

SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT

The School of Education and Human Development comprises research institutes, undergraduate and graduate programs and community service centers that concern the areas of teacher education, dispute resolution, counseling, liberal studies and lifelong learning.

The teacher education programs fall under the auspices of the Department of Literacy, Language and Learning and represent SMU's commitment to the professional development of educators through innovative and research-based undergraduate, graduate and professional development programs. The undergraduate curriculum prepares students for initial teacher certification. Graduate programs focus on early childhood education, literacy and language acquisition, learning theory, and giftedness and include a doctoral degree, Master's degrees and graduate-level certifications. A variety of enrichment opportunities serve the professional development needs of practicing educators.

The school also includes two institutes whose research efforts involve the study of education—the Institute for Reading Research and the Gifted Students Institute. One of the most productive literacy research centers in the nation, the Institute for Reading Research performs research concerning reading and reading disabilities, language acquisition, and teaching and learning. The Gifted Students Institute was founded on the premise that “giftedness” is a resource that should be nurtured for the benefit of all.

The Human Development programs represent a broad, interdisciplinary area whose central purpose is the promotion of personal enrichment and achievement of potential. The Dispute Resolution and Counseling programs draw on social and behavioral science theories to teach the communication skills necessary for the resolution of personal and interpersonal conflicts. To broaden students' perspectives, insights and understandings of the world, the Master of Liberal Studies, Informal Courses and Youth Programs expose students to the ideas and events that constitute the human experience. At the heart of all of the Human Development programs is the core belief that people can continue to grow both personally and professionally throughout their lives.

The programs within the School of Education and Human Development complement discipline offerings throughout the University. Students in the school's graduate programs take coursework within Dedman College, Meadows School of the Arts and the School of Engineering. The new programs in Human Development particularly complement and draw from the areas of anthropology, psychology and sociology in Dedman College.

DEPARTMENT OF LITERACY, LANGUAGE AND LEARNING

Associate Professor Jill H. Allor, **Department Chair**

Professors: Patricia Mathes; **Associate Professors:** Deborah Diffily, JoAnn Lan, William Pulte, Ken Springer; **Assistant Professors:** Caroline Kethley, Hector Rivera, Paige Ware; **Senior Lecturers:** Lee Alvoid, Kathy Hargrove, Barbara Morganfield;

Lecturers: Abigail Bartoshesky, Gail Hartin, Janis Sayers

Home to undergraduate, post-baccalaureate and graduate programs for both aspiring and practicing educators, the Department of Literacy, Language and Learning offers students a comprehensive curriculum of theory, research, cross-disciplinary studies and practicum. Undergraduate programs of study assist students in obtaining credentials for teaching in elementary, secondary or all-level (grades K-12) settings. At the graduate level, a student may pursue a Ph.D., a Master of Education (M.Ed.), a Master of Education with Certification (M.Ed.), a Master in Bilingual Education (M.B.E.), or a Master of Music in Music Education (M.M.), as well as other credentials in areas such as gifted education, reading, mathematics, science, technology, bilingual education, English as a Second Language and learning therapy. For information regarding any of SMU's teacher education opportunities, contact the Office of Teacher Education, Southern Methodist University, 415 Clements, P.O. Box 750455, Dallas, TX 75275-0455; 214-768-1311; or visit www.smu.edu/teacher_education.

Undergraduate Teacher Certification

Kathy Hargrove, **Director**

The Office for Teacher Certification offers courses that lead to teaching certification at the elementary and secondary levels. Undergraduate students pursue an approved academic major in Dedman College, Meadows School of the Arts or School of Engineering while seeking Texas teacher certification through the Office for Teacher Certification in Early Childhood-Grade 4 (EC-4), Middle School (grades 4-8), or High School (grades 8-12). Music education students work toward an all-level (grades K-12) certificate. Those who have already earned a Bachelor's degree may also obtain teacher certification credentials through the post-baccalaureate program, which essentially mirrors the undergraduate program.

Each student in a certification program has an education faculty adviser who directs his/her program of study. The education faculty is committed to mentoring and supporting student learning. Students are expected to maintain high levels of performance and to develop habits of reflection as they acquire knowledge and skills of practice.

The program of study includes 24 credit hours of coursework and six hours of student teaching/internship experience in all three certification programs: Early Childhood-Grade 4 (EC-4), Middle School (Grades 4-8) and High School (Grades 8-12). (See the list of courses below.) Students who complete the 30 credit hours required for teacher certification preparation can declare a minor in elementary teaching or secondary teaching.

Requirements for Admission to Teacher Education Programs.

Students apply for formal admission to the program, submitting a transcript, essay, recommendation, character and fitness affidavit, and appropriate THEA or other test scores. Students must complete at least 45 hours of academic work with a G.P.A. of at least 2.50 and maintain grades of C or better and a minimum G.P.A. of at least 2.75 in a teaching field (e.g., English, mathematics, etc.). In addition, students must have attained a grade of C- or better in the

following areas of the General Education Curriculum: Written English, Mathematical Sciences, Science and Technology, and History. Applicants also interview with members of the faculty. Students may register for up to seven hours of EDU coursework prior to formal admission. EDU 2350 (Educational Psychology) is a prerequisite for undergraduates enrolling in the certification program. Students complete the Personal Character and Professional Fitness Statement when they apply. A personal/criminal background check may be required prior to field experience and admission to student teaching. Applications for admission to Teacher Education may be obtained from the departmental office in 415 Clements Hall.

Required Courses. All of the courses in the program of study are based on the Texas standards for beginning teachers. The classroom-based coursework can be completed in two regular terms, such as fall and spring. Professors model learning experiences that are considered best practice for all learners in these courses. Students are expected to work collaboratively in small groups, complete simulated teacher tasks, pose questions for class inquiry, and use multiple resources to answer questions.

Field Experience. The teacher education program includes extensive field experience to help students prepare for careers in teaching. Background checks are required by most school districts prior to field experiences. The student progresses from observational activities in classrooms to teaching and learning practice sessions with individual students and small groups in early field experiences. Then the student assumes responsibility for an entire classroom in a carefully managed student teaching experience. SMU students receive mentoring from faculty noted for their exemplary records as both master teachers and scholars. Exemplary teachers from inner city to suburban settings also act as coaches during the field experience. Part of the field experience comes in the form of either a one-term student teaching experience or a two-term internship. During the one-term experience, students work full-time for 15 weeks in an assigned classroom with a master teacher in the Dallas Independent School District. During this student-teaching term, the six-term-hour student-teaching experience is regarded as “full-time” enrollment status at SMU for insurance purposes. Students receiving financial aid should meet with financial aid counselors prior to the student-teaching term to determine aid status. Student teaching ensures that graduates of the SMU teacher education program are better able to enter the teaching profession ready to meet the dynamic learning needs of today’s youth.

Interview and Student Teaching Review. Prior to assignment to student teaching, candidates are reviewed by the faculty to determine whether adequate progress has been made in order to assume responsibility for school-age students. Such factors as academic performance, maturity and a demonstrated sense of responsibility are among the factors considered. Students must have a 3.0 G.P.A. in all education courses before beginning student teaching.

Recommendation for Certification. Before the Office for Teacher Certification will recommend a student for certification, all requirements—24 hours of coursework, six hours of a satisfactory student teaching or internship expe-

rience, and passing scores on two TExES (Texas Examinations of Educator Standards)—must be fulfilled. For Early Childhood-Grade 4, the two TExES tests include the Pedagogy and Professional Responsibilities (EC-Grade 4) test and the Early Childhood-Grade 4 Generalist test. Students preparing for teaching in secondary schools must pass the Pedagogy and Professional Responsibilities TExES test for Grades 4-8 or Grades 8-12 and a TExES test in their content area.

TExES Preparation Seminar. The State Board of Educator Certification (SBEC) requires that persons seeking teacher certification take and pass the state-mandated TExES tests in the desired area(s) of certification. The SMU Office for Teacher Certification requires all students to take and satisfactorily complete the SMU TExES Preparation Seminar. In the rare instance where a student does not pass the TExES test, a faculty mentor may be assigned to help develop an individual plan of supplemental study to complement a second taking of the TExES Preparation Seminar.

EDUCATION COURSES

Early Childhood-Grade 4 Courses

EDU 2350. Educational Psychology. Application of psychological research and theory in educational settings. Topics include the learning process, individual differences among learners, motivation, the assessment of academic abilities, and successful classroom practice. (Prerequisite for all undergraduates.)

EDU 5121. Field Experience I. Field experiences coordinated with Early Childhood-Grade 4 courses. Class meets on a school campus. (Usually taken in first term of program.)

EDU 5122. Field Experience II. Field experiences coordinated with Early Childhood-Grade 4 courses. Class meets on a school campus. (Usually taken midway through program.)

EDU 5123. Field Experience III. Field experiences coordinated with Early Childhood-Grade 4 courses. Class meets on a school campus. (Usually taken in term prior to student teaching.)

EDU 5318. Formative/Summative Assessment. Explanation and practice of formal and informal assessment strategies and how assessment outcomes should inform instruction and be shared with families.

EDU 5327. Integrating Teaching and Learning. Review of the nature and design of educational activities: theory, research and practice of lesson planning for active learning that meets the needs of individual students.

EDU 5331. EC-4 Content Area Studies. Exploration of science, social studies, art, music, drama and physical education content for pre-kindergarten through 4th-grade students and effective teaching strategies for each content area.

EDU 5349. Student and Professional Development. Examination of issues facing teachers in establishing and maintaining a positive and productive learning environment; study of professional aspects of teaching, including ethics and professional growth.

EDU 5355. EC-4 Mathematics. Evaluation of mathematics learning materials and teaching methods focusing on knowledge and skills required for pre-kindergarten through 4th-grade students.

EDU 5357. Emergent Literacy. Examination of principles of literacy learning in young children and predictable stages of oral language, writing and reading development.

EDU 5358. Conventional Literacy. Introduction of theories, practices and materials for teaching reading/writing in primary grades.

EDU 5363/5364. Student Teaching. Requirement of a 15-week assignment in an elementary school that has a diverse student population; a weekly seminar meets on campus. (Six hours of credit.)

EDU 5385/5386. Internship I and II. Internship requirement of service as teacher of record in Early Childhood-Grade 4. (Six hours' credit, two terms of supervision.)

Middle (Grades 4-8) and High School (Grades 8-12) Courses and Certification Areas

EDU 2350. Educational Psychology. Application of psychological research and theory in educational settings. Topics include the learning process, individual differences among learners, motivation, the assessment of academic abilities, and successful classroom practice. (Prerequisite for all undergraduates.)

EDU 5124. Field experience I. Beginning field experiences coordinated with MS/HS courses. Class meets on a school campus. (Usually taken in first term of program.)

EDU 5125. Field Experience II. Intermediate field experiences coordinated with MS/HS courses. Class meets on a school campus. (Usually taken midway in program.)

EDU 5126. Field Experience III. Advanced field experiences coordinated with MS/HS courses. Class meets on a school campus. (Usually taken term prior to student teaching.)

EDU 5315. MS/HS Formative and Summative Assessment. Examination of various formal and informal assessment methods and strategies specific to their content areas and levels of certification.

EDU 5335. Adolescent Development and Cognition. Focus on adolescent growth and development from an educational perspective. Emphasis is placed on the cognitive basis of changes in learning, motivation, academic performance, self-identity, morality and social relationships that take place during adolescence.

EDU 5336/5337. Integrating Teaching and Learning. Emphasis on unit and lesson planning with focus on alignment of objectives, assessment and class activities. Students examine methods for incorporating theory into practice, teaching for higher-level learning, student-centered instructions, TAKS and the role of the teacher in the learning process.

EDU 5348. Inclusive Classrooms in Urban and Multicultural Environments. Study of diversity, multicultural concepts and inclusion, and exploration of issues, policies and professional practice relevant to teaching in urban schools.

EDU 5366/5367. Creating Successful Classrooms. Examination of current research promoting student-centered teaching and constructivist practices, including a variety of effective teaching and learning practices.

EDU 5368/5369. Establishing the Learning Environment. Examination of issues facing teachers in establishing and maintaining a positive and productive learning environment; study of professional aspects of teaching including ethics and professional growth.

EDU 5371. Content Area Methods. Identification of teaching strategies specific to content areas and levels of certification; examination of current research promoting literacy instruction, such as ways to integrate reading, writing and oral language.

EDU 5373/5374. Student Teaching. Requirement of a 15-week assignment in a middle/high school that has a diverse student population; a weekly seminar meets on campus. (Six hours of credit.)

EDU 5375/5376. Internship I and II. Internship requirement of service as teacher of record in any of grades 4 through 12. (Six hours credit, two terms of supervision.)

Elective Education Courses

(Do not meet state requirements for teacher certification)

EDU 1110. Oracle. Oracle is a one-term, one-credit-hour course that counts as a Uni-

versity free elective. Designed to improve reading and learning efficiency, Oracle is directed to first-year through graduate students who want to acquire advanced reading and learning techniques. Its content is developed from the educational theories and techniques on which both learning and teaching are based.

EDU 1305. Public Speaking and Communication. Public Speaking and Communication is a basic course that acquaints students with principles of successful public speaking and provides activities that lead to the development of good speaking, listening and organizational skills.

EDU 2101. Practicum Leadership. A unique leadership experience that gives students a laboratory for assessing learned concepts and skills about leadership. Course content includes discussions on empowerment, public speaking, ethics and citizenship.

EDU 2102 Practicum Leadership. One-hour credit for a minimum of 15 clock hours practicum either on campus or in the community. Prerequisite: must have completed EDU 2101.

EDU 2355. Literacy and Society (Elementary and Secondary Sections). A structured service learning opportunity that fosters academic growth, citizenship, leadership and civic responsibility. Readings and course activities relate to the relationship between literacy and society. Throughout the term, students tutor either local elementary or secondary school students, as well as complete related assignments. All literacy classes require field experiences in local schools.

EDU 3301. The Art and Science of Parenting. An examination of the literature pertaining to parenting. Students consider how parental beliefs, attitudes and expectations affect the manner in which parents interact with their children.

EDU 4300. Foundations of Teaching English to Speakers of Other Languages. Development and analysis of lesson plans in all content areas using TESOL competencies, emphasizing language concepts, acquisition, teaching and assessment strategies, and the role of culture in language acquisition.

EDU 5310. Civic Leadership. Individual and community transformation, resulting from civic leadership, will be examined in the classroom and experientially through a required community-service component occurring outside the classroom.

EDU 5343 (CCPA 5301). Leadership Theories and Practices. Examination of the theories and skills necessary for the development of effective leadership. It includes opportunities for evaluating leaders and leadership behavior in a variety of contexts.

Additional Information

For further information regarding SMU's teacher preparation opportunities, contact the Office of Teacher Education, Southern Methodist University, 415 Clements, P.O. Box 750455, Dallas, TX 75275-0455; 214-768-1311; or visit www.smu.edu/teacher_education.

INSTITUTES

The Institute for Reading Research Professor Patricia Mathes, Texas Instruments Foundation Endowed Chair for Reading Research and Director

Established in 2002, the Institute for Reading Research is dedicated to the promotion of reading skills through research in the areas of reading acquisition and progress in children at-risk for failing to learn to read, children with mild to moderate mental retardation, and children who are either bilingual or who speak Spanish exclusively in the early primary grades. In service to this mission, the institute conducts and disseminates cutting-edge research related to reading and reading disabilities, language acquisition, and teaching and

learning. It provides leadership on a local and national level through the publication of research manuscripts, curricula and coursework packages, and through the delivery of staff development workshops. It provides leadership training to future educators, researchers and statisticians through applied experiences in the execution of large-scale, field-based research while also being committed to the delivery of programs and activities that serve the reading enhancement needs of the community at large.

The institute was made possible, in part, through the support of the Texas Instruments (TI) Foundation, which endowed the faculty chair and directorship of the institute, a position presently held by Dr. Patricia Mathes. The TI Foundation has long been active in creating and funding programs that address the needs of academically at-risk children at the most critical points in their education.

In its first two years of operation, the institute and its collaborating faculty sought and received nearly \$10 million in external funding for various research studies. The initial funding allowed for the creation of a data center designed for the management and analyses of large sample size (n) studies through the application of leading-edge technology. Likewise, the institute has quickly gained national recognition as members of its faculty disseminate findings at national venues and collaborate with “sister” research centers, including the Florida Center for Reading Research (FCRR), the Texas Center for Reading and Language Arts (CARS), the Texas Center for Academic and Reading Skills (TCLRA), and the Texas Institute for Measurement, Evaluation and Statistics (TIMES)

Gifted Students Institute

Associate Dean and Senior Lecturer Katherine Hargrove, **Director**

Dedicated to the support of the cognitive and affective development of gifted youth, the Gifted Students Institute offers a range of programs and services for educators and gifted youth and their families.

The institute offers the Distinguished Lecture Series, which comprises one-day sessions that integrate theory and practice and which are delivered by guest speakers from the SMU faculty and public and private learning institutions throughout the country. The institute developed and administers the school’s Gifted Education certification program for educators. Serving pre-college gifted students, the institute offers the Talented and Gifted (TAG) and College Experience programs.

SERVICE CENTERS

The Diagnostic Center for Dyslexia and Related Disorders

The Learning Therapy program administers The Diagnostic Center for Dyslexia and Related Disorders, which was established in response to a community need for services that evaluate individuals for learning disorders related to reading acquisition and comprehension. Dyslexia is involved in most disorders of this type, which include developmental spelling disability, developmental auditory imperception, dysgraphia and dysphasia. The center is dedicated to providing comprehensive initial and follow-up evaluation services

and appropriate medical, psychological and educational referrals and recommendations to children, adolescents and adults who are at risk for dyslexia.

Comprehensive initial evaluation services are available to individuals who exhibit symptoms of dyslexia. Based on the evaluation results, the center helps these clients secure appropriate remediation and/or accommodations (e.g., a time-modified SAT or ACT) and provides medical and psychological referrals if warranted.

Re-evaluation services are available to individuals who have previously been diagnosed with dyslexia but require a follow-up evaluation and diagnosis in order to continue receiving remediation and/or accommodations. Again, the center provides clients with appropriate recommendations and assistance in s e c u r i n g a c c o m m o d a t i o n s .

Mediation Clinic

Mediation Services are available to parties involved in a dispute. Alumni and current students of the Dispute Resolution Program who have completed at least 200 training hours serve as volunteer mediators.

