scenography concentration, students learn skills and methodologies to create and execute designs in costumes, lighting, and scenery.

The concentration in theatre for youth is designed to prepare candidates for work as drama specialists; for college and university teaching in the field of theatre for youth; for professional careers in children’s theatre; and for work in community theatres, recreational programs, and social agencies.

**Admission.** Applicants must meet all admission requirements of the Graduate College. In addition, the Department of Theatre requires a minimum of 30 semester hours of course work in theatre, a minimum GPA of 3.20 for all course work in theatre, and acceptable scores on either the GRE or MAT.

For the concentration in performance, requirements include:

1. an interview and audition consisting of two performed selections, not to exceed four minutes total;

2. three letters of recommendation; and
3. a detailed statement of purpose.

Dates and sites for interviews may be obtained from the Department of Theatre.

For the concentration in scenography, three letters of recommendation are required from leaders in the field of theatre, education, or art. In addition, applicants must provide a portfolio of 12 slides or photographs of their work with a return envelope and postage, as well as a statement of educational and artistic objectives. An interview is recommended; dates and sites may be obtained from the Department of Theatre.

For the concentration in theatre for youth, three letters of recommendation are required from leaders in the field of theatre for youth, theatre education, or recreation, as well as a statement of educational and career goals. Submission of a current résumé is also necessary. An interview is strongly suggested but not required.

More detailed information regarding admission requirements for the concentration may be obtained from the Department of Theatre Web site.

**Application Deadline.** The first deadline for receipt of applications and test scores is March 1. After that date, admission is subject to space availability.

**Program of Study.** Each student works closely with a supervisory committee to develop a program of study in required and elective course work. All M.F.A. candidates majoring in Theatre are evaluated at the end of each semester by their supervisory committee, with the responsibility resting on each student for documenting professional development. The advancement of each student through each of the three years in the M.F.A. program is dependent upon a positive recommendation of the supervisory committee.

The program for the performance concentration consists of a minimum of 60 semester hours, distributed as follows: 48 hours of course work in the major (THE 500, 504, 505, 520, 521; THP 501, 502, 503, 504, 598); six hours of THE 692 Research; and six hours of THP 693 Applied Project.

The program for the scenography concentration consists of 60 semester hours distributed as follows: 43 hours of required course work in the major (THE 500 [one hour], 504, 505, 520, 521; THP 506, 530, 540, 545, 649 [three hours], 691, six hours each of THP 684 Internship and THP 693 Applied Project); 12 hours of additional design and/or technical theatre classes which may be selected from THE 430; THP 431, 435, 441, 442, 444, 445, 494; and five additional hours of electives subject to the approval of the supervisory committee.

The program for theatre for youth consists of 60 semester hours, distributed as follows: 39 hours of required course work in the major (THE 500, 504, 505, 520, 521, 524; THP 411, 511, and 611 or 618, six hours each of THP 684 Internship and THP 693 Applied Project); and 21 hours of approved electives in the major and related areas.

**Credit Before Admission.** Subject to approval by the supervisory committee, a maximum of 24 semester hours of graduate work from a completed master’s degree program earned at ASU or another accredited institution may be

applied to the program of study. In other cases, a maximum of nine semester hours of nondegree graduate work from ASU or another institution may be applied (see “Credit Completed Before Admission,” page 94). All course work for the degree must be completed within the six-year time limit.

**Foreign Language Requirements.** None.

**Final Examinations.** A comprehensive examination or comprehensive review in the area of concentration is required. In addition, students failing to receive a grade of “B” or higher in THE 504, 505, 520, and 521 must pass a written comprehensive examination on the subject matter of those courses. A final project THP 693 Applied Project (six hours), supported by written documentation and defended in an oral defense, is required.

**Deficiencies.** Deficiencies in undergraduate preparation of no more than 12 hours may be removed while pursuing the M.F.A. degree; courses taken to remove deficiencies may not be counted toward the degree.