Parties may use SMU Mediation Services either before or after a lawsuit is filed. Parties may contact SMU directly to arrange a mediation, or if a lawsuit has been filed, a judge may order mediation and appoint SMU Mediation Services. Parties have an equal say in the mediation process and the settlement terms. The mediator has no authority to impose a settlement, and there is no determination of guilt or innocence in this process. Both sides are able to exchange information, express expectations and propose solutions for reaching a resolution.

The mediator facilitates this process by helping the parties communicate clearly and appropriately. Most mediated settlements are completed in one meeting, saving time and expense. Legal or other representation is permitted in the mediation, but is not required. An agreement reached in mediation can be binding to both parties. If no agreement is reached, the lawsuit continues or is filed. However, the mediation process is strictly confidential and settlement discussions cannot be used as evidence in any future court proceeding. Both parties pay a minimal fee.

Lifelong Learning Programs

Informal Courses. These courses of varying lengths address different cultural, scholarly, personal, and professional topics. Additional information is available at www.smu.edu/informal.

Creative Writing Workshops. Creative writing instructors, noted authors, and publishers lead noncredit writing workshops. Selected participants are invited to submit manuscripts for review by New York literary agents, editors, and publishing houses. Additional information is available at www.creativewriting.smu.edu.

International Languages. Noncredit language-conversation courses typically include Spanish, French, Italian, German, Arabic, Russian, Mandarin Chinese and Japanese. Additional information is available at www.smu.edu/informal.

Graduate Test Preparation. Study courses for the GRE, GMAT, and LSAT are offered throughout the year. Additional information is available at www.smu.edu/testprep.

Certificate Program in Financial Planning. SMU offers a certification in this fast-growing professional field. Additional information is available at www.smu.edu/cfpfp.

College Experience (offered through the Gifted Students Institute) allows a small and carefully chosen group of highly motivated and academically able high school students to get a head start on college and a taste of campus life through SMU credit opportunities available during the summer; www.smu.edu/ce.

Talented and Gifted (TAG) (offered through the Gifted Students Institute) provides intellectual challenges and cultural and social learning experiences to academically accelerated students completing the seventh, eighth, or ninth grade. TAG is a summer opportunity that offers both credit and noncredit courses; www.smu.edu/tag.

Academic Enhancement offers a variety of workshops for students ages 5 through 18. Workshop topics include study skills, reading, test preparation, math/science, vocabulary, and writing. Additional information is available at www.smu.edu/read.

Summer Youth Program offers one- and two-week special-interest enrichment workshops throughout the summer in the areas of technology, computers, multimedia, writing, art, math, science, literature, gaming, the Internet, study skills, leadership, and social skills. Additional information is available at www.smu.edu/SummerYouth.

COX SCHOOL OF BUSINESS GENERAL INFORMATION

VISION STATEMENT

The mission of Edwin L. Cox School of Business is to improve its academic programs and reputation as a top-tier business school by providing a high-quality business education to its students and the business community, conducting research that contributes to the understanding of business and management, and participating in the service activities of the University and professional organizations.

GENERAL INFORMATION

From its beginning as the Department of Commerce for Southern Methodist University, the Edwin L. Cox School of Business has been educating the country's business leaders for more than 85 years.

Named in 1978 in honor of Dallas businessman Edwin L. Cox, the Cox School has a rich heritage that began in 1920 when the SMU Board of Trustees established a Department of Commerce at the request of the Dallas business

community. In 1921, the Department of Commerce was renamed the School of Commerce, and in 1941, the Board of Trustees established the School of Commerce as a separate entity from the University. At this point, the School of Commerce became the School of Business Administration and the new Bachelor of Business Administration degree (BBA) was approved by the Trustees.

The graduate program at the School of Business Administration began in 1949 with the authorization of a Master of Business Administration (MBA) program. At that time, students were granted an MBA after successfully completing 30 hours of course work and a thesis. Both the BBA and the MBA degree programs are fully accredited by The Association to Advance Collegiate Schools of Business (AACSB International). The Cox School also grants a Professional MBA (PMBA) and an Executive MBA (EMBA); Master of Science degrees in Accounting, Management and Entrepreneurship; as well as non-degree Executive Education programs.

In 1965, the SMU Foundation for Business Administration was established. This group of advisers has helped guide the Cox School throughout the years and today is known as the Executive Board. Also instrumental in supporting the Cox School are members of its two successful mentoring programs: the Associate Board for MBA students and the Business Associates Program for BBA students. These two boards involve more than 220 area business leaders who volunteer their time and expertise to students who want to start making business connections for the future.

COX SCHOOL COMPLEX

In 1952, ground was broken for the Joseph Wylie Fincher Memorial Building for the School of Business Administration, and for years the Fincher Building housed all activities in the Cox School. In 1987, two more buildings were added to the Cox School Complex — the Cary M. Maguire Building and the Trammell Crow Building.

Today the Fincher Building houses administrative and faculty offices as well as conference and meeting rooms, while the Maguire and Crow buildings primarily house classrooms and study rooms. Hailed as one of the most technologically advanced business learning facilities in the country, the Cox School complex has as its hub the Business Information Center (BIC), which combines many of the features of a traditional university library with the latest in online databases, search tools and presentation facilities.

Through the BIC, Cox School students, faculty and staff have access to the latest business periodicals, instantaneous market information, and news retrieval services. In addition, the BIC offers personal computers, printers and scanners for students to use for presentations and papers.

In 2005, the Cox School opened the James M. Collins Executive Education Center, the region's premier resource for working professionals and executives. The Collins Center houses the Cox School's Executive Education programs, Executive MBA program and MBA Global Programs Office, along with the Norman E. Brinker Institute for Restaurant and Hospitality Management,

the Southwestern Graduate School of Banking and the KPMG Institute for Corporate Governance.

CENTERS AND INSTITUTES

The Edwin L. Cox BBA Leadership Institute and Business Leadership Center

Paula Hill Strasser, **Director**

The Edwin L. Cox BBA Leadership Institute (BLI) and Business Leadership Center (BLC) are committed to helping students achieve professional success by becoming more effective communicators and leaders. Established in 1991, the BLC offers MBA students more than 60 seminars taught by business practitioners from Fortune 500 companies, medium-sized businesses and entrepreneurial ventures. In addition to presenting seminars on traditional topics such as strategic communication, leading with integrity, and conflict resolution, the BLC offers individualized training in several areas, including presentation techniques and business writing.

The BLI offers three courses that employ a variety of instructional techniques to impart key communication and leadership concepts and skills and expose BBA students to the real world of business. Techniques include lecture, class discussion, self-assessments, small-group projects, role-play simulations, corporate visits, and guest speakers from the corporate and non-profit arenas.

Executive Education

Frank R. Lloyd, **Associate Dean**

SMU Cox Executive Education is the region's premier resource for advanced leadership and management training. Executive Education offers numerous open enrollment certificate programs covering such topics as management, leadership, marketing, accounting and finance, energy, and professional effectiveness. Programs last from as little as a few hours to several weeks or months.

Executive Education also offers custom programs, designed to address companies' unique business challenges. Through close collaboration among corporate clients, Cox faculty and Executive Education staff, the school develops customized programs that help companies achieve their goals and positive return on investment.

Executive Education also offers the Summer Business Institute (SBI), a four-week business certificate for non-business major juniors, seniors or recent graduates. SBI provides a solid foundation in business basics, including marketing, accounting, finance, management and leadership. The SBI Certificate provides a valuable credential that gives students and young professionals a leg up in today's competitive job market.

The Center for Marketing Management Studies

Daniel J. Howard, **Director and Marketing Department Chair**

The Center for Marketing Management Studies was created to serve as a focal point for interaction among faculty, practitioners and students who share a common interest in applied marketing management research and education.

The Center sponsors research and educational programs in marketing management.

Since 1989, the Center has sponsored the Graduate Marketing Certificate Program, designed to provide Dallas-area business people with the latest in marketing thought and practice. This series of sessions is held on Monday nights throughout the school year.

The Caruth Institute for Entrepreneurship

Jerry F. White, **Director**

Since its founding more than three decades ago, the Caruth Institute has continuously developed innovative courses and programs to help individuals keep pace with the dynamic, rapidly changing field of entrepreneurship. The Institute currently offers more than 18 custom-designed courses to give students the skills and knowledge necessary to launch and manage successful entrepreneurial ventures. Courses cover a range of topics including starting a business, venture financing, and law of financial transactions for entrepreneurs.

In addition to its academic courses, the Institute has created a number of unique programs that enable students to experience and better understand the inner workings of entrepreneurial ventures. Programs include the Cox MBA Venture Fund, the Southwest Venture Forum and the Dallas 100TM Awards—an annual event that identifies and honors the 100 fastest-growing privately-held companies in the Dallas area.

The Center for Research in Real Estate and Land Use Economics

William B. Brueggeman, **Director and Real Estate Department Chair**

The Center for Research in Real Estate and Land Use Economics was created in 1984 as a research entity with a focus on major issues in the real estate industry. It is currently engaged in a number of projects including the federal income taxation of housing and real estate development, real estate investment performance in pension fund portfolios, database management and valuation in urban property tax jurisdictions, and related problems. The Center also acts as a conduit for research grants and proposals for management programs, which it conducts through the Costa Institute of Real Estate Finance and the Folsom Institute for Development and Land Use Policy.

The Maguire Energy Institute

The Maguire Energy Institute promotes the study of policy, marketing and management issues that affect oil, natural gas and electricity. Founded by Cary Maguire, chairman and president of Maguire Oil Company, the Institute is a leading-edge resource for energy industry information and facilitates the exchange of ideas among students, businesses, the media and government officials.

Students can participate in courses, workshops and seminars. The Institute also conducts research and analysis, publishes a quarterly newsletter on important policy issues, and focuses on exploring innovative ways to improve management of the world's oil and gas resources.

JCPenney Center for Retail Excellence
Edward J. Fox, **Director and Marketing Professor**

The JCPenney Center for Retail Excellence was created with a generous gift from the JCPenney Company to promote, develop and integrate retail education and practice. Today, the Center is a leading source of academic expertise on consumer shopping behavior and the effects of retailer activities on shopping behavior.

American Airlines Center for Labor Relations and Conflict Resolution

Robin L. Pinkley, **Director and Strategy Professor**

The American Airlines Center for Labor Relations and Conflict Resolution teaches students to successfully resolve disputes, negotiate salaries and resolve critical business situations. Courses and research focus on partnering (aligning the interests of both sides), proactive negotiating, and adding value to negotiations to improve outcomes. Ongoing research explores the newest and most effective techniques in negotiation.

KPMG Institute for Corporate Governance
Wayne Shaw, **Director and Accounting Professor**

Made possible by an alliance with KPMG, the KPMG Institute for Corporate Governance focuses on the importance of corporate structure and communication channels in business organizations. Through close working relationships with many companies, the Institute develops multidisciplinary case studies and courses that explore corporate governance and ethical decision making, preparing students to understand the choices they make and how those choices impact the market's perception of a firm and its future.

ADMISSION

For detailed information regarding Southern Methodist University's admission requirements, regulations and procedures, see the Admission section of this catalog.

ADMISSION OF SMU STUDENTS TO THE BUSINESS MAJOR OR MINOR

Admission to the Cox undergraduate program may be made at the time a student is admitted to SMU via the BBA Scholars Program (see page 265) or via the regular Cox admission requirements below. Admission to Cox is required for enrollment in upper-level Cox courses.

Regular admission to the BBA major or business minor requires:

1. Good standing (2.00 minimum SMU G.P.A.), and
2. Completion of a minimum of 42 hours
3. A minimum G.P.A. of 3.30 in the business subset ENGL 1301 and 1302 (or ENGL 2305 and 2306)

ECO 1311 and 1312
MATH 1309 or 1337
ACCT 2311
ITOM 2305 or STAT 2301 or 2331 or EMIS 5370

All business subset courses must be satisfactorily completed (no Fs) prior to admission to Cox. Once a student enters SMU, all remaining subset courses must be completed in residence at SMU. With the exception of courses completed under the SMU first year grade repeat policy (page 45), the subset G.P.A. is calculated using the first graded attempt of these courses. The subset G.P.A. for students who have AP or IB credit is based on the remaining graded subset courses.

Admission via the Extended Subset

Students who do not achieve a 3.30 G.P.A. in the business subset may be admitted based on the extended subset. The extended subset consists of the original subset plus a first attempt of ACCT 2312, which must also be completed in residence at SMU. Students who achieve a minimum 3.30 G.P.A. on this extended subset will be admitted to the Cox BBA program or business minor.

Declaring a Business Major or Minor

Students who meet the Cox admission requirements should complete a Change of Academic Program form at the records office of their current school. This form will be forwarded with the student's academic record to the Cox School. Students normally enter Cox in January of the sophomore year; students who enter later may need additional time to complete degree requirements.

Applying for Admission as a First-Year Applicant

First year applicants submit an application for admission to the SMU Office of Enrollment Services and follow the University requirements for admission (page 16). Applicants who are admitted to SMU and who indicate business as their primary academic interest on the application for admission are automatically reviewed for admission as a Business Scholar (page 265).

ADMISSION OF EXTERNAL TRANSFER STUDENTS TO THE B.B.A. PROGRAM

Admission of external transfer students from accredited four-year or two-year institutions to the BBA major or minor requires:

1. Admission to SMU, and
2. Completion of a minimum of 42 term hours of transferable college credit (excluding activity-related physical education), and
3. Minimum cumulative academic G.P.A. of 2.50, and
4. A minimum G.P.A. of 3.30 in the business subset is required on the first attempt of the equivalent of the following seven courses (no Fs allowed):
ENGL 1301 and 1302
ECO 1311 and 1312

MATH 1309 or 1337
ACCT 2311
ITOM 2305 or STAT 2301 or STAT 2331

Admission via the Extended Subset

Students who do not achieve a 3.30 G.P.A. in the business subset may be admitted on the extended subset, which consists of the original subset plus a first attempt of ACCT 2312. Students who achieve a minimum 3.30 G.P.A. on this extended subset will be admitted to the Cox BBA program or business minor.

SMU students and transfer students will be allowed to register for upper-level Cox classes (3000, 4000, 5000) when they have first successfully completed **all** B.B.A. admission requirements, and secondly, have completed a specified number of hours.

Current University grading policy, as summarized under “Academic Forgiveness” in the University Registration and Academic Records Standards section of this catalog, permits forgiveness of academic work taken 10 or more years prior to the term of admission. Academic work forgiven under this policy will not be included in the G.P.A.

STATUTE OF LIMITATIONS

If a student discontinues an academic program from the Cox School at SMU for at least three years (excluding summer school), upon readmission the degree and admission requirements will be subject to those in the current bulletin.

ACCEPTANCE OF TRANSFER CREDIT

A prospective transfer student must present to the Office of Enrollment Services official transcripts containing a full record of all previous college work attempted. Failure to provide full records of all work is grounds for dismissal from the Cox School. To avoid delay, a student should forward transcripts to the SMU Office of Enrollment Services no later than July 1 for the fall term and December 1 for the spring term.

In general, transfer credit will be accepted for degree credit only if the courses completed are equivalent in content to those offered at SMU and if the university’s school of business at which the courses were completed is accredited by The Association to Advance Collegiate Schools of Business (AACSB International). In the case of transfer credit completed at a junior college, only those courses with equivalents at the first-year and sophomore level at SMU (1000- and 2000-level courses) will be accepted for degree credit. The Cox School will grant a maximum of three or six credit hours for transferred Introductory Accounting.

Prior to matriculation, the Cox School of Business will accept transfer business credit toward the B.B.A. degree from schools accredited by AACSB International regardless of the student’s classification.

Courses completed with a grade of *D+* or less or those completed without letter grades (Pass/Fail or Satisfactory/Unsatisfactory) will not be transferred for any degree credit. Grades earned elsewhere will be considered for admission

purposes and in determining graduation with honors.

Students enrolled in the Cox School who are seeking to fulfill any portion of their degree requirements through transfer credit must file a petition for approval of their intentions with the Undergraduate Office in 252 Maguire Building prior to enrollment for such courses. With the approval of the appropriate SMU departmental chair, SMU students may complete a maximum of 15 transfer hours for degree credit. Matriculated students must complete all required business courses in residence. Exceptions to this policy require concurrent approval of the Associate Dean for Undergraduate Studies, the appropriate Department Chair, and the BBA Director of Advising and Student Records.

Students are cautioned to check the current SMU bulletin before enrolling in courses at other institutions and to verify transferability with the appropriate offices. Regardless of the number of acceptable transfer hours, at least 60 hours of the total 122 baccalaureate hours must be completed in residence at SMU. Of the 48 required business hours, a minimum of 30 must be completed in residence in the Cox School.

Detailed information regarding enrollment procedures, orientation, student file number, name changes, address changes, transcript service, classification of students, changes of school, policies for adding and dropping courses and for auditing classes, enrollment for no credit, class attendance, withdrawal from the University, final examinations, term-hour loads, grading policies and grade reports is included in the University Enrollment and Academic Records section of this catalog.

ACADEMIC REGULATIONS

DEGREE REQUIREMENTS

The degree of Bachelor of Business Administration (B.B.A.) will be conferred upon the student completing the appropriate 122 term hours of approved credits. An overall G.P.A. of at least 2.00 must be maintained on all SMU work attempted, a minimum G.P.A. of 2.00 must be maintained on all SMU business course work attempted, and a minimum G.P.A. of 2.00 on all business course work attempted within a student's declared major.

Undergraduate business students admitted to the Cox School's B.B.A. Program will be allowed to complete a maximum of 54 business hours (except for Accounting majors and Business and Financial Reporting majors who can take up to 57 and 60 business hours respectively), which will include statistics and exclude economics. All B.B.A. students must complete 30 business hours in residence at the Cox School. Students will be allowed to exceed the 54-, 57-, or 60-hour limit if necessary to comply with residency requirements.

A student must satisfactorily meet all course and credit requirements of the Cox School. See "Admission" at the beginning of the Cox section of this catalog.

The Edwin L. Cox School of Business adheres to The Association to Advance Collegiate Schools of Business (AACSB International) standards of

accreditation.

B.B.A. students must meet the following residence requirements:

1. Of the 122 minimum required term credit hours, at least 60 hours must be completed in residence at SMU.
2. Of the 48, 51, or 54 hours of business credit, a minimum of 30 must be completed in residence in the Cox School.

A student must make formal application for the degree by filing an application for candidacy to graduate with the Undergraduate Office of the Cox School. Applications are available in 252 Maguire Building and should be filed before the final term of course work. Consult the University Calendar for the deadline.

In addition to the student's fulfilling all academic requirements, the Cox School may consider any judicial or disciplinary matters before any degree may be conferred. A student must meet all financial obligations to the University in order to receive his or her diploma and copies of his or her transcript.