## DOCTOR OF PHILOSOPHY

The Ph.D. degree is designed to give students a broad knowledge of theatre as well as special research, production, and teaching skills in theatre for youth. A detailed description of the program may be obtained from the Department of Theatre Web site.

See “Doctor of Philosophy,” page 96, for general requirements.

**Application and Admission.** Applicants must meet all admission requirements of the Graduate College. In addition, the Department of Theatre generally requires a master’s degree in theatre or education; a minimum of 36 hours of undergraduate and graduate course work in theatre (to include courses in dramatic literature, acting, directing, stagecraft, improvisation with youth, theatre for children, children’s literature, research methods, theatre history, and theatre theory/criticism); acceptable scores on the GRE and on the Test of English as a Foreign Language (where applicable); three letters of recommendation; a current résumé; writing sample; transcripts; and statement of purpose.

**Application Deadline.** The first deadline for receipt of applications and test scores is March 1. After that date admission is subject to space availability.

**Program of Study.** A total of 90 semester hours is required for this degree, consisting of (1) a minimum of 66 semester hours of graduate course work (including a maximum of 30 semesters hours accepted from the first year of graduate study, a core of 15 semester hours of required courses, and 21 semester hours of elective and research credits); and (2) 24 semester hours of research and dissertation preparation.

A minimum of 30 semester hours of the approved Ph.D. program, exclusive of dissertation and research hours, must be completed after admission to the Ph.D. at ASU.

In meeting these requirements, students, with the advice of the supervisory committee, may select theatre courses in areas such as theatre education, directing, acting, design,

playwriting, theatre history, and theatre theory/criticism, in addition to tutorial courses, as well as courses offered by other departments in areas such as pertinent research methodologies, educational theory and methodology, aesthetic theory, the arts and arts education, and children’s literature. Students are encouraged to be involved in on- and off-campus production and teaching. All activities are selected to help students meet the goals of the program and develop the capability of becoming leaders in the field.

**Research Technique Requirement.** Students must successfully complete two graduate level courses in qualitative or quantitative research methods approved by their committee, or they must successfully pass an examination in a foreign language approved by their committee.

**Preliminary Reviews.** Reviews of a student’s performance in courses and development of research skills, artistic skills, and teaching competencies are conducted by the supervisory committee at the end of each semester.

**Comprehensive Examinations.** These examinations are composed of written and oral components centering upon: theatre history, literature, and criticism; theatre for youth and theatre education; and the research area.

**Dissertation Requirements.** A dissertation based on original research work of high quality, demonstrating proficiency in the student’s special field, is required. (See “Doctoral Dissertations,” page 96.)

**Financial Assistance.** University scholarships, fellowships, grants, and other forms of financial assistance are available. See “Financing Graduate Studies,” page 47, and “Assistantships and Associateships,” page 91. Graduate assistantships are granted by the Department of Theatre; application forms and information concerning graduate assistantships are available through the graduate secretary, Department of Theatre.

## RESEARCH ACTIVITY

Recent Ph.D. dissertations completed in Theatre for Youth include:

*Drama Activities at the Ethical Culture School, 1878–1930*, by Virginia Page Tennyson.

*An Interrogation of Drama in Colonial Educational Contexts: Three Boys’ Schools in Queensland, Australia*, by Janet McDonald.

*Longevity and the Secondary Theatre Arts Teacher: A Case Study*, by Cynthia Brown.

*Mapping the Cultural Geography of Childhood or Constructing the Child in Child Drama: 1950–Present*, by Stephani Woodson.

*Russian Theatre for Young Audiences and the Changes in Ideological Function with Glasnost and Perestroika*, by Manon C. van de Water.

*Theorizing Programming for Diversity in Three Professional Theatres for Young Audiences*, by Lisa Kramer.

*Understanding Two Teachers’ Practices and Their Use of Theatre in the Elementary School Classroom*, by Lorenzo Garcia.