PROGRAMS OF STUDY

CURRICULUM

The requirements summarized below must be satisfied to earn the Bachelor of Business Administration Degree. A core of required fundamental courses has been designed by the faculty of the Cox School. This core of courses is specified below. Each core course must be passed for a student to be eligible for graduation. Generally, Calculus, English, Economics and Information Technology should be completed in the student's first year; Accounting, Managerial Statistics and Information Systems requirements in the sophomore year; Finance, Legal Environment and Ethics, Marketing, Management and Operations Management requirements in the junior year; and the Business Strategy requirement (STRA 5370 or CISB 5397, also known as Capstone courses) in the senior year.

Students are responsible for designing their own degree programs with assistance from one of the Cox academic advisers. Close attention should be given to course and knowledge prerequisites as well as course content to maximize the value of each course and to avoid the possibility of enrolling in a course with insufficient preparatory background. It is expected that students will consult with faculty and academic advisers in determining their course selections.

Each student's file, reflecting his or her total academic record, is located in the Undergraduate Office, 252 Maguire Building. Transcripts of the student's official record should be requested from the Office of the Registrar.

ADVISING

The undergraduate program of the Cox School of Business is strongly committed to the academic advising process and believes that advising is

mitted to the academic advising process and believes that advising is effective only if the adviser and the advisee assume equal responsibility. Cox academic advisers are available in 252 Maguire Building for student appointments. All students admitted to the Cox School are required to attend a three-part orientation session which includes the BBA Advising Office, BBA Career Services and the Business Information Center (BIC). After the initial orientation, students are required to visit with a BBA adviser every term until graduation.

Students are not assigned to a specific adviser. Many students prefer to meet with the same adviser, but it is the student's choice when his or her appointment is scheduled to either express a preference for a particular adviser or schedule with whomever is next available.

The electronic degree progress report (eDPR) is a computerized degree plan each student should request online no more than 24 hours before the scheduled advising appointment, examine carefully, and bring to the advising meeting. It is the student's responsibility to help assure the eDPR's accuracy. After meeting with an adviser, students register, swap, and drop on ACCESS.smu, a Web-based records and registration system. The BBA Director of Advising and Student Records will add students to a closed class only if the student is a graduating senior and there is no further opportunity to complete a major requirement.

Cox faculty members provide assistance in the areas of their professional expertise, offering guidance in selecting and sequencing courses appropriate for meeting specific academic and career goals.

CAREER COUNSELING

In conjunction with the University's Hegi Family Career Development Center, the office of Undergraduate (BBA) Career Services focuses on providing exposure to various careers and helping students learn lifelong, career decision-making and job search skills. In addition to individual appointments, each term a number of special events and workshops are offered to BBAs such as: career fairs, business dining etiquette, resume and interviewing tips, networking skills, internships and job search resources.

The primary focus is to help students early in their college education to identify and explore careers in relation to their own values, interests, personality and skills. The goal is to help students have more direction regarding their career interests, and therefore, better manage selecting a major and activities, and pursuing internships and full-time positions.

Career-related experience, often referred to as "internships," is encouraged and considered a key component of the undergraduate experience at Cox. SMU's location in Dallas allows students to pursue both part-time internships during the academic year and part- and/or full-time internships during the summer worldwide. Over 90 percent of the internships are paid.

Students are encouraged to make an appointment with a career counselor the term they are accepted to Cox. Since meeting with a career counselor is NOT required, taking the initiative to do so early is up to the student and also encouraged by faculty and staff. The three counselors available exclusively to

Cox BBAs are conveniently located in Maguire 254.

BUSINESS ASSOCIATES PROGRAM

The Business Associates Program (BAP) is a corporate mentoring experience that pairs business undergraduates one-on-one with executives in the Dallas-area business community. The program enhances a student's collegiate experience by providing firsthand insights into the business world while teaching the value of effective networking.

Eligibility for the program requires a declared major in business, junior or senior status and good academic standing. B.B.A. students on academic probation are not eligible to participate. After acceptance into the program, students are matched with a mentor for an academic year. Students are eligible to participate during their junior and senior years.

B.B.A. HONORS PROGRAM

The Cox B.B.A. Honors Program is designed to enable outstanding business students to participate in an enhanced curriculum that challenges their intellectual abilities and sharpens their professional skills. A small class size promotes greater interaction between students and professors which, in turn, leads to a more meaningful educational experience. The Cox School offers honors sections of the following required business courses:

	<i>Fall</i>	<i>Spring</i>
Sophomores	ACCT 2311 ITOM 2305	ACCT 2312 ITOM 2308
Juniors	FINA 3320 MKTG 3340	ITOM 3306 MNO 3370
Seniors	STRA 5370	Senior Seminars

The sophomore sections of honors business courses are available to declared Business and Pre-Business students who have a minimum 3.6 cumulative G.P.A. Students who have a 3.6 cumulative SMU G.P.A. and/or all-college G.P.A., and Business School G.P.A. by the spring of their sophomore year and have been officially admitted to the Cox School are eligible to apply for the Cox B.B.A. Honors Program. Those in the Program who achieve a 3.6 G.P.A. in a minimum of four honors courses (three of which must be at the junior/senior level) and a 3.6 cumulative SMU G.P.A. will receive an honors notation ("Honors in Business") on the transcript and diploma. The Cox Honors distinction is separate from the *cum laude* distinctions awarded at graduation.

Cox accepts a maximum of 30 of the best qualified students to the Honors Program once a year in the spring. Pre-business students with an interest in the Cox B.B.A. Honors Program must stay on track for admission to Cox by the beginning of the spring term of their sophomore year; this is the only time that Cox will consider their applications for admission to the Honors Program.

See the "Course Descriptions" section for further information about the courses.

BUSINESS SCHOLARS PROGRAM

The Business Scholars Program affords numerous special opportunities including networking with Cox faculty and the Dallas business community, invitations to special events, and tailored academic advising and career services. Participation in this program enhances students' educational experience and helps develop the skills and connections necessary for professional success.

Admission to the Business Scholars Program is by invitation only. Students are invited to join the program after they have been admitted to SMU, and must accept their invitation no later than May 1 prior to SMU matriculation in the following fall. Students who accept admission to the Business Scholars Program are pre-selected for admission to the academic programs in the Cox School of Business and will transfer into Cox during their first term at SMU.

Business Scholars are encouraged to apply for the B.B.A. Honors Program in the spring of their sophomore year; however, admission to the Business Scholars Program does not guarantee admission to the B.B.A. Honors Program. Admission to the Business Scholars Program is based on achievement prior to SMU admission; admission to the B.B.A. Honors Program is based on achievement at SMU.

BUSINESS ADMINISTRATION REQUIREMENTS

All candidates for the Bachelor of Business Administration degree must satisfy the following requirements:

General Education Curriculum: 41 hours

Please see the General Education Curriculum section of this catalog for information on this requirement.

<i>Business Core requirements</i>	<i>Credit Hours</i>
ACCT 2311, 2312 Fundamentals of Accounting I and II	6
ITOM 2305 Managerial Statistics	3
or STAT 2301 or 2331 or EMIS 5370	
ITOM 2308 Information Systems for Management	3
FINA 3320 Financial Management	3
LT 3335 Introduction to Legal Environment and Ethics	3
ITOM 3306 Operations Management	3
MKTG 3340 Fundamentals of Marketing	3
MNO 3370 Management of Organizations	3
STRA 5370 Strategic Management in a Global Economy	3
or CISB 5397 Entrepreneurship — Starting A Business	
Business Hours (satisfies requirements for General Business major)	
Business Electives	18
	TOTAL Business Hours
Non-business Electives	33
	TOTAL DEGREE HOURS
	122

The applicable requirements for each Cox major are those in effect during the academic year in which the student is officially admitted to the Cox B.B.A.

Program. The Cox School offers the following majors:

Major in General Business

To earn the Bachelor of Business Administration degree with a major in General Business, students must comply with the core B.B.A. degree requirements and satisfy the following additional requirements:

	<i>Credit Hours</i>
Business Electives (any combination of Cox departments)	18

Major in Accounting

To earn the Bachelor of Business Administration degree with a major in Accounting, students must comply with the core B.B.A. degree requirements, as well as satisfy the requirements below. The State of Texas requires 150 college credit hours including 30 hours of accounting beyond introductory, 20 hours of business courses, and a baccalaureate degree to take the CPA exam. Senior accounting majors may participate in an optional competitive internship experience through the Cox School.

The SMU program provides a B.B.A. degree with a major in Accounting that prepares students for careers in the general field of accounting, but students wishing to become CPAs are encouraged to enter the one-year Cox School of Business Master of Science Degree in Accounting Program after completing the B.B.A. degree.

To earn the Bachelor of Business Administration degree with a major in Accounting, students must comply with the core B.B.A. requirements and satisfy the following additional requirements:

Twenty-one credit hours in Accounting courses beyond the current six-hour core requirement (ACCT 2311, 2312), to be composed of the following:

	<i>Credit Hours</i>
1. Accounting core:*	15
ACCT 3311 Intermediate Accounting I	
ACCT 3312 Intermediate Accounting II	
ACCT 4311 Cost Accounting I	
ACCT 4315 Federal Income Tax I	
ACCT 5314 Accounting Systems/Auditing	
2. Accounting elective hours selected from the following:	3
ACCT 4306 Business Process Consulting	
ACCT 4307 Business Modeling with Spreadsheets	
ACCT 5317 Studies in Accounting Theory	
ACCT 5321 Financial Statements Analysis	
3. Accounting Communications elective hours selected from the following	
ACCT 3391 Ethics for Accounting	
BLI 3303 Business Communications	3

Major in Finance

To earn the Bachelor of Business Administration degree with a major in Finance, students must comply with the core B.B.A. degree requirements and satisfy the following additional requirements:

Twelve credit hours in Finance, beyond the three-hour core requirement of FINA 3320, to be composed of the following:

**Must be taken in residence.*

	<i>Credit Hours</i>
1. Six-hour Finance core:*	6
FINA 4325 Advanced Financial Management	
FINA 4326 Investment Analysis and Portfolio Management	
2. Six Finance elective hours selected from the following:	6
FINA 3330 Money and Capital Markets	
FINA 4327 Speculative Markets	
FINA 4328 Management of Financial Institutions	
FINA 4329 International Finance	
FINA 5331 Advanced Concepts in Financial Management	
FINA 5332 Honors Practicum in Portfolio Management (FINA 5132; FINA 5232)	
3. Recommended business electives for Finance majors:	6
ACCT 3311 Intermediate Accounting I	
ACCT 3312 Intermediate Accounting II	
ACCT 5321 Practicum in Financial Statement Analysis	
INS 3360 Principles of Risk and Insurance	
RE 3381 Real Estate Fundamentals	
RE 4389 Real Estate Finance	

Major in Financial Consulting

	<i>Credit Hours</i>
1. Accounting core:*	6
ACCT 3311 Intermediate Accounting I	
ACCT 3312 Intermediate Accounting II	
2. Finance core:*	6
FINA 4325 Advanced Financial Management	
FINA 4326 Investment Analysis and Portfolio Management	
3. Required Accounting and/or Finance electives:	6
ACCT 4306 Business Process Management	
ACCT 4311 Cost Accounting I	
ACCT 4315 Federal Income Tax	
ACCT 4307 Financial Planning and Control Using Microcomputers	
ACCT 5317 Studies in Accounting Theory	
ACCT 5321 Financial Statement Analysis	
FINA 3330 Money and Capital Markets	
FINA 4327 Speculative Markets	
FINA 4328 Management of Financial Institutions	
FINA 4329 International Finance	
FINA 5331 Advanced Concepts in Financial Management	
FINA 5332 Honors Practicum in Portfolio Management (FINA 5132, FINA 5232)	

Major in Business and Financial Reporting

To earn a Bachelor of Business Administration degree with a major in Financial Reporting, students must comply with the core B.B.A degree requirements and satisfy the following requirements:

Eighteen hours of required Business and Financial Reporting courses:

ACCT 3391 Ethics in Accounting

CCJN 2312 Reporting I
CCJN 2313 Reporting II
ACCT 3321 Financial and Business Reporting

*Must be taken in residence.

ACCT 3353 Financial Statement Analysis
CCJN 4380 Objectivity and Bias in the News

And six hours of Elective Courses from the following:

FINA 4320 Development of the American Private Enterprise System
FINA 3330 Money and Capital Markets
FINA 4326 Investment Analysis and Portfolio Management
BA 4101 Executive Speaker Series
BA 5325 Internship in Financial Reporting I
BA 5326 Internship in Financial Reporting II

Major in Information Systems

To earn the Bachelor of Business Administration degree with a major in Information Systems, students must comply with the core B.B.A. degree requirements, as well as satisfy the following requirements:

**Eighteen credit hours in Information Systems courses beyond the current nine-hour core requirement (ITOM 2305 or STAT 2301 or STAT 2331, ITOM 2308 and ITOM 3306), to be composed of:

	<i>Credit Hours</i>
ITOM 3307 Database Management	
ITOM 3354 Business Programming (Java)	
ITOM 4305 Systems Analysis and Design	
ITOM 4306 Business Process Management	
ITOM 4307 Business Modeling with Spreadsheets	
ITOM 4355 Systems Integration	9

Major in Marketing

To earn the Bachelor of Business Administration degree with a major in Marketing, students must comply with the core B.B.A. degree requirements and satisfy the following additional requirements:

Twelve credit hours in Marketing, beyond the three-hour core requirement of MKTG 3340, to be composed of the following:

	<i>Credit Hours</i>
1. Six-hour Marketing core:*	6
MKTG 3342 Marketing Research	
MKTG 5341 Marketing Management	
2. Six Marketing elective hours selected from the following:	6
MKTG 3343 Consumer Behavior	
MKTG 3344 Integrated Communication Advertising Management	
MKTG 3345 Sales and Distribution Management	
MKTG 3346 Retailing	
MKTG 3348 International Marketing	
MKTG 3349 Product and Brand Management	

- MKTG 4341** Marketing Implementation and Control
- MKTG 4345** Sports Marketing
- MKTG 5345** Honors Marketing Practicum
- 3. Six business elective hours 6

Major in Management

To earn the Bachelor of Business Administration degree with a major in Management, students must comply with the core B.B.A. degree requirements and satisfy the following requirements:

Twelve credit hours in Management (MNO) and Strategy (STRA) courses beyond the six hour core requirements of MNO 3370 and STRA 5370 (may be substituted by CISB 5397), to be composed of the following:

- | | <i>Credit Hours</i> |
|--|----------------------------|
| 1. Six credit hours of MNO classes:* | 6 |
| MNO 3371 Human Resources | |
| MNO 4371 Leadership and Culture | |
| 2. Six credit hours from the following classes* | 6 |
| MNO 3373 Negotiations | |
| MNO 3375 Corporate Social Responsibility and Ethical Leadership | |
| CISB 5397 Entrepreneurship (if “senior core” is completed with STRA 5370) | |
| CISB 5398 Managing the Entrepreneurial Business | |
| STRA 5370 Strategic Management in a Global Economy (if “senior core” is completed with CISB 5397) | |
| STRA 5371 Advanced Strategic Management (<i>Prerequisite:</i> STRA 5370) | |
| 3. Six hours of business electives | 6 |

Major in Real Estate Finance

To earn the Bachelor of Business Administration degree with a major in Real Estate Finance, students must comply with the core B.B.A. degree requirements and satisfy the following additional requirements:

- | | <i>Credit Hours</i> |
|--|----------------------------|
| 1. Twelve hours of Real Estate core:* | 12 |
| RE 3381 Real Estate Fundamentals | |
| RE 4338 Real Estate Law | |
| RE 4382 Real Estate Markets and Valuation | |
| RE 4389 Real Estate Finance | |
| 2. Six hours from the following set of classes MUST be completed | 6 |
| FINA 3330 Money and Capital Markets | |
| FINA 4325 Advanced Financial Management | |
| FINA 4326 Investment Analysis and Portfolio Management | |
| ACCT/ITOM 4307 Business Modeling with Spreadsheets | |
| FINA 4327 Speculative Markets | |
| FINA 4328 Management of Financial Institutions | |
| FINA 4329 International Finance | |
| FINA 5331 Advanced Concepts in Financial Management | |
| FINA 5332 Practicum in Portfolio Management | |
| INS 3360 Principles of Risk and Insurance | |

Concurrent Degrees

B.B.A. students may simultaneously complete a second baccalaureate degree in a major outside of business. Students interested in a double major should

contact the Undergraduate Office in the Cox School in 252 Maguire Building and the appropriate representative of the dean of the school in which the second degree will be earned.

Minor in Business Administration

Undergraduates with majors outside the Cox School may complete a minor in business administration.

Admission requirements

See "Admission of SMU Students to the B.B.A. Program as a Major or Minor" under Admission in the Cox section of this catalog.

Course requirements

Matriculated students must complete all hours toward the business minor in residence. Transfer students must complete 18 hours in business at SMU.

The following six courses (18 hours) are required for the minor in business:

ACCT 2311 Fundamentals of Accounting I

ACCT 2312 Fundamentals of Accounting II

FINA 3320 Financial Management

ITOM 3306 Operations Management

MKTG 3340 Fundamentals of Marketing

MNO 3370 Management of Organizations

Grading

Regular grading standards will be used. None of the 18 hours may be completed Pass/Fail for a minor in business. A minimum 2.00 G.P.A. on all business courses attempted is required for satisfactory completion of the minor in business.

Minors

B.B.A. students are encouraged to complete a minor in other schools on campus, including Dedman College, Meadows School of the Arts and the School of Engineering.

Directed Studies

Business students may pursue independent studies, a research-based project, in a specified department *under the sponsorship* of a full-time Cox faculty member. This project may involve further study by the student in some aspect not covered in regularly scheduled business courses. B.B.A. students must first complete the basic required course in the field of study.

Business elective or free elective credit will be granted to a maximum of six hours (no more than three hours in one term) and cannot be used to fulfill major requirements. Regular grades or grades of Pass/Fail may be granted without consideration for the 54-, 57-, or 60-hour regulation for business classes to be allowed on a Pass/Fail basis. Independent studies will be exempted from the 54-, 57-, or 60-business-hour limit. Students on academic probation may not register for independent studies.

Internships

Business students can take up to three hours of internship credit for work experience. The credit cannot be used towards the BBA major or minor requirements.

COURSES OF STUDY IN COX

The following business courses have been approved by the faculty of the Edwin L. Cox School of Business. It should be noted that not all courses described in this bulletin are necessarily offered in any given academic year. Students should check published course schedules to see which courses are offered at a particular time.