## GRADUATE PROGRAMS AND COURSES

### THEATRE (THE)

#### THE 400 Focus on Film. (3)

*fall, spring, summer*

Specialized study of prominent film artists, techniques, and genres. Emphasizes the creative process. May be repeated for credit. Topics may include the following:

- Film Production Part I  
Fee.
- Film Production Part II  
Fee.

Prerequisite: ENG 101 or 105.

#### THE 402 Gender Identity in Film. (3)

*selected semesters*

Examines the representation of gender in Hollywood cinema with particular focus on films from 1970 to the present. Prerequisite: THE 300.

#### THE 403 Independent Film. (3)

*once a year*

Examines independent films and filmmakers in the United States, 1968 to the present.

#### THE 404 Foreign Films and Filmmakers. (3)

*once a year*

Films and filmmakers from Europe, Asia, Australia, Far East, South America, and Caribbean. Emphasizes cultural content and filmmaking philosophies.

#### THE 405 Film: Great Performers and Directors. (3)

*fall, spring, summer*

Examines processes and influences of one or more great film performers and/or directors. May be repeated for credit. Prerequisite: THE 300.

#### THE 406 American Multicultural Film. (3)

*fall and spring*

Examines Native, African, Asian, and Latina and Latino American films and film artists in cinema history and production. Internet course. Prerequisite: ENG 102 or 105.

#### THE 421 History of the English Theatre. (3)

*selected semesters*

History of the artists, events, and plays in the development of English theatre from medieval times to the present. Lecture, group and independent work. Prerequisite: THE 100 or 220.

#### THE 422 Latina and Latino Theatre. (3)

*selected semesters*

Readings, discussion, video of dramatic literature and production styles of Latina and Latino playwrights and theatre companies in the United States. Prerequisite: ENG 102 or 105.

#### THE 423 African American Theatre. (3)

*fall and spring*

Readings, discussion, video of the history and dramatic literature of African American playwrights and theatre companies in the United States. Prerequisite: ENG 102 or 105.

#### THE 424 Trends in Theatre for Youth. (3)

*selected semesters*

Surveys the history, literature, and contemporary practices in theatre for youth.

#### THE 426 Theatre of the Americas. (3)

*fall and spring*

Selected studies in pre-Columbian theatre forms and texts of the Aztecs, Mayans, Caribbean islands, and North American Indians. Internet course. Prerequisite: ENG 102.

#### THE 430 History of Costume: Western Tradition. (3)

*selected semesters*

Studies major costume styles throughout history of Western civilization and how these fashions reflected society. Explores how styles can be used by theatrical costumers.

#### THE 440 Theatre Forms and Contexts. (3)

*fall and spring*

Explores 20th-century modernist theatrical forms and movements and development of alternative strategies for analyzing contemporary theatre and performance. Prerequisites: THE 220, 320, 321; Theatre major.

#### THE 480 Methods of Teaching Theatre. (4)

*spring*

Applies materials, techniques, and theories for theatre with 9th-through 12th-grade students. Emphasizes curriculum development

and praxis. Prerequisite: theatre education concentration or written instructor approval.

#### THE 494 Special Topics. (1–4)

*selected semesters*

Topics may include the following:

- Performance Technology I  
Fee.

#### THE 500 Research Methods. (1–3)

*fall*

Introduces graduate study in theatre.

#### THE 504 Studies in Dramatic Theory and Criticism. (3)

*fall*

Dramatic theory, criticism, and aesthetics from the classical period to the 19th century. Related readings in dramatic literature. Prerequisite: Theatre major.

#### THE 505 Studies in Dramatic Theory and Criticism. (3)

*spring*

Dramatic theory, criticism, and aesthetics from the 19th century to the present. Related readings in dramatic literature. Prerequisite: Theatre major.

#### THE 510 Studies in Literature. (1)

*fall and spring*

Assigned individual reading program in standard sources and masterpieces in theatre literature. May be repeated for credit.

#### THE 520 Theatre History and Literature I. (3)

*fall*

Surveys historiographical issues, historical periods, and theatre literature, through the 17th century.

#### THE 521 Theatre History and Literature II. (3)

*spring*

Surveys historiographical issues, historical periods, and theatre literature, from the 17th century to present.

#### THE 524 Advanced Studies in Theatre for Youth. (3)

*fall*

In-depth study of the history, literature, and contemporary practice of theatre for youth. Prerequisite: written instructor approval.

#### THE 562 Literary Management Workshop. (3)

*selected semesters*

Advanced literary management for the contemporary theatre, including trends in new play development, festivals and productions throughout the United States. Participation in Arizona Playwriting Competition. Prerequisite: THP 560 or written instructor approval.

#### THE 591 Seminar. (3)

*selected semesters*

Selected topics in child drama, community theatre, and theatre history. Prerequisite: written instructor approval.

#### THE 598 Special Topics. (1–4)

*fall and spring*

Topics may include the following:

- College Teaching: Dramatic Analysis
- Film Studies
- Performance Technology I  
Fee.

#### THE 691 Seminar. (1–12)

*selected semesters*

#### THE 692 Research. (1–12)

*selected semesters*

#### THE 700 Advanced Research Methods. (3)

*fall*

Critical review of research, development, and design of research in theatre and theatre for youth.

#### THE 791 Seminar. (3)

*selected semesters*

Selected topics offered on a revolving basis. May be repeated for credit when topics vary.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

**THEATRE PERFORMANCE AND PRODUCTION (THP)****THP 401 Theatre Practicum. (1–3)***fall and spring*

Production assignments for advanced students of technical production, stage and business management, and design. May be repeated for credit. Prerequisites: THP 301; written instructor approval.

**THP 406 Advanced Scenography. (3)***selected semesters*

Process of production collaboration among scenographers, directors, and playwrights. Taught in conjunction with THP 519. Prerequisites: a combination of THP 214 and 340 and 345 or both THP 313 and 340.

**THP 411 Methods of Teaching Drama. (3)***fall*

Applies materials, techniques, and theories with grades K–8 youth. Regular participation with children. Prerequisite: THP 311 or written instructor approval.

**THP 418 Directing the Actor. (3)***once a year*

Practical applications of directing for the stage. Rehearsal and presentation of scenes and short plays. Prerequisites: THP 318; instructor approval.

**THP 428 Theatre and the Future. (3)***fall and spring*

Capstone course exploring visions of the future of theatre. Results in a project in creative or scholarly form. Prerequisites: THE 440; senior standing; Theatre major.

**THP 430 Costume Design. (3)***selected semesters*

Principles of costume design with projects in both modern and period styles. Includes budgets and fabric/pattern estimates. Lecture, studio. Prerequisite: THP 214.

**THP 431 Advanced Costume Construction. (3)***selected semesters*

Specialized training in costume construction problems and crafts with projects in tailoring, millinery, and period accessories. Prerequisites: both THP 214 and 331 or only instructor approval.

**THP 435 Advanced Technical Theatre. (3)***selected semesters*

Selection of materials, drafting of working drawings, tool operation, and construction techniques. 2 hours lecture, 2 hours lab. Prerequisites: both THP 340 and 345 or only written instructor approval.

**THP 440 Advanced Scene Design. (3)***selected semesters*

Advanced studio projects in designing scenery for a variety of stage forms. Fee. Prerequisite: THP 340 or written instructor approval.

**THP 441 Scene Painting. (3)***selected semesters*

Studio projects in painting stage scenery. Fee. Prerequisite: THP 340 or written instructor approval.

**THP 442 Drawing. (3)***selected semesters*

Techniques in drawing and rendering for scenic, costume, and lighting design. Prerequisite: written instructor approval.

**THP 444 Drafting for the Stage. (3)***selected semesters*

Fundamentals of and practice in graphic techniques for the stage. Introduces computer-aided design for the stage. 2 hours lecture, 3 hours studio. Fee. Prerequisites: THP 213; written instructor approval.