DEPARTMENTS OF INSTRUCTION

Courses are listed under the following:

Accounting; Business Administration; Business Leadership Institute; Caruth Institute of Entrepreneurship; Finance; Information Technology and Operations Management; Marketing; Management and Organizations; Real Estate, Law and Risk Management; and Strategy and Entrepreneurship.

There have been some course changes and new courses added. Students should use caution in selecting courses to avoid repetition of courses previously taken.

Accounting (ACCT)

Professor Joseph Magliolo, **Department Chair**

Professors: Marvin L. Carlson, Wayne M. Shaw; **Associate Professors:** Hemang A. Desai, Elbert B. Greynolds, Michael van Breda; **Assistant Professors:** Nilabhra Bhat-tacharya; Chris E. Hogan, Gregory A. Sommers; **Senior Lecturer:** Susan M. Riffe; **Lecturer:** Jeffrey R. Austin.

See requirements to major in Accounting in the "Programs of Study" section.

B.B.A. degree-seeking students should take ACCT 2311 and 2312 during their sophomore year. Matriculated students must take these courses in residence.

2311. Fundamentals of Accounting I. Theory and practice of measuring and interpreting financial data for business units: basic concepts, principles and procedures. *Prerequisites:* Calculus and ECO 1311, 1312 or for Markets and Culture majors ECO 3355 and SOCI 2377

2312. Fundamentals of Accounting II. Extension of Fundamentals of Accounting I. Uses of accounting information in making business decisions. *Prerequisite:* ACCT 2311.

3311. Intermediate Accounting I. Theory and techniques for construction of corporate financial reports for use by stockholders, creditors and other analysts. *Prerequisite:* ACCT 2312.

3312. Intermediate Accounting II. Continuation of Intermediate Accounting I. *Prerequisite:* ACCT 3311 and FINA 3320, or consent of department chair.

3321 Financial and Business Reporting. This course examines financial and business reporting from a journalistic point of view. Aspects of business reporting with an emphasis on finance and accounting information will be examined.

3353. Financial Statement Analysis. This course examines the role of financial statement analysis in the evaluation of the firm and the prediction of its future condition. Topics covered include fundamental analysis, the use of accounting numbers in the credit market, the use of accounting numbers in the stock market, and the use of accounting

numbers for corporate restructuring decisions. Prerequisites: ITOM 2305 (or STAT 2301) and ACCT 2311 and 2312.

3391. Ethics in Accounting. Develops students' ability to identify and evaluate ethical issues related to accounting and business management in a corporate environment. *Corequisite:* ACCT 5325 or consent of department chair.

4300. Special Topics in International Accounting. Offered through SMU International Programs. Junior standing required.

4306 (ITOM 4306). Business Process Management (Spring only). The application and management of information technology in business organizations. Application areas include systems to enable business processing, electronic data interchange, decision support systems, and expert systems. Management issues include designing and managing technology architectures, organizing and distributing information technology resources, make-vs.-buy, benchmarking, and measuring performance of information resources, and project management.

4307 (ITOM 4307). Business Modeling with Spreadsheets. Study of uses and limitations of microcomputers in the financial planning and control process of the firm. Analyzes cases and problem situations using microcomputer software. Emphasis on financial analysis, budgeting, forecasting, capital expenditure analysis. Primarily lecture/discussion with some use of case studies and projects. *Prerequisites:* ACCT 2312, ITOM 2308 and FINA 3320.

4311. Cost Accounting (Fall Only). Study of the measurement, accumulation and control of costs. Topics include: product cost accounting, cost behavior analysis, direct costing, standard cost variance analysis, and relevant cost analysis. *Prerequisite:* ACCT 2312.

4315. Federal Income Tax I (Spring only). A conceptual basis and structure for the determination of income taxes. Tax research methods are used in preparing tax returns, solving problems and planning business decisions. *Prerequisite:* ACCT 2312.

5314. Accounting Systems/Auditing: Concepts, Design and Analysis (Fall only). Deals with the understanding, development and analysis of financial and management accounting systems. Presents fundamental concepts and applies them to contemporary issues. Management internal control functions serve as a central theme for evaluation and analysis. Furthermore, the behavioral characteristics and mechanics of accounting fraud are presented. *Prerequisite:* ACCT 3311.

5317. Studies in Accounting Theory I (Spring only). Study of selected topics and current issues in the area of accounting theory. *Prerequisite:* ACCT 3312 or permission of instructor.

5318, 5319. Independent Studies in Accounting.

5321. Practicum in Financial Statement Analysis (Honors, Fall only). An honors course that examines the role of financial statement analysis in the evaluation of the firm and the prediction of its future condition. Topics covered include fundamental analysis, the use of accounting numbers in the credit market, the use of accounting numbers in the stock market, and the use of accounting numbers for corporate restructuring decisions. *Prerequisites:* ACCT 3311, FINA 3320, ITOM 2305 (or STAT 2301 or STAT 2331), and permission of instructor.

5325, 5326. Accounting Internships. Three or six hours. *Prerequisites:* Senior standing, departmental approval.

Business Administration (BA)

2172. Career Planning Strategies. The objectives of this course are for students to explore and define their career interests and summarize the steps necessary for job search preparation. Students will examine personal interests, values, and abilities related to possible career options, identify majors most related to their career interests, formulate ways to develop skills and experience related to their career interests, and explain and assess characteristics involved in making lifelong career decisions. Each student will be

characteristics involved in making lifelong career decisions. Each student will be able to select a minimum of three occupations and industries of interest, describe employer expectations and professional behavior in the work place, create a Career Portfolio to include their resume, demonstrate their interviewing and networking skills, and compose an action plan focused on meeting their career objectives. (Counts as free elective only.)

3300, 3301. Special Topics in International Business. Offered through SMU International Programs. *Prerequisite:* Junior standing.

3303. Written Technical Communications for Accounting Majors. *Prerequisite:* Junior standing.

4101. Executive Speaker Series. *Prerequisite:* Junior standing. (One academic credit hour.)

4111,4112,4113. Business Internship. Instructor approval only.

4315. European Union (EU) Seminar. Offered through SMU International Programs and available spring only for full-year students. *Prerequisite:* Junior standing.

5180, 5280, 5380, 5381. Independent Studies in Business Administration.

3 hours each

5325. Business Reporting.

5326. Internships. *Prerequisites:* Senior standing, departmental approval.

Business Leadership Institute (BLI)

The mission of the Edwin L. Cox BBA Leadership Institute (BLI) is to help students achieve professional success by becoming more effective communicators and leaders. Toward that end, the BLI seeks to:

1. Improve students' writing, interpersonal and presentation skills as well as their ability to plan and manage meetings and projects in a team setting.
2. Increase students' understanding of the vital role communications, integrity, ethics and trust play in running a successful business.
3. Enhance students' appreciation for the contemporary issues and topics that impact businesses on a daily basis, including corporate structure, global competition, legislation/regulation and diversity.

The BLI employs a variety of instructional techniques to impart key concepts and skills and expose students to the real world of business. Techniques include lecture, class discussion, self-assessments, small-group projects, role-play simulations, corporate visits and guest speakers from the corporate and non-profit arenas.

1110. Special Topics in Business Administration: B.B.A. Scholars Seminar (One credit hour, Pass/Fail grading option). Provides an introduction to various business topics including an overview of business disciplines and careers in business. Restricted to B.B.A. Scholars in fall of their first year. (Counts as free elective only.)

2301. Contemporary Business Topics. Leading in business today requires thinking creatively, building relationships based on trust, managing meetings effectively, and giving persuasive presentations to a range of audiences. Through interactive lectures, assessments, taped presentations, individual coaching, case studies and interviewing successful leaders, students will develop the skills, understanding and style necessary to lead. The

course culminates with a corporate capstone project and team presentation.

2304. Integrated Communications for Internal and External Audiences. Behind every great business initiative is a carefully planned and executed communication plan. Students will learn how to develop integrated communication plans targeting internal and external audiences, define communication objectives and target audiences, select the best channel for reaching each audience and craft messages to fit those channels, and measure communications to determine if they achieved the desired results.

3303. Business Communications. Effective business communication requires employees to understand how and when to use communication channels within their companies while considering the impact that globalization and diversity will have on their efforts. By working on a functional team in a simulated business setting, students will learn how to plan and execute various business communications in the context of increasing cultural diversity and global market expansion. Specific activities include interviewing local executives, developing and giving team presentations, and honing business letter writing skills for different situations.

FINANCE (FINA)

Professor David C. Mauer, **Department Chair**

Professors: Andrew H. Chen, Albert W. Niemi, James L. Smith, Rex W. Thompson, Michael R. Vetsuypens; **Associate Professors:** Jeffrey W. Allen, Chun H. Lam, Darius P. Miller, Kumar Venkataraman; **Assistant Professors:** Evrim Akdogu, Amar Gande, Qin Lei, Natalia Reisel ; **Lecturers:** Brian R. Bruce, Michael L. Davis, Jeffrey R. Hart.

See requirements to major in Finance in the “Programs of Study” section.

3300. Special Topics in International Finance. Offered through SMU International Programs. *Prerequisite:* Junior standing.

3320. Financial Management. Survey of concepts, practices and problems surrounding financial markets, securities and decision-making. Includes time value of money, market efficiency, evaluation of securities and capital budgeting. *Prerequisites:* Calculus, ECO 1311, 1312; ACCT 2311; and EMIS 5370, ITOM 2305 or STAT 2301/2331. Students may not receive credit for this course and ECO 4368. Economics courses will not fulfill B.B.A. requirements.

3330. Money and Capital Markets. Analyzes the structural interrelationships among the important participants in the U.S. financial markets. Topics discussed include flow of funds, determinants of interest rates, monetary policy and interest rates, money and capital market instruments, and problems in managing financial institutions. *Prerequisite:* FINA 3320. Students may not receive credit for this course and ECO 3355.

4320. Development of the American Private Enterprise System. This course examines the evolution of private enterprise in the American economy. The course will track changes in American capitalism from the establishment of the nation in the late 1700s, to the global challenges facing U.S. companies today and in the future. This course does not count as a Finance elective.

4325. Advanced Financial Management. In-depth analysis of capital budgeting, cost of capital, sources of capital open to the firm, capital structure, dividend policy, mergers, and bankruptcy, in a combined lecture-case format. *Prerequisite:* FINA 3320.

4326. Investment Analysis and Portfolio Management. Evaluation of the interactive effects of economic, industry, company and market considerations on the risk and return of individual assets. Analysis of the interrelationships of risky assets when combined in portfolios; asset pricing theory and implications. *Prerequisite:* FINA 3320. Students may not receive credit for this course and ECO 4378.

4327. Speculative Markets (Spring only). Introduction to analysis of speculative securities such as options and futures. Evaluates underlying theories explaining speculative

markets in which such securities are traded. Discusses strategies such as hedging and arbitrage. *Prerequisite:* FINA 4326.

4328. Management of Financial Institutions (Spring only). Management of assets, liabilities and capital accounts of financial institutions in general and commercial banks in particular. Emphasis on an understanding of the interrelationship among profitability, liquidity and capital adequacy. Uses simulations and/or cases to illustrate the concepts. *Prerequisite:* FINA 3330.

4329. International Finance. Analyzes the effects on financial transactions of dealing in foreign markets. Considers international financial markets and such issues as interest rate differences between countries and spot and forward transactions in foreign currencies. Major emphasis is given to the impact of international operations for the corporate financial manager. *Prerequisite:* FINA 3320.

5325, 5326. Independent Studies in Finance.

5331. Advanced Concepts in Financial Management (Fall only). Selected advanced topics in corporate finance such as cost of capital, efficient markets, acquisitions, cash management and applications of options concepts. Combined lecture-case format. *Prerequisite:* FINA 4325 or permission of instructor.

5132/5232/5332. Practicum in Portfolio Management (Honors Section, One Hour Fall and Two Hour Spring). Offers practical experience in investments through management of the Ann Rife Cox Investment Fund. Economic and industry analysis and the determination of their effect on investment decisions. Money and capital market forecasts; selection of individual securities; development of a portfolio strategy. *Prerequisites:* Application process required. FINA 4326 and minimum 3.50 G.P.A. are highly recommended. Information Systems (ITOM)

INFORMATION SYSTEMS (ITOM)

Professor Amit Basu, **Department Chair**

Professors: Bezalel Gavish, Marion G. Sobol; **Associate Professors:** Ulrike Schultze, John H. Semple; **Assistant Professors:** Sreekumar Bhaskaran, Chester G. Chambers, Joakim Kalvenes, Neil J. Keon, Eli V. Snir; **Lecturers:** Ellen Allen, James C. Collins.

See requirements to major in Information Systems in the “Programs of Study” section.

B.B.A. degree-seeking students should take ITOM 2305 (or STAT 2301 or STAT 2331) and 2308 during their sophomore year.

2305. Managerial Statistics. Introductory course consisting of probability and descriptive statistics, regression analysis, decision making under uncertainty, and use of data in decision making. (STAT 2301 and STAT 2331 are alternates for this course.) *Prerequisites:* Calculus, ECO 1311 and 1312.

2308. Information Systems for Management. Covers the business use of information technologies (IT). Databases, networks and software applications are studied as business resources, and the social and ethical influences of IT on individuals, firms and society are examined. Coursework includes problem solving with information technology and case assignments involving information systems. *Prerequisite:* ITOM 2305 or STAT 2301 or STAT 2331 or EMIS 5370. *Corequisite:* ACCT 2311. Will satisfy IT requirement for business majors.

3306. Operations Management. An introduction to the models and concepts used for problem solving in operations management. Topics include inventory management, production planning and scheduling, linear programming, decision analysis, simulation and forecasting. Coursework includes problem solving and case assignments involving operations management. *Prerequisites:* Calculus, ECO 1311 and 1312, ACCT 2311, and student chooses one of the following four courses: STAT 2301 or STAT 2331 or ITOM 2305 or

EMIS 5370.

3307. Database Management. The management of the information resource and the issues in communicating data include defining information requirements, the role of information in the organization, and the design and administration of the system. The relational model is used along with database management systems to facilitate the communication and distribution of data and its conversion into information. The process of normalizing data, data integrity and security, the Structured Query Language (SQL), and application generation are among the topics. *Prerequisite:* ITOM 2308.

3354. Business Programming. This course will introduce students to the process of designing, writing, testing and implementing computer software in business. The course will cover the widely-used business programming language Java which is used to deploy a variety of business application. Students will also become familiar with the fundamentals of object-oriented programming.

4305. Systems Analysis and Design . Emphasizes the technical and managerial skills required to analyze, design and implement cost-effective systems for the collection and processing of information in a business environment. Topics include: systems development life cycle, prototyping, structured methodologies, business process analysis and redesign, and project management. Typically students complete a project. *Prerequisite:* ITOM 3354.

4306. Business Process Management. This course teaches students business process consulting skills, which include identifying, documenting, analyzing (for efficiency, effectiveness and controls) and improving business processes. Topics include workflow diagramming, designing and evaluating controls, the use of IT to improve business process performance, change management, stakeholder analysis and benchmarking. The course covers core business processes such as sales, billing and procurement. Typically students complete a project. *Prerequisite:* ITOM 2308, ACCT 2311, ACCT 2312, STAT 2301 or STAT 2331 or ITOM 2305, ITOM 3306.

4307. Business Modeling with Spreadsheets. The study of uses and limitations of microcomputers in the financial planning and control process of the firm. Cases and problem situations will be analyzed using microcomputer software. *Prerequisites:* ACCT 2312, ITOM 2308 and FINA 3320.

4355. Systems Integration. The course will focus on how to design and develop a system that must integrate various technologies and/or systems into a fully functional system in order to meet the needs of a client or to solve a business problem. The course will draw on the skills learned in previous ITOM courses including: Database Design, Systems Analysis and Design, and Business Programming in order to complete a term project that merges these concepts through the use of the Systems Development Life Cycle. *Prerequisites:* ITOM 2308, 3307, 3354 and 4305.

5350, 5351. Research Practicum in Information Technology I and II. Topics determined by student and faculty interests.

Management and Organizations (MNO)

Professor Don Vandewalle, **Department Chair**

Professor: Miguel A. Quiñones, John Slocum, Linda Stearns; **Associate Professors:** Ellen F. Jackofsky, Robin Pinkley; **Assistant Professors:** Jay Carson, Mel Fugate, Peter A. Heslin, Robert W. Rasberry.

See requirements to major in Management in the "Programs of Study" section.

3300 and 3301. Special Topics in International Management I and II. Offered through SMU International Programs. *Prerequisite:* Junior standing.

3370. Management of Organizations. A survey course to help students become aware of and develop skills in management that facilitate high performance, satisfaction,

and continued self-development. *Prerequisites:* Calculus; ECO 1311, 1312; ACCT 2311; and EMIS 5370 or ITOM 2305 or STAT 2301 or STAT 2331.

3371. Human Resources. Seeks to increase understanding of theories of effective human resources utilization; to acquaint students with procedures and practices for recruitment, hiring, training and development; to acquaint students with organizational and individual factors associated with effective human resource utilization. *Prerequisite:* MNO 3370.

3373. Negotiations. Studies theories and processes of negotiation as it is practiced in a variety of settings. Focuses on understanding the strategy or conflict resolution in the context of competitive situations. Emphasizes simulations, role playing and cases. *Prerequisite:* MNO 3370.

3375. Corporate Social Responsibility and Ethical Leadership. This course gives students an understanding of the dilemmas managers face in integrating ethical reflection with business decision making. Topics discussed include: an organization's responsibility to employees, customers, shareholders and the community, conflicts of interest, product liability and whistle blowing. The mode of delivery is case study, class discussion, video analysis and written and oral presentations. *Prerequisite:* MNO3370

4371. Leadership and Culture. The course is designed to enhance effectiveness and success as an outstanding leader. Important theories of motivation, leadership, interpersonal relationships, teamwork and organizational culture are studied and applied to making leadership decisions. *Prerequisite:* MNO 3370 (For non-Cox students, approval of the Cox BBA Advising Office, junior standing and two courses in psychology or sociology may be substituted for the prerequisite).

4378. Independent Studies in Management. Research in this area will consider contemporary issues – theoretical, ethical, methodological, social, etc. — that are currently of interest to management. *Prerequisite:* MNO 3370 and permission of full-time faculty..

Marketing (MKTG)

Professor Daniel J. Howard, **Department Chair**

Professors: Thomas E. Barry, William R. Dillon, Roger A. Kerin; **Associate Professors:** Ed Fox, Raj Sethuraman, Tasadduq Shervani; **Assistant Professors:** Richard A. Briesch, Priyali Rajagopal, Suzanne B. Shu; **Lecturers:** Charles A. Besio, Judith H. Foxman, James T. Kindley.

See requirements to major in Marketing in “Programs of Study” section.

3300. Special Topics in International Marketing. Offered through SMU International Programs. *Prerequisite:* Junior standing.

3340. Fundamentals of Marketing. Examines three major areas: The nature of marketing decisions, the environment in which these decisions are made, and the relationship of these decisions to the firm, business and society. *Prerequisites:* Calculus; ECO 1311, 1312; ACCT 2311; and ITOM 2305 or STAT 2301 or EMIS 5370.

3342. Marketing Research. Nature and role of information in the decision-making process; identification and discussion of the elements and relationships that constitute the research process; planning and conducting a research project; the role and nature of a marketing information system. *Prerequisites:* MKTG 3340.

3343. Consumer Behavior. Helps students understand the motivation and behavior of buyers and consumers. Consumer behavior within a marketing framework will be discussed and will be related to the task of marketing management. *Prerequisite:* MKTG 3340.

3344. Integrated Communication Advertising Management. Provides an opportunity for students to explore key marketing communication concepts and management issues through the study of message strategy, advertising, sales promotion, direct marketing

and media planning. *Prerequisite:* MKTG 3340.

3345. Sales and Distribution Management. A multidisciplinary approach to the study of sales and sales force management. The topic areas of major concern focus on the total sales process, e.g., selection, training, motivation and compensation of personnel, sales forecasting, sales territory management, and analyses. The basic objectives are to provide the student with a fundamental understanding of the elements of the sales process, and to provide the student with a management perspective to plan, organize and direct a sales force. *Prerequisite:* MKTG 3340.

3346. Retailing. A study of retailing, focusing on the environment of retailing management, retail strategy, merchandise management, sales promotion and customer services, and expense and productivity management. *Prerequisite:* MKTG 3340.

3347. Services Marketing. Investigates the institutions that facilitate the transfer of title of a good as it moves from producer to ultimate consumer. *Prerequisite:* MKTG 3340.

3348. International Marketing. Focuses on the analysis of environmental variables in the foreign market context. *Prerequisite:* MKTG 3340.

3349. Product and Brand Management. Deals with the management of product development programs and the appraisal of the many factors that affect product decision making. Examines policies concerning branding, product line strategy, and compliance with social and government restrictions. Studies the fundamentals of pricing the product and the formulation of price policies, including their legal aspects. *Prerequisite:* MKTG 3340.

4341. Marketing Implementation and Control. Uses the case analysis method to examine strategy, tactics and decision making regarding the implementation and control of marketing problems. *Prerequisite:* MKTG 3340.

4345. Sports Marketing. An exploration of sports marketing from two perspectives: the marketing *of* sports and marketing *through* sports. Focuses on key issues including fan segmentation, branding, licensing and sponsorship. *Prerequisite:* MKTG 3340 and MKTG 3342.

5341. Marketing Management (Spring only). The objectives are to (1) provide the student with a fundamental understanding of the marketing strategy planning process within the firm and (2) develop the abilities to cope with marketing management problems encountered by senior marketing managers, general management executives, and marketing consultants. Viewed as the capstone course for marketing majors. Heavy emphasis is placed on case analysis and class projects. *Prerequisites:* Senior standing and MKTG 3342.

5342, 5343. Independent Studies in Marketing.

5345. Honors Marketing Practicum (Spring). Gives students an opportunity to apply marketing concepts and theories learned in the classroom to a real-life business situation. Groups will be responsible for researching, designing and presenting a comprehensive integrated marketing promotions plan to a Dallas business. *Prerequisite:* By application.

Real Estate, Law and Risk Management (RE)

Professor William B. Brueggeman, **Department Chair**

Associate Professor: Robert Puelz; **Lecturers:** Barbara W. Kincaid, Catherine Weber.

See requirements to major in Real Estate Finance in the “Programs of Study” section.

3381. Real Estate Fundamentals. An introduction to all phases of real estate and the foundation for other courses in real estate. *Prerequisite:* ACCT 2312; *Corequisite:* FINA 3320.

4338. Real Estate Law (Spring only). A survey of real estate law with particular attention given to real estate transactions, financing, syndication and land use regulation. *Prerequisites:* LT 3335 and RE 3381.

4382. Real Estate Markets and Valuation (Fall only). The principles and techniques of estimating the value of residential and income-producing properties. Also considers the economic base, structure and distribution of land use in urban areas. *Prerequisites:* RE 3381 and FINA 3320.

4389. Real Estate Finance (Spring only). Development of technical competence necessary to structure real estate transactions. Computation of periodic payments, amortization schedules and true borrowing costs. Examination of the secondary mortgage market. Application of techniques for structuring real estate transactions (e.g., sale-leaseback, joint ventures, syndications, etc.). *Prerequisites:* RE 3381, RE 4382 and FINA 3320. (Students cannot receive credit for RE 4381 and RE 4389).

5193, 5293, 5393. Independent Studies in Real Estate. Number of credit hours per course may range from one to three hours. *Prerequisite:* Permission of instructor.

Law Area (LT)

3335. Introduction to Legal Environment and Ethics. An environmental course that emphasizes the nature, formation and application of law with a macro view. Public law and regulation of business is emphasized. *Prerequisites:* Calculus, ECON 1311, 1312, ACCT 2311, ITOM 2305 or STAT 2301 or STAT 2331.

4336. Business Law II. Includes the law of real property, commercial paper, creditors' rights and secured transactions, agency and employment, partnerships and corporations. *Prerequisite:* LT 3335.

Risk Management and Insurance Area (INS)

3360. Principles of Risk and Insurance. Focuses on the principles of risk and the role of insurance in handling risk. Examines many different topics, from insurance markets to personal insurance contracts to legal principles that reinforce insurance contracts. Concludes with a discussion of employee benefit plans and social insurance. *Prerequisite:* ACCT 2311.

Strategy and Entrepreneurship (STRA)

Professor Gordon Walker, **Department Chair**

Associate Professors: David Croson, David T. Lei; **Assistant Professors:** Steven R. Postrel; Senior Lecturer and Associate Dean of Undergraduate Programs: Gary T Moskowitz

5370. Strategic Management in a Global Economy. Analyzes the processes of building competitive advantage and strategy execution in single and multi-business firms with emphasis on industry evolution, the boundaries of the firm, and global competition. *Prerequisites:* ACCT 2311 and 2312, EMIS 5370 or ITOM 2305 or STAT 2301 or STAT 2331, ITOM 2308, FINA 3320, MKTG 3340, MNO 3370, ITOM 3306.

5371. Advanced Strategic Management (Spring only). Seeks to extend the theories and practices introduced in STRA 5370 and to broaden the understanding of strategic problems found in modern corporations. Topics may vary. *Prerequisite:* STRA 5370.

5378/79. Independent Studies in Strategy. Projects will focus on contemporary issues in strategy research. *Prerequisite:* STRA 5370 and permission of full-time faculty.

The Caruth Institute (CISB)

(An Entrepreneurship Center)

Jerry White, **Director**

5397. Entrepreneurship (Starting a Business). How to plan and start a new business or expand an existing owner-managed or family-owned business. The personal characteristics of successful entrepreneurs; the career path of successful entrepreneurs; profit

and cash flow forecasts; sources of information; forecasting sales, the importance of relevant experience; finding financing; the business plan. *Prerequisites*: FINA 3320, MKTG 3340, MNO 3370, ITOM 3306.

5398. Managing the Entrepreneurial Business. Explores the unique challenges and opportunities involved in the management and ownership of a closely-held enterprise. Examines key business, personal and interpersonal issues relevant to the continuity and management of these firms. Topics include strategic management and corporate governance, life cycle and systems analyses, and leadership *Prerequisite*: Senior standing.

5399. Independent Studies in Entrepreneurship.

MEADOWS SCHOOL OF THE ARTS GENERAL INFORMATION

The distinctive education offered by the Meadows School of the Arts comes from our belief in a rich mixture of tradition, innovation and care for the human spirit. The Meadows School exists to provide an education that centers on the study, creation and analysis of the communication, performing and visual arts at the undergraduate and graduate levels within a liberal arts environment.

The Meadows School seeks to embed the arts, with their insights into human values and imagination, in the thought processes of those we educate. We work to develop in people the ability to maintain the arts and communication professions at a high level of skill and critical imagination, whether as audiences, performers, practitioners or scholars. We promote the sheer enjoyment of provocative, feisty and finely crafted expression, and we cultivate a respect for the legacy by which peoples before us have crystallized their experiences. We develop analytical abilities and a critical consciousness of the power of images in our lives. Meadows feels strongly the duty to illuminate and to be a center of standards, ideals, diversity and risk-taking in our University and the larger community.

The Meadows School of the Arts, founded through the generosity of Algur H. Meadows, his family, and the Meadows Foundation, is recognized as one of the nation's premier arts schools. It offers intense specialized education in the communication, performing and visual arts to arts majors, and provides a rich variety of course work for students from other disciplines exploring the arts as part of their liberal arts education.

In addition to working closely with a nationally renowned faculty, Meadows students have access to many eminent visiting professors, artists and scholars, as well as the annual winners of the Algur H. Meadows Award for Excellence in the Arts. Recipients of the award spend several days in residence at Meadows in personal interaction with students. They have included playwright Edward Albee; filmmaker Ingmar Bergman; dancer and choreographer Martha Graham; television producer and journalist Don Hewitt; actress Angela Lansbury; artist Jacob Lawrence; musician and composer Wynton Marsalis; playwright Arthur Miller; soprano Leontyne Price; cellist and conductor Mstislav Rostropovich; composer and lyricist Stephen Sondheim; and dancer and choreographer Paul Taylor. The Meadows School also offers one of the nation's

finest university complexes for instruction, performance and exhibition in art, art history, arts administration, communications, dance, music and theatre.

ACADEMIC, PERFORMANCE AND EXHIBITION SPACES

The Owen Arts Center houses the Greer Garson Theatre (a classical thrust stage), the Bob Hope Theatre (a proscenium theatre), the Margo Jones Theatre (a black box theatre), Caruth Auditorium (which includes a 51-stop, 3681-pipe Fisk organ), the Charles S. Sharp Performing Arts Studio, the O'Donnell Lecture/Recital Hall, and several smaller performance spaces, as well as classrooms, studios and rehearsal areas. The Doolin Gallery in the Owen Arts Center and the Pollock Gallery, housed in the Hughes-Trigg Student Center, are the art exhibition spaces of the Division of Art. Student work is exhibited and critiqued in the Doolin Gallery; exhibitions organized in the Pollock Gallery provide students, faculty, staff and the community with opportunities to experience a thoughtful and wide array of exhibitions representing diverse artists, time periods and cultures.

The Meadows Museum exhibits one of the finest and most comprehensive collections of Spanish art outside of Spain, including works of such masters as El Greco, Velázquez, Ribera, Montañes, Murillo, Goya, Sorolla, Picasso, Gris, Miró and Tápies. The Elizabeth Meadows Sculpture Collection includes important works by such modern sculptors as Rodin, Maillol, Lipschitz, Henry Moore, Marini, Giacometti, Noguchi, David Smith and Claes Oldenburg.

The Umphrey Lee Center serves as home to several of the communication arts areas. A journalism complex, including a television studio, computer labs and editing suites, opened in 2002.

The four-story Jake and Nancy Hamon Arts Library is adjacent to the Owen Arts Center and houses all arts library collections, a slide library, an audio/visual center, and the Center for Instructional Technology in the Arts. The G. William Jones Film and Video Collection, a part of the library's holdings, is housed in the Greer Garson Theatre's 3,800-square-foot refrigerated storage vault, with screening rooms also in the building.

MEADOWS SCHOOL OF THE ARTS AND THE LIBERAL ARTS EDUCATION

All first-year undergraduates spend at least one year in Dedman College before transferring officially to Meadows. Students are assigned an academic adviser in Dedman College based on their intended majors. Arts and communications students have advisers who specialize in those disciplines. In the first year, students combine liberal arts courses with the introductory course requirements of their intended major. After transferring into Meadows, normally in the sophomore year, students continue to combine courses in the major with general education requirements. Meadows considers the General Education Curriculum to be an important part of the education of its students.

Meadows Divisions

Meadows consists of 10 undergraduate and graduate divisions. Each is outlined in detail in individual sections of this publication. They are as follows:

Temerlin Advertising Institute for Education and Research
Art
Art History
Arts Administration
Cinema-Television
Corporate Communications and Public Affairs
Dance
Journalism
Music
Theatre

Programs of Study

Bachelor of Arts

Advertising
Art History
Cinema-Television
Corporate Communications and Public Affairs
Interdisciplinary Studies in the Arts
Journalism
Music

Bachelor of Fine Arts

Art
Dance
Theatre

Bachelor of Music

Music Education (includes Texas teacher certification)
Music Performance
Music Composition
Music Therapy (includes registration by the National Association for Music Therapy)
Piano Pedagogy

Academic Minors

University students may complete a minor in various divisions within Meadows School of the Arts. The minor will be noted on the student's permanent record for employment and academic purposes. The interested student should contact the undergraduate records office regarding a specific minor. The minors are as follows:

Advertising
Art
Art History
Cinema Studies
Corporate Communications and Public Affairs
Dance
Journalism
Music

ADMISSION

AUDITIONS AND OTHER SPECIAL ADMISSIONS CRITERIA

Various divisions in Meadows School of the Arts have special admissions criteria, such as auditions, portfolio reviews and specified course work. Admissions criteria pertinent to each instructional unit are stated in the section of this publication devoted to that unit.

ADMISSION PROCEDURES

Prospective students interested in undergraduate degrees in Meadows School of the Arts apply for undergraduate admission to SMU as first-year students or transfer students through the SMU Office of Enrollment Services, PO Box 750181, Dallas TX 75275-0296. The application deadline for first-year students entering for the fall term is November 1 for early action, January 15 for regular decision and merit scholarships, and November 1 for the spring term. For transfer students, the application deadline is June 1 for the fall term and November 1 for the spring term. (See the University Admission section in the front of this catalog.)

Admission as an SMU Inter-School Transfer Student

First-year pre-major students enter Dedman College and then transfer to Meadows School of the Arts when they complete requirements for the major declaration. A student transferring from Dedman College (or other schools of the University) must secure a Student Change of Degree Program form from the office of the academic dean of the student's current school to present to the Undergraduate Academic Services office of Meadows School of the Arts.

Students must have completed a minimum of 24 term hours of study with a minimum cumulative G.P.A. of 2.00. Students in various divisions also must receive formal recognition for suitable scholarly or creative ability, and talent in the performing arts. Art students must take introductory course work in the first year. They gain admission through successful work completed in those classes. Art History students are strongly encouraged to contact the chair of the Art History Division for a conference. Advertising, Cinema/Television, Journalism, and Corporate Communications and Public Affairs students must successfully complete the prerequisite subset of courses with the appropriate G.P.A. to be admitted to their degree programs. Advertising students must additionally complete a written on-site application to the program.

It should be noted that all students in dance, music and theatre will have auditioned/interviewed prior to entering SMU.

Admission as an External Transfer Student

Transfer students applying for admission to Meadows School of the Arts by transfer from another accredited educational institution should request a transfer application from the Office of Enrollment Services. Transfer applicants

who have completed 30 transferable hours with a G.P.A. of 2.70 or better are often successful in gaining admission to the University. Once admitted, a transfer student must be prepared to earn 60 hours of credit in residence at SMU.

Transfer credit is not given for correspondence courses or for work completed at a non-accredited school. Only grades of C- or better in comparable courses are transferable to SMU.

Transfer into Meadows School of the Arts is not automatic. Recognition is also given to creative or scholarly potential for the program to be undertaken and to particular talent in performing areas. Admissions criteria pertinent to each instructional unit also must be satisfied.

Readmission Students

Students should contact the Meadows Undergraduate Academic Services Office regarding readmission. A student who has been readmitted after an absence of more than three years will be expected to meet all current requirements for graduation. Music, dance or theatre students may also be required to re-audition. Official transcripts from each college or university attended since last enrolled at SMU must also be forwarded to the Division of Enrollment Services. If five years have lapsed since the last term of enrollment at SMU, official transcripts from each college or university attended prior to SMU must also be forwarded to the Division of Enrollment Services. All data is due no later than the last business day prior to the first day of classes of the term of reentry. See "Readmission of Students" in the University Admission section for more details.

UNDERGRADUATE STUDENT FINANCIAL AID

For many SMU students, scholarships and other aid make the cost of attending a distinguished university no more, and often less, taxing on their families' financial resources than attending a public university. More than 75 percent of SMU students receive some type of financial aid. For more information, see the Student Financial Aid section or contact the Division of Enrollment Services – Financial Aid.

SMU has a generous program of merit scholarships, grants, loans and part-time jobs to recognize academic achievement and talent in specific fields and to meet financial need.

Meadows Undergraduate Artistic Scholarships

The divisions and centers comprising Meadows School of the Arts annually award scholarships for outstanding achievement in a particular discipline. Candidacy for scholarship considerations may require an audition, portfolio review and/or interview. No student with ability should hesitate to apply to SMU and Meadows because of financial need.

For information regarding Artistic Scholarships, write to the Associate Dean for Student Affairs, Meadows School of the Arts, Southern Methodist University, PO Box 750356, Dallas TX 75275-0356.

To receive primary consideration for all SMU merit scholarships and other aid, students should comply with the following schedule:

By January 15

- b Complete SMU Application for Admission
- b Submit Free Application for Federal Student Aid (FAFSA) at www.fafsa.ed.gov and the CSS Profile at www.collegeboard.com.

By March 1

- b Complete auditions and/or interviews

DEGREE REQUIREMENTS

REQUIREMENTS FOR GRADUATION

Students who are candidates for a degree in Meadows School of the Arts must submit a formal application for graduation to the Undergraduate Academic Services Office by the end of the first week of class for December and May graduation, and by the second day of summer school for August graduation. In addition to the requirements for general education and the major, candidates for graduation must also fulfill the following requirements:

1. Credits:
 - a. A minimum total of 122 term credit hours (125 for art majors, 123 for dance and theatre majors, and 124 to 133 for music majors seeking the Bachelor of Music).
 - b. Each student with a major in Meadows School of the Arts will complete, as a co-curricular requirement, three term credit hours of course work within Meadows but outside the division in which he or she is a major.
2. Grades:
 - a. A minimum cumulative G.P.A. of 2.00 on all attempted SMU work and a minimum 2.00 G.P.A. in the major area of study.
 - b. A maximum of 12 term credit hours with a grade of P at the student's election.
3. Residency:
 - a. A minimum total of 60 term credit hours in residence.
 - b. A maximum of 15 term credit hours of transfer work after matriculation.