**THP 445 Advanced Lighting Design. (3)***selected semesters*

Specialized techniques in stage lighting. Advanced application of design process, graphic techniques of design presentation, and use of qualities of light. Lecture, class workshops. Fee. Prerequisite: THP 345 or written instructor approval.

**THP 450 Theatre Organization and Management. (3)***once a year*

Overview of nonprofit arts: organizational design, strategic planning, financial management, and leadership. Prerequisite: THE 220.

**THP 460 Playwright's Workshop. (3)***fall and spring*

Practice and study of creating characters, dialogue, scenes, plays, and monologues for the stage. May be repeated for credit. Studio, lecture. Prerequisite: written instructor approval.

**THP 461 Scripts in Progress. (3)***fall and spring*

Studio work with the instructor, centered on revisions of original plays. May be repeated for credit. Studio. Prerequisite: THP 460 or written instructor approval.

**THP 481 Secondary School Play Production. (3)***fall*

Methods of directing, designing, and coordinating play production experiences at the secondary school level. Off-campus practicum. Prerequisites: both THP 318 and theatre education concentration or only instructor approval.

**THP 483 Acting: Viewpoints and Composition. (3)***spring*

Training in Anne Bogart's viewpoints and composition techniques; application to rehearsal and performance, and creating new work. Studio. Prerequisite: THP 207 or 285 or written instructor approval.

**THP 484 Internship. (1–4)***selected semesters***THP 489 Acting: Career Development. (2)***selected semesters*

Familiarization with the business of acting: self-promotional tools and techniques, marketing strategies, finances, interview skills, and actor unions. Studio. Prerequisites with a grade of "B" or higher: both THP 101 (or 102) and junior (or senior) standing or only written instructor approval.

**THP 494 Special Topics. (1–4)***once a year*

Topics may include the following:

- Advanced Screenwriting
- Performance and Technology
- Problems in Directing
- Storytelling
- Student Production Board
- Theory and Practice of Performance

**THP 498 Pro-Seminar. (1–7)***once a year*

Topics may include the following:

- Directing. (1–6)
- Theatre-for-Youth Tour. (1–6)
- Theatre in Education. (1–6)

Prerequisite: written instructor approval.

**THP 501 Performance: Solo Performance. (1–8)***once a year*

Students begin to define their mission in art. Emphasizes the actor as a solo storyteller, speaking as herself or himself. Studio. Prerequisite: instructor approval.

**THP 502 Performance: Aesthetics of Theatre Art. (1–8)***once a year*

Understanding and analyzing scripts and performance in order to be an effective actor/storyteller who speaks as a character. Projects focus on solo, duet performances. Studio. Prerequisite: instructor approval.

**THP 503 Performance: The Ensemble. (1–8)***once a year*

Ensemble, working with a playwright, creates a play that addresses social issues through improvisation and community input. Studio. Prerequisite: instructor approval.

**THP 504 Acting: Transformation. (1–8)***once a year*

Fundamentals, including combat, scansion, poetic language, acting style. Scene study, ensemble performance projects focused on Shakespeare, new scripts. Studio. Prerequisite: THP 503 or written instructor approval.

**THP 506 Scenography. (3)***selected semesters*

Process of production collaboration. Taught in conjunction with THP 519. Fee. Prerequisite: theatre graduate standing or written instructor approval.

## GRADUATE PROGRAMS AND COURSES

### **THP 507 Acting: Advanced Research and Performance. (1–3)**

*once a year*

Acting in advanced theatre projects, productions, or collaborative performance in directing classes. May be repeated for credit. Studio. Prerequisite: instructor approval.

### **THP 509 Singing for Actors. (1)**

*fall and spring*

Introduces the basics of singing technique. Breath control, resonance, articulation, exploration, and expansion of singing range. May be repeated for credit. Studio. Prerequisite: admission to M.F.A. performance concentration or written instructor approval.