A degree from Meadows School of the Arts is awarded by the faculty only in recognition of developed abilities, demonstrated knowledge of the student's particular field of study, and the capacity to express an understanding of the art medium; merely passing all courses is not necessarily sufficient.

Requirements for the Major

Candidates for undergraduate degrees must complete the requirements for an academic major in one of the divisions in Meadows. Students usually declare a major at the end of the first year. Students may major in more than one program within Meadows, or combine a major in Meadows with one in a different school. All course work counting toward a major must be taken for a letter grade, except for those courses that are routinely designated Pass/Fail. To change majors or to declare a second major, students must process appropriate forms in the Undergraduate Academic Services Office.

General Education Requirements

The general education requirements of the University must be met by all undergraduate students, regardless of degree program or major. All courses used to meet general education requirements must be taken for a letter grade. Questions concerning general education requirements may be directed to advisers or the Undergraduate Academic Services Office.

Double Majors

A student who wishes to double major (majors in two departmental areas or in two schools) must satisfy the requirements of each department or school.

Graduation Honors

There are three classes of graduation honors: summa cum laude, magna cum laude, and cum laude. Eligibility for graduation honors will be based upon a student's total academic program. All academic work attempted at other colleges or universities that is equivalent to SMU work will be included in the calculation of the G.P.A. For students who have transferred to SMU, two grade-point averages will be calculated, that for all work attempted, and that for work completed at SMU. Honors will be based on the lower of the two averages.

Commencement Activities Prior to Completion of Degree Requirements

Participation in May graduation activities is allowed to students who are within six hours of completing graduation requirements and are enrolled to complete the required work during the summer following graduation activities. Students who meet the above requirements may petition to participate in commencement activities.

Interdisciplinary Course Offerings (MSA)

1010/1110. Undergraduate Teaching Practicum. Development of teaching and leadership skills through preparing lesson plans, leading discussion groups, assessing course presentations, and coordinating/developing supplemental learning experiences. The corresponding course by the same professor is required as either a prerequisite or corequisite. Students will spend a minimum of one hour per week preparing a lesson plan, one hour in discussion planning with the professor and one hour leading a discussion/listening group.

1315. Mass Media and Technology. An overview of technology as it applies to mass media in America, emphasizing the access of information via the Internet. Topics include the expanding nature of technology, legal aspects and the effects of technology on society.

2051/3351 and 2052/3352. Artists in the World—The Teaching Artist as Catalyst. Introduces artists-in-training to the basic principles, practices and priorities of the artist as teacher in the community. Provides a foundation in any artistic discipline and for the most common kinds of education work that artists undertake, such as working with young people (in schools and other settings), teaching one's art form, curriculum integration and in-depth residencies, creating artistically authentic programs with an education thrust, working in challenging situations, and working with adults in performance, educational and professional settings. This is a two semester sequence. Students must take MSA 2051 or 3351 in order to enroll in either MSA 2052 or 3352. Completion of MSA 2052 or 3352 will make students eligible to apply for a competitive paid Fellowship in the following year. Minimum 3.0 G.P.A. and instructor consent required.

2301. Mass Media and Society. A survey of all print and broadcast media – their backgrounds as well as their current status as industries. Ethics, law, effects of mass media, international communication, advertising and public relations also are treated.

5005, 5101, 5102, 5103, 5104. Workshop: Microcomputers in the Arts.

5105, 5205, 5305. Directed Study.

5301. Microcomputer Applications in the Arts. An in-depth survey of available courseware and utilities programs in the arts, including sound and graphics application. Introduction to structured BASIC programming for arts application.

5302. Developing Computer-Based Instructional Materials for the Arts. A course designed to provide students with skill in hierarchical, structure program design in BASIC computer language, including sound and graphics routines. Explores pedagogical approaches, using the computer, appropriate to the student's arts discipline.

INTERDISCIPLINARY STUDIES IN THE ARTS

Program Director: Dr. Gregory Warden, **Associate Dean for Academic Affairs**

The major in Interdisciplinary Studies provides an opportunity for outstanding students to design interdisciplinary programs that bring together multiple disciplines within the Meadows School of the Arts. Another option is to combine a discipline or disciplines housed in the Meadows School of the Arts with areas of study found elsewhere in the University for the purpose of exploring new forms of artistic expression or communication.

Academically qualified students may explore the possibility of a specialized major with the Program Director. If the proposed plan appears to have merit, the Program Director will suggest faculty advisers who can provide further assistance in designing the program.

PROGRAM DESCRIPTION

Students with at least a 3.0 G.P.A. in the first 24 term hours taken in residence at SMU are eligible to pursue the program.

The program consists of individually designed majors in the arts of at least 36 term hours, with a minimum of at least 24 term hours of advanced courses (3000 level or above). At least two-thirds of the courses that count toward the major must be taken in the Meadows School of the Arts. The program must satisfy the General Education Curriculum (GEC) requirements and all other University and Meadows School graduation requirements. Students are responsible for fulfilling all prerequisites for courses taken.

This program is designed to allow exceptional students an opportunity to design an interdisciplinary program; it is not intended to be a way of avoiding divisional requirements. Certain Meadows courses are open only to majors or by audition. Admission to such courses is at the discretion of the faculty of the division in which such courses are offered.

The degree will be identified as a Bachelor of Arts. The transcript will refer to the major as "Interdisciplinary Studies in the Arts." A note on the transcript will denote the specialization. Students intending to seek admission to graduate schools are encouraged to include at least 30 hours of a coherent set of courses in an identifiable disciplinary field.

ADMINISTRATIVE PROCEDURES

The Meadows Academic Policies Committee shall have the final authority to

approve all specialized programs. Prior to declaring the major, a number of steps must be completed: In order to initiate discussion of a specialized major, a student must submit a preliminary plan of study in the form a brief statement of goals and a course list made in consultation with appropriate faculty advisers.

1. If the Program Director approves the program, the student and the faculty advisers must form a Supervisory Committee with a minimum of three members. The Supervisory Committee will provide advice and guidance to the student. At least two members, including the chair of the committee, shall be resident members of the Meadows School faculty. The chair of the committee will normally be the faculty adviser.
2. The student will submit a formal plan of study to the Supervisory Committee. The plan of study must include a proposal for a special project such as a thesis, exhibition or performance. Satisfactory completion (in the judgment of the Supervisory Committee) of this special project is a requirement. If the committee approves the plan, the plan must then be submitted for approval by the Meadows Academic Policies Committee.
3. Once approved by the Meadows Academic Policies Committee, the plan will be transmitted to the office of the Meadows Associate Dean for Student Affairs. The plan of study normally should be submitted to the Meadows Academic Policies Committee for approval before the completion of 60 total term hours of course work.
4. The chair of the Supervisory Committee and the Program Director will recommend candidates for graduation. The chair of the Supervisory Committee will certify that the required project has been completed to the satisfaction of the Committee. The Supervisory Committee may recommend that the degree be awarded "with distinction" if the grade point average in the courses required for the major exceeds or equals 3.5 and if the project is deemed excellent. The Associate Dean for Student Affairs will be responsible for verifying and certifying graduation requirements.

PROGRAMS OF STUDY IN MEADOWS

ADVERTISING

Temerlin Advertising Institute for Education and Research

Professor Patricia Alvey, **Distinguished Chair and Director**

Professor: Alice Kendrick; **Associate Professors:** Steven Edwards, Carrie La Ferle; **Assistant Professors:** Glenn Griffin, Kartik Pashupati; **Senior Lecturer:** Peter Noble; **Lecturer:** Mark Allen; **Executive-in-Residence:** Bill Ford; **Adjunct Lecturers:** Adrienne Cornelsen, David Hadeler, Sarah Hall, David Henry, Alison Malone, Richard Martin, Chris Owens, Geoffrey Owens, Helayne Wendel.

The Temerlin Advertising Institute was endowed by the Dallas advertising community through a pledge to augment scholarships, faculty salaries and public programs that enrich student learning and practical experience in adver-

tising. Established in 2001, it is the nation's only endowed advertising institute. It enjoys a strong relationship with the industry, as it is situated in a top media and advertising market — the Dallas/Fort Worth Metroplex. DFW is the nation's seventh largest television and media market and the headquarters for major advertising agencies, national and global corporations, large U.S. media corporations, public relations firms and film production companies. This location affords access to professionals of the highest caliber who serve as class clients, guest lecturers, executives-in-residence, adjunct faculty and internship sponsors. Students have access to high-profile internships at national and global agencies as well as client and media corporations. All students admitted to the Institute work toward a B. A. degree in Advertising. In addition, students may wish to focus their elective studies to form a media emphasis or they may apply, after their first term at the Institute, for admission into the creative program.

Admission Requirements

For students wishing to pursue either a Bachelor of Arts in Advertising or a minor in advertising at SMU, admission into the Temerlin Advertising Institute is a two-step process.

STEP ONE: Advertising major or minor candidates must complete the following four required subset courses with a minimum cumulative G.P.A. of 3.0: STAT 1301, ENGL 1301, ENGL 1302 and ADV 2374. (STAT 2301 or STAT 2331 may replace STAT 1301. No other exceptions will be granted.) Students transferring from other universities must have completed equivalent courses and obtained the equivalent cumulative G.P.A. in those courses before they can progress to Step Two.

STEP TWO: Advertising major or minor candidates who have fulfilled Step One also must complete a written on-site application that examines grammar, spelling, punctuation, critical thinking and writing skills. The application process is offered once each fall, spring and summer term prior to the preregistration period. Students who are not admitted during an application process may re-apply during the next application period.

Program of Study

B.A. Degree in Advertising

The Temerlin Advertising Institute offers a general advertising curriculum. The general advertising program prepares students for careers in several areas of the profession, including advertising agencies and corporate and retail advertising departments. Graduates are also prepared for careers in major media outlets such as newspapers, magazines, television, radio and interactive media. If students want to target their studies toward a particular area, they may choose to focus their elective courses to form a media emphasis, or they may apply for admission into the creative program if they wish to become advertising writers or art directors.

SMU advertising students receive a broad-based liberal arts degree with approximately 70 percent of their coursework taken outside the Temerlin Advertising Institute. All SMU advertising students are required to take a core of advertising courses that includes creative, research, advertising literacy,

advertising courses that includes creative, research, advertising literacy, media planning, marketing principles of advertising and advertising campaigns. In addition, advertising majors are required to complete eight hours of foreign language coursework, and all majors must declare and complete a second major or a minor of their choosing. Because SMU is in the center of a dynamic top 10 U.S. advertising market, many students participate in internships for course credit. Thirty-six hours of advertising and communications courses are required for a major in advertising.

	<i>Credit Hours</i>
General Education Curriculum	41
Advertising Course Requirements (beyond General Education):	24
ADV 2374 Survey of Advertising	
ADV 2375 Advertising Ethics	
ADV 3351 Advertising Literacy	
ADV 3362 Marketing Principles of Advertising	
ADV 3376 Advertising Media	
ADV 3385 Introduction to Creativity	
ADV 3393 Advertising Research	
ADV 4399 Advertising Campaigns	
General Advertising Electives (Choose one):	3
ADV 4317 Consumer Behavior	
ADV 4375 Contemporary Advertising Issues	
ADV 4381 Advertising Sales Management	
ADV 5301, 5302, 5303, 5304 Topics in Advertising	
ADV 4125, 4225, 4325. Advertising Internship	
Specialized Advertising Electives (Choose one):	3
ADV 4362 Advertising Account Management	
ADV 4393 Advertising Account Planning	
ADV 4376 Advanced Advertising Media	
Communications Electives:	6
<i>Communications Electives include any Advertising, Journalism, Cinema-Television, or Corporate Communications course.</i>	
<i>For a list of suggested Communications Electives please consult the "TAI Student Handbook," available online: temerlin.smu.edu</i>	
Foreign Language (Two terms of the same language):	8
Statistics (STAT 1301, STAT 2301 or STAT 2331)	3
Meadows Elective:	3
<i>Meadows Electives include any Art, Art History, Dance, Theatre or Music course. For a list of suggested Meadows Electives please consult the "TAI Student Handbook," available online: temerlin.smu.edu</i>	
Second Major or Minor Choice	31-40
Total Hours	122

Media Emphasis

Working in conjunction with their academic advisers, students may opt to focus their studies on the media buying, planning and selling process. In addition to the required advertising courses, students selecting this course of study would also take the following: ADV 4376 (*Advanced Advertising Media*),

ADV 4381 (*Advertising Sales Management*), ADV 5302 (*Topics in Advertising: Interactive Media*) and ADV 4325 (*Advertising Internship in a Media-Related Position*.)

Creative Program

Overview

The Temerlin Advertising Institute's creative program prepares students for careers in art direction or copywriting. Admission to the program is selective, and based upon a faculty panel's evaluation of an application used to assess a student's creative ability and potential. This screening process improves the quality of the experience each student receives in creative courses and helps ensure that the quality of work produced by our students is of the highest caliber and competitive by industry standards.

Creative program applications are collected at the end of every fall, spring and summer term. Most students' first opportunity to apply is near the end of their ADV 3385 (*Introduction to Creativity*) course. Any student who is not admitted to the creative program on a first attempt may reapply during a subsequent application process.

Creative Program Application

The application requires students to submit two samples of creative work as evidence of their capabilities — one that demonstrates facility to solve a specific problem and another that permits a longitudinal examination of creative thinking ability:

Part I: The Big Question – Each term, members of the creative program faculty will confer and propose a question that applicants are challenged to answer. The question is open to broad interpretation and responses may be crafted using words, images or a combination of both. Applicants must observe submission guidelines but are otherwise free to propose the most unique, intelligent and imaginative answers possible.

Part II: Idea Journal – Over the course of a term, all ADV 3385 (*Introduction to Creativity*) students are required to maintain and submit a journal documenting their ideas and insights on a variety of topics, both assigned and voluntary. The journal conforms to certain parameters as a class assignment, but is designed to offer students the opportunity to document and showcase their identities as independent thinkers.

Student Progress

Students admitted to the creative program are required to produce work that meets artistic standards (as evaluated by creative program faculty) in order to continue taking courses in the program, consistent with Meadows School of the Arts policy. This evaluation is made by the creative program faculty, who regularly consult with industry professionals for each creative program student. Students who fail to meet artistic standards will discontinue coursework in the creative program and have the option to continue pursuing their general advertising degree.

Advertising Course Requirements (beyond General Education Curriculum):33

- ADV 2374** Survey of Advertising
- ADV 2375** Advertising Ethics
- ADV 3351** Advertising Literacy
- ADV 3362** Marketing Principles of Advertising
- ADV 3376** Advertising Media
- ADV 3385** Introduction to Creativity
- ADV 3390** Creative Production
- ADV 3393** Advertising Research

Credit Hours

- ADV 3395** Concepting
- ADV 4385** Portfolio
- ADV 4399** Advertising Campaigns

Communications/Meadows (Advertising Creative) Electives (Choose two): 6

- ADV 4354** Copywriting Seminar OR **ADV 4355** Art Direction Seminar
- ADV 4395** Advanced Portfolio

Communications Electives include any Advertising, Journalism, Cinema-Television, or Corporate Communications and Public Affairs courses. Meadows Electives include any Art, Art History, Dance, Theatre or Music course. For a list of suggested Meadows Electives please consult the "TAI Student Handbook," available online: temerlin.smu.edu. Creative program students are strongly encouraged to take either ADV 4354 or 4355 and ADV 4395 to satisfy Communications Elective (3 credits) and Meadows Elective (3 credits).

Foreign Language (Two terms of the same language):	8
Statistics (STAT 1301, STAT 2301 or STAT 2331)	3
Second Major or Minor Choice	31-40

Total Hours	122
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Minor in Advertising

Admission to the minor is contingent upon available space. In addition, for students wishing to pursue a minor in Advertising, admission is a two-part process. See "Admission Requirements" section. The minor in Advertising offers the student a cogent overview of the social, economic, legal and marketing environments in which advertising functions. Courses offered in the minor are designed to satisfy the needs of the consumer of advertising messages, as well as those of a person who might choose advertising as a valuable adjunct to another career choice.

Credit Hours

Advertising Course Requirements

15

- ADV 2374** Survey of Advertising
- ADV 2375** Advertising Ethics
- ADV 3351** Advertising Literacy
- ADV 3385** Introduction to Creativity
- ADV 3362** Marketing Principles of Advertising (or MKTG 3340
Fundamentals of Marketing)

Elective Requirements (Choose three): 9

ANTH 3346 Culture and Diversity in American Life
ARHS 1303 Introduction to Western Art I: Prehistoric through Medieval
ARHS 1304 Introduction to Western Art II: Renaissance through Modern
ENGL 2311 Poetry
ENGL 2314 Doing Things With Poems
HIST 3364 Consumer Culture in the United States, 1700-1990
PSYC 3341 Social Psychology

Total Hours

24

The Courses (ADV)

2374. Survey of Advertising. Introductory course for majors and non-majors; surveys the field of advertising and studies how it fits into society. Topics include history, law, ethics, social dynamics, economic implications, as well as the advertising campaign planning process. The process of advertising is examined from the perspectives of art, business and science. Required for all majors and minors.

2375. Advertising Ethics. Students will gain a broad overview of the issues that relate to the ethical practice of advertising and marketing communications. In-depth exploration of ethical topics will be accomplished through directed reading assignments, class/small group discussions, guest speakers and independent research. Required for all majors and minors. *Prerequisite:* ADV 2374. Restricted to advertising majors and minors.

3351. Advertising Literacy. Students are introduced to the history, current news and developing trends of the advertising industry. This includes exploration into the effects of world-changing events on advertising strategy, historical perspectives from industry leaders and the metamorphosis of advertising agencies including mergers and international conglomerates. *Prerequisites:* ADV 2374. Restricted to advertising majors and minors.

3354. International Advertising. Students examine the principles, trends and impact of advertising in a global environment. Focus will be on the role advertising plays in shaping the social, economic and political forces of various countries. *Prerequisites:* ADV 2374. Restricted to advertising majors.

3362. Marketing Principles of Advertising. Students learn the basic principles of consumer marketing and the role of advertising in the marketing mix. The marketing and advertising strategy and planning processes are emphasized through case studies in which students develop advertising answers to marketing problems and opportunities. *Prerequisite:* ADV 2374. Restricted to advertising majors and minors.

3376. Advertising Media. Principles covered are those essential to media planners, buyers and sellers. Includes media audience analysis, media vehicle comparisons and budgeting. Students master the elements of media plans used in major advertising agencies. *Prerequisite:* ADV 2374. Restricted to advertising majors.

3385. Introduction to Creativity. A survey of the theoretical, practical and ethical issues associated with creative thinking. Examines both individual and organizational strategies for promoting creativity, and the creative thinker's role in shaping the culture. Also highlights the intellectual connections between the scholarship in creativity and advertising industry practice. Students who complete this course may apply for admission to the Temerlin Advertising Institute's creative program. Students must earn a "B" or better in ADV 3385 to be eligible for admission to the creative program. *Prerequisite:* ADV 2374. Restricted to advertising majors and minors

3390. Creative Production. Students learn the basic principles of advertising design and production in tandem with the use of industry-standard hardware and software programs, including the Adobe Creative Suite. *Prerequisites:* ADV 2374 and 3385. Restricted to advertising majors. Departmental consent required.

3393. Advertising Research. The proper role of research in advertising planning is the focus. Students are exposed to a variety of research methods, sources and issues. Pri-

mary and secondary research projects are designed, executed, analyzed and presented by students. *Prerequisite:* ADV 2374. Restricted to advertising majors.

3395. Concepting. A workshop for developing ideation skills and helping students self-identify as art directors or writers. Students acquire techniques and develop personal discipline inherent to the generation of novel, sophisticated creative work based on a solid concept — the distinctive, guiding idea that drives campaign messages. Assignments are evaluated in group critiques and each student completes a final portfolio by term's end. *Prerequisites:* ADV 2374 and 3385. Restricted to advertising majors. Departmental consent required.

4125, 4225, 4325. Advertising Internship. Off-campus opportunity for students to apply principles learned in various advertising courses in a professional setting. Students may be placed for the fall, spring or summer terms. Through weekly, midterm and final reports, the completion of an essay and the satisfactory accomplishment of 50, 100 or 150 hours of work, a student may earn one, two or three academic credit hours respectively. Only three total credit hours may be earned through internships. *Prerequisites:* ADV 2374, 3351, 3362, 3376, 3385, 3393 and junior standing. Restricted to advertising majors. Departmental consent required.

4300. Advertising Seminar. Students experience an intensive study of advertising, usually via a series of seminars at leading advertising agencies, corporations and mass media outlets. Students will have the opportunity to interact with senior advertising executives on a one-to-one basis in order to understand advertising's role in society and as a business and artistic function. *Prerequisites:* ADV 2374, 3351, 3362, 3376, 3385 and 3393. Departmental consent required.

4317. Consumer Behavior. Draws upon the disciplines of psychology, social psychology, sociology, anthropology, economics, marketing and communications to explore the consumer decision-making process. Includes theories of motivation, attitudes, beliefs and learning, with a direct application to advertising. *Prerequisite:* ADV 2374. Restricted to advertising majors.

4354. Copywriting Seminar. An intensive exploration of the writer's craft across a variety of literary genres. Students will gain an understanding of the power of words and the distinctive voices in poetry and prose, with implications for strategic advertising copywriting. *Prerequisites:* ADV 2374, 3385 and 3390. Restricted to advertising majors. Departmental consent required.

4355. Art Direction Seminar. Building upon the prerequisite course in Creative Production (ADV 3390), students apply the fundamentals of advertising layout and design with the goal of preparing material for professional use. This course is intended for creative program majors choosing art direction careers. *Prerequisites:* ADV 2374, 3385 and 3390. Restricted to advertising majors. Departmental consent required.

4362. Advertising Account Management. This course will enable students to understand what makes advertising agency account managers, or account executives, successful. The personal and performance qualities that characterize successful account managers will be examined. Course work will include assigned reading, problem-solving exercises, lectures and discussions of advertising industry situations. *Prerequisites:* ADV 2374 and 3362. Restricted to advertising majors.

4375. Contemporary Advertising Issues. Focuses on topics that are important to present-day advertising. Emphasis might vary from term to term in topic areas including, but not limited to, creative, media, research, management, international and mass communications theory and culture. *Prerequisites:* ADV 2374, 3351, 3376, 3393 and senior standing. Restricted to advertising majors.

4376. Advanced Advertising Media. Intends to advance concepts learned in Advertising Media (ADV 3376) and apply them to more sophisticated applications of media planning and buying. Particular emphasis will be placed upon the role of technology in media decision-making. Students will plan, execute and verify media purchases, to maxi-

mize the client's dollars and to justify allocations across and within media choices. *Prerequisites:* ADV 2374 and 3376. Restricted to advertising majors.

4381. Advertising Sales Management. Focuses on the role of the media in the advertising mix and those who sell media time and space. Examines the establishment of rate cards, sales forecasting, budgeting, building client lists, reading circulation and listener-ship/viewership data properly, understanding discounting procedures and perfecting negotiations and presentation skills. *Prerequisites:* ADV 2374, 3351, 3362, 3376, 3393 and senior standing. Restricted to advertising majors.

4385. Portfolio. A workshop course devoted to the continued development and professional-level execution of an advertising portfolio reflecting mastery of strategic and conceptual thinking. Work is prepared and evaluated to satisfy highest industry standards for placement. Portfolios are reviewed by a jury of creative professionals at an end-of-term critique. *Prerequisites:* ADV 2374, 3385, 3390 and 3395. Restricted to advertising majors. Departmental consent required.

4393. Advertising Account Planning. The research-based and consumer-centered approach to strategic development of advertising known as account planning is the focus of this course. Students will review both qualitative and quantitative research practices used in advertising, as well as the planning techniques used by account planners. Course activities will include the creation of strategic briefs, primary research among consumers, and reports that contribute to both creative and media elements of an advertising campaign. *Prerequisites:* ADV 2374 and ADV 3393. Restricted to advertising majors.

4395. Advanced Portfolio. Building on the Portfolio (ADV 4385) course, students continue development of an advertising portfolio. Special focus is given to the development of nontraditional and alternative media strategies. Students are also required to develop self-promotional materials to complement the portfolio. Portfolios are reviewed by a jury of creative professionals at an end-of-term critique. *Prerequisites:* ADV 2374, 3385, 3390, 3395 and 4385. Restricted to advertising majors. Departmental consent required.

4399. Advertising Campaigns. Integrating the major advertising principles, students develop and present an advertising campaign, including research, strategy, creative execution, a media plan and presentation of the campaign to a client. *Prerequisites:* ADV 2374, 3351, 3362, 3376, 3385 and 3393. Additional prerequisites for creative program students: ADV 3390 and ADV 3395. Restricted to advertising majors.

5110, 5210, 5310. Directed Study. This is an independent study under the direction and supervision of a full-time faculty member. A directed study is a close collaboration between the professor and an advanced student who conducts a rigorous project that goes beyond the experience available in course offerings. The student must secure written permission from the instructor and return a completed Directed Studies Approval Form to the Temerlin Advertising Institute office before the start of the term. *Prerequisites:* Junior standing. Instructor and departmental consent required.

5113. Professional Development. This course is designed to guide graduating seniors from the classroom to the work force and will encompass all aspects of the job search. It will include resume and cover letter development, interview practice, networking through a "sphere of influence" and sourcing positions in the field of advertising. *Prerequisites:* Junior Standing. Restricted to advertising majors.

5301, 5302, 5303, 5304. Topics in Advertising. Focuses on special topics in advertising. Examples might be an off-campus class to study the New York, Chicago, or international advertising communities, or an on-campus seminar studying current advertising issues, or a comparison of U.S. advertising with that of other countries. *Prerequisites:* ADV 2374. Restricted to advertising majors.

ART

Professor James Sullivan, **Division Chair**

Professors: Barnaby Fitzgerald, Bill Komodore, Laurence Scholder. Mary Vernon;

Associate Professors: Peter Beasecker, Debora Hunter, Philip Van Keuren (**Direc-**

tor, Pollock Gallery); Assistant Professors: Rebecca Carter, Noah Simblist; **Senior Lecturer:** Charles DeBus.

The Division of Art offers professional education leading to the B.F.A. and M.F.A. degrees within a traditional liberal arts environment. Knowledge, awareness and performance are at the center of this education. The commitment to producing liberally educated, well-rounded graduates with a strong professional focus is at the heart of the mission of the Meadows School. Believing in a rich mixture of tradition and innovation, the Art Division seeks to develop in students analytical abilities and a critical consciousness of the nature and power of images.

This mixture will help students to produce significant works of art that speak to contemporary issues. At the core of the mixture is substantial studio instruction in the fundamental areas of the making of art, supported by critical and historical studies. Drawing serves as the basic visual language binding the various disciplines. By encouraging technical and imaginative abilities that are both unmechanical and enthusiastic, the Art Division hopes to engender an artistic and intellectual flexibility that will serve a range of professional goals in the visual arts. Such flexibility of thought is essential for artists to meet the challenges of the rapidly changing visual and cultural life.

When students graduate, they will be prepared to continue as professional artists, to be capable of visually testing differences, questioning distinctions, and presenting conclusions. Their work should reflect an individual voice. In the spirit of their liberal education, they should continue earnestly and sincerely to question, appreciate and respect the creative endeavors of all people. For more information, visit www.meadows.smu.edu/art.

Instructional Facilities

The tree-lined SMU campus offers a beautiful setting for learning. Unlike many universities in major cities, SMU guarantees housing for all four years of undergraduate study and also provides graduate accommodations if desired. Facilities for the study of art include well-lighted studios, individual workspaces and excellent equipment to support all media taught, as well as individual experimentation. Art students work as broadly and as experimentally as they wish within an environment of open artistic exchange, surrounded by artists in dance, music, theatre, film and communications. Additional facilities include the Pollock Gallery – the art exhibition space of the Division of Art located in Hughes-Trigg Student Center. The Pollock Gallery provides students, faculty, staff and the surrounding community with opportunities to experience a wide and thought-provoking array of exhibitions representing diverse artists, time periods and cultures, as well as the B.F.A. and M.F.A. qualifying exhibitions. The Meadows School and SMU offer excellent library and technological resources, including the Hamon Arts Library (incorporating the Meadows computer center) as well as specific facilities within the Division of Art.

The division runs an extensive visiting artist program, ranging from visiting artist lectures and workshops to the Meadows Distinguished Visiting Professor, an internationally significant artist brought to campus for monthly

visits during one term of the year to teach and to conduct graduate critiques.

The division also runs two special programs of importance to graduate and undergraduate students: the New York Colloquium (a winter interterm program in New York) and SMU-in-Taos, a summer program at SMU's campus near Taos, New Mexico. During the New York Colloquium, students visit a range of museums, galleries, artists' studios and other venues appropriate to the development of their critical and professional studies in art. The program at Fort Burgwin, Taos, offers course work as well as independent and directed study each summer, including *plein-air* painting, an interdisciplinary studio workshop, sculpture, photography and printmaking.

The Dallas-Fort Worth area contains a large artistic community with rich and varied resources. These include six internationally significant museums (The Dallas Museum of Art, SMU's newly designed Meadows Museum, and the Nasher Sculpture Center in Dallas, and the Kimbell Museum, Museum of Modern Art, and Amon Carter Museum in Fort Worth), contemporary exhibition spaces (The MAC, Arlington Museum), and a strong commercial gallery system.

Admission and Financial Aid

Admission to the study of art on the undergraduate level is open to all SMU students. No portfolio is required for admission; however, talented students wishing to pursue the B.F.A. are encouraged to submit work for review and all students seeking artistic scholarships based on merit as they enter the University must submit a portfolio for faculty review. A portfolio guide is available through the Division of Art office to help the student in preparing the portfolio of slides. In addition, each fall the Division of Art hosts a portfolio day for prospective students when faculty critique and discuss student work in an open review. Financial aid for entering and continuing students is based upon accomplishment and progress as judged in portfolio reviews each year, as well as upon a clear understanding of need. The deadline for incoming portfolios to be reviewed for scholarship is March 1st of every year for scholarships beginning in the fall term.

Programs of Study

The B.F.A. Degree in Art

The Division of Art offers one undergraduate degree, the Bachelor of Fine Arts. This degree prepares students to become professional artists, engage in professions in the arts, or to continue studies at the graduate level. The division offers instruction in six broad areas of media and conceptual approach – painting, drawing, sculpture, printmaking, photography and ceramics. Within this structure, the faculty encourages cross-disciplinary interaction, which the curriculum is designed to facilitate. First-year students intending to major in art should take *Foundations: Drawing and Design* in the fall and spring terms as the beginning of their B.F.A. studies. To earn a B.F.A. (125 hours), the student is required to take a minimum of 66 hours in the Division of Art and 9-12 hours in the Division of Art History. **All majors in art are strongly encouraged to enroll in May term or summer term study of art in**

Fort Burgwin, New Mexico, in the May or summer after declaring the major.

Because the total number of hours required to satisfy the General Education requirements and the major requirements exceeds 122 term hours, students in the B.F.A. degree program of the Division of Art are exempt from three (3) hours of Perspectives and an additional three (3) hours taken from either Perspectives or Cultural Formations.

General Education Curriculum (GEC) **Credit Hours**
35

The B.F.A. Curriculum is divided into eight stages or areas:

1. Foundations: Drawing/Design (for art majors only) 12
ASAG 1300, 1304, and 1601

Six hours each term, team-taught.

Will meet two days for periods of five hours each
(10 classroom hours per week).

2. Departmental Distribution 12

One course in four of the following areas; usually taken at the 2300 level:

Ceramics	Photography (1300 level)
Drawing	Printmaking
Painting	Sculpture

Foundations: Drawing/Design cannot fulfill this requirement.

Courses in major concentration (see below) cannot be counted to fulfill this requirement..

3. Major Concentration, including Junior Independent Tutorial 24

Each student must take:

- a. Eighteen hours in a single area of specialization (ceramics, drawing, painting, photography, printmaking or sculpture). Three of these hours are the Junior Independent Tutorial, taken in the spring of the third year. (Courses taken in Taos may be counted toward the major concentration or Junior Independent Tutorial.)
- b. Six hours in a related area. Any of the six areas may be deemed "related" to any other, but the student must show a clear understanding of the way they are related for his or her work.

4. Critical Issues ASAG 3381 3

To be taken by the junior year. This may be the course titled "Critical Issues" taught in the Division of Art or a course designated from another department (for example, philosophy) as a critical-issues course, with the consent of the undergraduate adviser.

5. Senior Seminar **Credit Hours**
3

6. Art History and New York Colloquium (the latter is an option, 12 not a requirement)

Six hours must be art history survey.

Three hours must be in 20th-century art history.

Three hours may be in any art history (or in New York Colloquium).

7. Electives in art	12
8. B.F.A. Qualifying Exhibition (required)	0
9. Meadows Elective/Corequirement	3
10. Electives	9
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Total Hours	125

Minor in Art

The minor in art is planned to give a coherent structure to a brief but serious investigation of studio art. Through a series of courses that become increasingly more challenging as the student progresses, the student should grow to understand the formation of visual imagery and gain confidence in studio practice. The minor is designed for students who wish to incorporate more intensive visual studio training with studies in other areas, such as art history or advertising, or for those who want a basic directed studio curriculum.

Requirement: 18 term hours, distributed as follows:

	<i>Credit Hours</i>
Foundation requirement	6
ASDR 1300 ASSC 1300, or ASCE 1300	
Introductory Art	9
(any three of the following at the 1300 or 2300 level, leading toward work at the 3300 level in at least one discipline)	
ASCE 2300 Ceramics	
ASPT 1300 or 2300 Introduction to Studio - Painting I or II	
ASDR 2300 Introduction to Studio - Drawing II	
ASPH 1300 Basics of Photography	
ASSC 2300 Introduction to Studio - Sculpture II	
ASPR 2320 or 2321 Printmaking – Beginning and Printmaking - Beginning Woodcut	
One additional course at the 3300 level	3
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Total Hours	18

Minor in Photography

Students completing 18 hours in photographic study can expect to obtain a sophisticated understanding of the photographically derived image and the technical and creative skills necessary for its production. Classes offered by the Photography Program, which is part of the Division of Art, integrate the technical aspects of the medium with the aesthetic concerns traditional to the fine arts. Through the use of photography, students learn to think and express themselves visually. A minor in photography prepares one for further work in fine arts or commercial photography and other areas where knowledge of photography is helpful. Beyond vocational applications, a minor in photography creates a firm foundation for future creative development.

Requirement: 18 term hours, distributed as follows:

Credit Hours

ASPH 1300 Basics of Photography	3
	Credit Hours
ASPH 2300 Black and White Photography	3
History of Art or approved substitution	3
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Total foundation study	9
Plus – Three additional courses at the 3000 level or higher	9
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Total Hours	18

The Courses

Studio courses generally require six hours per week of in-class exercises and critical discussion. Students should enroll with a firm commitment to regular attendance and should expect out-of-class work of four to six hours per week, per class, in addition to in-class studio exercises.

Departmental Codes and Course Fees

In enrolling for courses in art, it is necessary that the course number be preceded by the appropriate subject code prefix in order for credit to be properly recorded. *All courses at the 2300 level and above have prerequisite course work required. All directed studies courses require instructor approval before enrollment.*

All courses in studio art, except lectures and seminars, have a laboratory fee of \$30 per term hour, which will be collected by the cashier at the time of enrollment.

Art, General Studio (ASAG)

Foundations: Drawing and Design. A year-long foundations course for art majors or for those students seeking an intensive study of the visual arts, which explores contemporary assumptions and practice regarding the making of art while significantly addressing its tradition. The foundations curriculum consists of a two-term sequence of courses, designed to give the student intensive training in studio practice, exposure to a range of materials and methods, and an introduction to the theoretical issues of contemporary studio art. Students develop technical knowledge, adding to it discipline and the development of the intellectual, theorizing and risk-taking aspects of art that must grow at an equal pace with studio practice in order to sustain their lives as artists. (Note: This is a two-term sequence. Students must enroll for fall term first (ASAG 1300, 1304), followed by ASAG 1601 (spring term). Ten class hours per week. *Prerequisite:* Art major or pre-major, or departmental permission. Each term is team-taught.