### **THP 511 Improvisation with Youth Workshop. (3)**

*spring*

Theories and techniques of drama with various populations of youth. Emphasizes how research informs practice. Includes practicum. Prerequisites: only THP 411 or both graduate standing and written instructor approval.

### **THP 512 Puppetry Workshop. (3)**

*fall, spring, summer*

Survey of puppetry in education, puppetry as an art form in design and performance. Fee. Prerequisite: graduate standing or written instructor approval.

### **THP 517 Stage Management Practicum. (3)**

*once a year*

Readings and research in stage management and participation as a stage manager in a university theatre production. Prerequisite: written instructor approval.

### **THP 518 Advanced Directing Lab. (3)**

*once a year*

Active discovery of directing concepts through practical exercises and collaboration; deconstruction of contemporary/classic literature. Explores director as primary artist. Lab. Prerequisite: written instructor approval.

### **THP 519 Directing: Works in Progress. (3)**

*once a year*

Advanced projects in directing concentrating on a collaborative process between director, playwright, actors, and designers. Focuses primarily on new scripts or adaptations of literature. May be repeated for credit. Studio, on-site practicum. Prerequisites: THP 418; instructor approval.

### **THP 530 Advanced Costume Design. (3)**

*selected semesters*

Advanced studio projects in costume design for a variety of production forms. Prerequisite: written instructor approval.

### **THP 540 Scene Design Applications. (3)**

*selected semesters*

Conceptual and practical application of the design process, including graphic and sculptural projects. Practical design problems investigated in laboratory. Lecture, lab. Lab fee. Prerequisite: written instructor approval.

### **THP 545 Lighting Design Applications. (3)**

*selected semesters*

Advanced studio projects in stage lighting design. Prerequisite: written instructor approval.

### **THP 560 Playwright's Workshop. (3)**

*fall and spring*

Practice and study of creating characters, dialogue, scenes, plays, and monologues for the stage. May be repeated for credit. Studio. Prerequisite: written instructor approval.

### **THP 561 Scripts in Progress. (3)**

*fall and spring*

Studio work with the instructor centered on revisions of original plays. May be repeated for credit. Studio. Prerequisite: THP 560 or written instructor approval.

### **THP 584 Internship. (1–3)**

*selected semesters*

Field research and on-site training in theatre for youth, community theatre, and production techniques. Prerequisite: written instructor approval.

### **THP 592 Research. (1–12)**

*selected semesters*

### **THP 593 Applied Project. (1–12)**

*selected semesters*

Prerequisite: written instructor approval.

### **THP 594 Conference and Workshop in Child Drama. (3)**

*once a year*

Prerequisite: written instructor approval.

### **THP 598 Special Topics. (1–4)**

*once a year*

Lecture, studio. Topics may include the following:

- Advanced Screenwriting
- College Teaching:
  - Acting
  - Improvisation with Youth
  - Movement
  - Puppetry
  - Theatre for Social Change
  - Voice
- Performance and Technology
- Storytelling

### **THP 599 Thesis. (1–12)**

*selected semesters*

### **THP 611 Improvisation with Youth Seminar. (3)**

*once a year*

Examines current research, theory, and practices in drama with youth. Development and execution of research projects. Prerequisite: written instructor approval.

### **THP 618 Directing Practicum. (3)**

*fall and spring*

Practical experience in directing and producing an entire play or musical for young audiences. Prerequisite: written instructor approval.

### **THP 649 Design Studio. (3)**

*fall and spring*

Projects include design of scenery, costume, lighting, or sound for laboratory or mainstage productions. May be repeated for credit. Prerequisite: written instructor approval.

### **THP 684 Internship. (1–6)**

*fall, spring, summer*

Field research in performance, improvisation with youth, theatre for youth, puppetry, and scenography. Prerequisite: written instructor approval.

### **THP 691 Seminar: Scenography. (3)**

*selected semesters*

Examines and researches modern concepts and practices of scenography. Prerequisite: written instructor approval.

### **THP 693 Applied Project. (1–12)**

*fall, spring, summer*

Final projects for M.F.A. Theatre candidates in performance, scenography, and theatre for youth. Prerequisite: written instructor approval.

### **THP 783 Field Work. (1–12)**

*selected semesters*

Topics may include the following:

- Theatre Education

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Translation

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See "Undergraduate Certificate in Translation," page 247.



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## Transportation Systems

### Interdisciplinary Certificate Program

[www.asu.edu/caed/transportation](http://www.asu.edu/caed/transportation)

480/965-6395

ARCH 119

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**Mary Kihl, Director**

**Aeronautical Management Technology (ASU East)**

Professor: Gesell

Associate Professors: Jackson, Karp

**Civil and Environmental Engineering**

Professor: Mamlouk

Assistant Professors: Owusu-Antwi, Zhu

**Geography**

Professor: Burns

Associate Professor: Kuby

**Planning and Landscape Architecture**

Professors: Kihl, Mushkatel, Pijawka

Associate Professor: Guhathakurta

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Under the auspices of the Graduate College, the interdisciplinary certificate in Transportation Systems program is administered by the Committee on Transportation Systems. The objective of this program is to enable existing ASU graduate students and transportation professionals to examine transportation-related issues from a variety of perspectives and in the context of different travel modes.

The certificate program requires a minimum of 15 semester hours of course work. To qualify for the certificate, the student must complete an interdisciplinary issues proseminar class (three semester hours) and a capstone research paper that explores a transportation problem from a multidisciplinary perspective (three semester hours). A thesis in the area of transportation may substitute for the capstone paper. Students selecting the thesis option must take one additional elective course.

**Core Courses**

TRC 591 Seminar .....	3
TRC 593 Applied Project .....	3

**Elective Courses.** Nine semester hours of elective course work is also required. Students should choose three classes from the following list of approved transportation-related courses.

AMT 521 Air Transportation Regulation .....	3
AMT 525 Airport Planning and Design .....	3
AMT 527 Airline Management Strategies.....	3

AMT 598 Special Topics .....	3
CEE 475 Highway Geometric Design.....	3
CEE 512 Pavement Performance and Management.....	3
CEE 515 Properties of Concrete.....	3
CEE 573 Traffic Engineering .....	3
CEE 598 Special Topics .....	3
GCU 442 Geographical Analysis of Transportation.....	3
GCU 444 Geographic Studies in Urban Transportation.....	3
GCU 591 Seminar .....	3
GPH 471 Cartographic Design .....	3
GPH 494 Special Topics .....	3
GPH 598 Special Topics .....	3
PAF 505 Public Policy Analysis .....	3
PAF 591 Seminar .....	3
PUP 510 Citizen Participation.....	3
PUP 544 Urban Land Use Planning.....	3
PUP 598 Special Topics .....	3
PUP 642 Land Economics.....	3

Master's degree candidates in good standing in participating departments may apply. Current practicing professionals who already hold a graduate degree or who have at least three years of postbaccalaureate professional transportation experience may also apply for admission to the certificate program. Applications are reviewed by the Transportation Systems Certificate Admissions and Advisory Committee, made up of representatives of participating departments. Enrollment in all classes outside the major requires permission of the instructor. For more information, contact the program director, 480/965-6395.

**TRANSPORTATION SYSTEMS CERTIFICATE (TRC)**

**TRC 591 Seminar. (1–12)**

*fall and spring*

Topics may include the following:

- Transportation Systems Pro-Seminar. (3)

**TRC 593 Applied Project. (1–12)**

*fall and spring*

Topics may include the following:

- Transportation, Advanced Research. (3)

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.

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## Women's Studies

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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. For more information, contact the Women's Studies academic advisor.

**WOMEN'S STUDIES (WST)**

**WST 598 Special Topics. (1–4)**

*selected semesters*

May be concurrently listed with 400-level courses.

**Omnibus Courses.** For an explanation of courses offered but not specifically listed in this catalog, see "Omnibus Courses," page 50.