Fall

ASAG 1300 Foundations I: Introduction to Studio Practice

ASAG 1304 Foundations II: Introduction to Materials

Note: *Must* be taken concurrently; no exceptions

Spring

ASAG 1601 Foundations III

1300. Foundations I: Introduction to Studio Practice (Fall term only). For students seeking an intensive study of the visual arts, course focuses on the development of ideas within the studio, primarily through drawing, but also through parallel investigation of three-dimensional work and other media. Students will take an idea through a sequence of

specific assignments and projects, examine it in multiple ways to articulate its connections and visual and imaginative possibilities, as well as question the assumptions under which artists work. By moving from drawing to sculpture to design in two or three dimensions, and exploring diverse media, the students and faculty stretch their conceptions of art's way of working. Note: *Must* be taken concurrently with ASAG 1304.

1304. Foundations II: Introduction to Materials. This class is an integral part of the first term foundations course for art majors or for those students seeking an intensive study of the visual arts. Topics include theory and design in two and three dimensions. *Prerequisite:* Must be taken concurrently with ASAG 1300.

1601. Foundations III: (Spring term). The continuation of Foundations I and II, with more intensive investigation of the specific media and ideas in studio art, usually through investigations of two to three areas of practice under individual faculty members. Topics will vary term to term. Ten class hours/week. *Prerequisites:* ASAG 1300 and 1304.

3310, 4310, 5310. Studio Workshop. An intensive investigation in arts by students engaged in independent work, group collaboration and analytical study. *Prerequisite:* 15 credit hours in art or permission of instructor.

3315, 4315, 5315. Special Studies in Art. Intermediate to advanced research in a variety of areas that support studio practice including contemporary developments in criticism and theory, approaches to media, social and community context, or specific geographic or cultural contexts, through focused seminar discussion, research and studio projects, or travel-based study. May be counted towards the Junior Seminar with approval of adviser and chair.

3340, 4340. Gallery Practicum. A hands-on course in gallery techniques: installation, lighting, publications, gallery management, protection and transportation of works of art, working with curators, planning, design, and analysis of the aesthetics of exhibitions. Taught in a professional gallery setting, the course requires an extensive commitment of time. *Prerequisite:* 15 credit hours in art or permission of instructor.

3350, 5350. Art Colloquium – New York. Involves intensive analysis, discussion and writing concerning works of art in museum collections and exhibitions, and in alternative exhibition spaces. The class topics studied will deal with the philosophical as well as the practical in order to define and understand the nature of the art our society produces and values. The colloquium meets in New York City for a period of two weeks in January. *Prerequisite:* Permission of instructor.

3381. Critical Issues. (Spring term only.) A seminar for art majors in their second or third year of studies, this course will investigate topics in current critical theory in the arts as well as the historical context for their development. Readings will be taken from modern philosophy and literary criticism as well as art theory and criticism.

4300, 4301. Senior Seminar in Art. (Fall term only.) For senior art majors. Discussion and exploration of issues facing artists today, including theoretical discussion as well as topics relevant to professional life in the visual arts.

5001. B.F.A. Qualifying Exhibition. Participation in the qualifying exhibition is required for all candidates for the degree of B.F.A. in Art.

5100, 5200, 5300. Internship in Studio Art. Students work in internship positions that relate to their individual studio studies, including internships in teaching, in galleries, as assistants to established artists, or with businesses in the arts. Students should sign up for one, two or three credit hours for internships of five, 10 or 15 hours/week respectively, under the supervision of individual faculty who will supervise and evaluate the internship. Must be approved by departmental chair.

Ceramics (ASCE)

1300: Ceramics—Introduction to Studio I. This studio class is intended for non-majors and is an introduction to and exploration of the expressive characteristics of clay through the investigation of various hand-building and wheel-thrown techniques. Tradi-

tional as well as contemporary approaches to the material will be explored. Studio work will involve claymaking, kiln loading, and other processes associated with both low-fire (earthenware) and high-fire (stoneware) ceramics. Emphasis will be on the analysis of sculptural and utilitarian form, control of the material, and critical judgment. *No prerequisite.*

2300: Ceramics—Introduction to Studio II. An introduction to and exploration of the expressive characteristics of clay through the investigation of various hand-building and wheel-thrown techniques. Traditional as well as contemporary approaches to the material will be explored. Studio work will involve claymaking, kiln loading and other processes associated with both low-fire (earthenware) and high-fire (stoneware) ceramics. Emphasis will be on the analysis of sculptural and utilitarian form, control of the material, and critical judgment. *Prerequisite:* ASAG 1300 and 1304, or ASSC 1300, or permission from instructor.

3300, 3301: Intermediate Ceramics. A more involved investigation of hand-building/wheel-thrown processes with emphasis on researching form and surface relationships. Studio work involves developing claybodies, surfaces (slips, engobes and glazes), and further study of kiln operation and design. *Prerequisites:* ASCE 2300, or permission from instructor.

4300, 4301: Advanced Ceramics. Advanced problems in sculptural and wheel-thrown forms. Emphasis on developing a personal point of view regarding material, process and idea. *Prerequisites:* ASCE 3300 or 3301, or permission from instructor.

4315. Junior Independent Tutorial in Ceramics. Directed individual investigation leading to a sustained body of work within the student's concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5100, 5101, 5200, 5201, 5302, 5303. Directed Studies in Ceramics.

5300, 5301. Ceramics. Advanced problems for the senior student. *Prerequisite:* ASCE 4300 or 4301, or permission of instructor.

5310. Special Topics in Ceramics. To be announced by the Division of Art. *Prerequisites:* ASCE 2300 or 3300; or permission of instructor.

Design (ASDS)

1300. Introduction to Studio – Design I. Lectures and studio exercises familiarize the novice with the functions of visual elements, methods of idea-generation, the selection and organization of elements into two-dimensional compositions. *No prerequisite.*

2302. Collage and Assemblage. Beginning level. A course combining lecture and studio work, studying the influence of culture on perception, using the media of collage and assemblage, which are inexpensive and require no professional skills or techniques, and leave the student free to concentrate on understanding.

3302. Collage and Assemblage. Intermediate level. *Prerequisite:* ASDS 2302 or permission of instructor.

4302. Collage and Assemblage. Advanced level. *Prerequisite:* ASDS 3302 or permission of instructor.

3310, 4310, 5310. Digital Design Workshop. An intensive introduction to work in digital media designed to enable the integration of digital media into studio practice. Topics include two-dimensional imaging (Photoshop and related programs), three-dimensional imaging, including CAD applications, video, animation and installation. Students are encouraged to engage in independent work, group collaboration and analytical study. Depending on topic and work completed, study may be applied to different media concentrations. *Prerequisite:* 15 credit hours in art, or permission of instructor.

5300. Design and the Visual Image. A reexamination of fundamental design assumptions and principles. Intended for advanced art majors and prospective design instructors,

the course combines studio work in picture construction with reading in the classic literature of design and visual perception. *Prerequisite:* 24 credit hours in art or permission of instructor.

5301. Color and the Visual Image. Color systems of Munsell, Itten, Photoshop palettes, etc., studied in the light of contemporary neurobiology and the capabilities of media. Klee, Albers, Matisse and other masters of color focus the course on color modes. *Prerequisite:* 24 credit hours in art or permission of instructor.

5302. Directed Studies in Design.

Drawing (ASDR)

1300. Introduction to Studio – Drawing. Drawing from life and from objects, as well as interior and landscape, and supplemented by outside assignments. Emphasis on perspective, materials, analysis of form, and critical judgment. No prerequisite.

1310. Drawing in Italy. This course will introduce students to plein-air drawing of the ruins, monuments, and landscape of central Italy, with an emphasis on development of light, space, and compositional structure. No prerequisite. Offered at SMU in Rome.

1320 Material Studies. An interdisciplinary course which considers materials, both constructed and found. Recording time in movement and repetitive action, following the processes of making, in textiles and in digital work, as well as formats of installation and documentation. Open to non-majors. No prerequisite. Students who have taken ASSC 1320 may not enroll for ASDR 1320.

2140, 2340. Scientific Field Illustration. Intended primarily for scientists as a supplemental lab; students are to be concurrently registered in an appropriate science course, such as field biology or archaeology. Basic drawing skills, such as the use of line, proportion, light and shade, and the rendering of volume, will be taught. An introduction to watercolor and its usefulness in the field will also be covered. *Prerequisite:* 2140, concurrent enrollment with field science course 2340, ASDR 1300, or equivalent.

2300. Introduction to Studio – Drawing II. For students who have completed Foundations or Beginning Drawing. Intensive study of the materials and processes of drawing and qualities of vision, using subjects from life as well as abstract composition. Extensive studio and outside work required. *Prerequisite:* ASDR 1300 or Foundations, or permission of instructor.

2320 Material Studies. An interdisciplinary course which considers materials, both constructed and found. Recording time in movement and repetitive action, following the processes of making, in textiles and in digital work, as well as formats of installation and documentation. Open to non-majors. *Prerequisite:* Foundations, ASDR 1320, ASSC 1320, or permission of instructor. Students who have taken ASSC 2320 may not enroll for ASDR 2320.

3300, 3301. Drawing, Intermediate Level. Designed to increase the student's command of technique and to further develop vision and individual approaches to drawing. *Prerequisite:* ASDR 2300.

4300, 4301. Drawing. Advanced drawing with emphasis on independent development. *Prerequisite:* ASDR 3300, 3301, or permission of instructor.

4315. Junior Independent Tutorial in Drawing. Directed individual investigation leading to a sustained body of work within the student's concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5300, 5301. Drawing, Advanced. *Prerequisites:* ASDR 4300 or 4301 or permission of instructor.

5100, 5101, 5200, 5201, 5302, 5303. Directed Studies in Drawing.

Painting (ASPT)

1300. Introduction to Studio – Painting. A first course in painting from life, objects and landscape, supplemented by outside assignments. Emphasis is on materials, color relationships and critical judgment. *No prerequisite.*

2300. Introduction to Studio – Painting II. For students completing Foundations or painting and drawing at the 1300 level, includes instruction in the use of materials and approaches to representation, with special emphasis on color and composition. *Prerequisite:* ASPT 1300, or Foundations.

3300, 3301. Intermediate Painting. Intermediate level course designed to increase the student's command of technique and to develop vision and sense of style. *Prerequisite:* ASPT 2300.

3305. Studio Workshop: Color and Meaning. An advanced painting workshop for students who have completed ASPT 1300 and 2300, and who are ready to work on problems with some independence. Theoretical works on color will be discussed and employed, but the central concern will be the development of color relationships within each student's work. *Prerequisite:* ASPT 2300.

3306. Painting in Taos. An intermediate study of painting in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisites:* ASPT 2300, or permission of instructor.

3309. Painting in Rome. A study of painting among the monuments and landscapes of central Italy. Offered at SMU-in-Rome. *Prerequisite:* ASPT 2300 or permission of instructor.

4300, 4301. Painting. Continuation of ASPT 3300, 3301, with emphasis on individual development. *Prerequisites:* ASPT 3300 or 3301.

4306. Painting in Taos. An advanced study of painting in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisites:* ASPT 3300 or 3301 or 3306, or permission of instructor.

4315. Junior Independent Tutorial in Painting. Directed individual investigation leading to a sustained body of work within the student's concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5100, 5101, 5102, 5200, 5201, 5302, 5303, 5304. Directed Studies in Painting.

5300, 5301. Advanced Painting. Advanced problems for the senior student. *Prerequisite:* ASPT 4300 or 4301, or permission of instructor.

5305. Studio Workshop: Color and Meaning. An advanced painting workshop for students who have completed ASPT 1300 and ASPT 2300, and who are ready to work on problems with some independence. Theoretical works on color will be discussed and employed, but the central concern of our work will be the development of color relationships within each student's work.

5306. Painting in Taos. An advanced study of painting in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisites:* ASPT 4300 or 4301 or permission of instructor.

Photography (ASPH)

1300. Basics of Photography. Thorough discussion of equipment and operation of 35mm photography. Elements of visual design (such as space, composition, color and light) explored through the medium of photography. Emphasis placed upon the creative use of aperture, shutter speed, framing techniques and exposure selection. No darkroom. Written examination and 35mm slide assignments. *No prerequisite.*

1306. Photography in Taos. A study of photography in the physical and cultural environment of the Fort Burgwin Research Center.

2300. Black-and-White Photography. Exploration of the creative possibilities of photographic materials in the darkroom. Special attention given to black and white film

development, and negative enlarging as well as a variety of manipulative techniques. *Prerequisite:* ASPH 1300 or permission of instructor.

2306. Photography in Taos. A study of photography in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisite:* ASPH 1300 or 1306, or permission of instructor.

3300. Black-and-White Photography II. Continuation of ASPH 2300, with emphasis on the zone system, film manipulations, and printing and matting techniques. Includes possibility of working in medium to large formats. *Prerequisite:* ASPH 2300, or permission of instructor.

3302, 4303. Color Photography I and II. Exploration of the aesthetic issues and technical concerns of color photography. Color print processing from negatives and transparencies, presentation and conservation techniques, and review of the history of color photography. May be taken as a first darkroom course. *Prerequisite:* ASPH 1300 (for 3302) ASPH 3302 (for 4303), or permission of instructor.

3306. Photography in Taos. An intermediate study of photography in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisite:* ASPH 2300 or 2306, or permission of instructor.

3310. Large-Format Photography. Students will be introduced to the special capacities of large format black-and-white photography. Film exposure and development based upon the theory and practice of the zone system. Further refinement of printmaking techniques, including contrast control through the use of bifilters, toning for archival quality, and the creation of an edition of silver gelatin prints. *Prerequisites:* ASPH 2300 or permission of instructor.

4300, 4301, 5300, 5301. Special Topics in Photography. Alternative processes, computer-based photography, and other topics to be announced. *Prerequisites:* ASPH 2300 or 3302, or permission of instructor (for 4300/4301); ASPH 3300 or 4303 or permission of instructor (for 5300/5301).

4306, 5306. Photography in Taos. An advanced study of photography in the physical and cultural environment of the Fort Burgwin Research Center. *Prerequisites:* ASPH 3300 or 3306 (for 4306) ASPH 4300, 4301 or 4306 (for 5306), or permission of instructor.

4315, Junior Independent Tutorial in Photography. Directed individual investigation leading to a sustained body of work within the student's concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5100, 5101, 5200, 5201, 5302, 5303, 5304. Directed Studies in Photography.

Printmaking (ASPR)

2320. Printmaking – Beginning. Introduction to the process of intaglio printing, etching, engraving, dry point and aquatint. *Prerequisite:* ASDR 1300 or Foundations.

2321. Printmaking – Beginning Woodcut. Introduction to the process of relief printing. *Prerequisite:* ASDR 1300 or Foundations.

3300, 3301, 4300, 4301, 5300, 5301. Printmaking Workshop. Further exploration of the possibilities of intaglio printing at the intermediate and advanced level. The ambience of the workshop, with no rigid structure, encourages the freedom to experiment in all directions (emotionally and intellectually, as well as technically) and to seek inspiration from any source whatsoever. The self-discipline necessary for coherent results, and mastery of the craft of printing, are the goals of the workshop. *Prerequisite:* ASPR 2320 (for 3300 or 3301), ASPR 3300 or 3301 (for 4300 or 4301), ASPR 4300 or 4301 (for 5300 or 5301), or permission of instructor.

4315, Junior Independent Tutorial in Printmaking. Directed individual investigation leading to a sustained body of work within the student's concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5100, 5101, 5200, 5201, 5302, 5303. Directed Studies in Printmaking. *Prerequisite:* Permission of instructor.

Sculpture (ASSC)

1300. Introduction to Studio Sculpture I. An introduction to working in three dimensions in a variety of media, including clay, wood, and metal. Historical as well as contemporary approaches to sculpture will be examined to achieve an understanding of how to manipulate form, space, and expressive content in three dimensions. No prerequisite.

1320 Material Studies. An interdisciplinary course which considers materials, both constructed and found. Recording time in movement and repetitive action, following the processes of making, in textiles and in digital work, as well as formats of installation and documentation. Open to non-majors. No prerequisite. Students who have taken ASDR 1320 may not enroll for ASSC 1320.

2300. Introduction to Studio Sculpture II. Intended for students who have some prior experience in sculpture or Foundations, this is an intensive introduction to the language of sculpture in a number of media. Emphasis is on sustained investigation using a number of perspectives, and on gaining confidence with and understanding of the tools, materials, and concepts of sculpture. Critical discussion, analysis of contemporary and historical work, and concentrated studio practice will be emphasized. *Prerequisite:* ASSC 1300, Foundations, or ASDS 1300.

2320 Material Studies. An interdisciplinary course which considers materials, both constructed and found. Recording time in movement and repetitive action, following the processes of making, in textiles and in digital work, as well as formats of installation and documentation. Open to non-majors. *Prerequisites:* Foundations, ASDR 1320, ASSC 1320, or permission of instructor. Students who have taken ASDR 2320 may not enroll for ASSC 2320.

3300, 3301. Sculpture – Intermediate. Intermediate problems in sculpture, including analysis of form, theory, and technical processes. Emphasis on development of individual investigation and conceptual understanding of sculptural issues. *Prerequisite:* ASSC 2300 or permission of instructor.

3310, 4310, 5310. Material and Form. An intensive investigation of material processes (specifically construction, metal casting, and subtractive techniques) and the ramifications of material choice and method in the formal and stylistic development of sculptural work. Both the traditional development and contemporary practice of each process will be explored. This is an intensive class, with a requirement of six hours of studio work outside scheduled meeting times. *Prerequisite:* ASSC 2300 (for 3310), ASSC 3300 or 3301 (for 4310), or ASSC 4300 or 4301 (for 5310), or permission of instructor.

3320, 4320, 5320. Body and Object. The body has been the preeminent subject in the history of sculpture, represented in all traditions as a focus of belief and identity. Recent sculpture has seen a resurgence of interest in work both of and about the body, asserting its centrality while at the same time attacking many of the social and psychological assumptions attendant to its history. This course will take a dual approach to the sculptural study of the body and figure: in class, work will focus on careful observation and direct study of the model, working up to life-sized study in clay and plaster. Out of class, students will consider, through independent projects, the question of the body as a metaphoric subject, creating work “about” the figure without literal reference to it. The aim is to try to address the body both through its objective structure and its social and psychological meanings, and to discover how these issues are conveyed through sculpture. This is an intensive class, with a requirement of six hours of studio work outside scheduled meeting times. *Prerequisites:* ASSC 2300 (for 3320), ASSC 3300 or 3301 (for 4320), ASSC 4300 or 4301 (for 5320), or permission of instructor.

3340, 4340, 5340. Shelter and Place. An intensive investigation into architectural forms and natural environments in order to question what it is to dwell, how we achieve a

sense of place, and how natural forms and events can influence and be influenced by structures. Collaborative work, drawing, analytical study of sites and environments, and construction. Paradigm examples are drawn from historical and contemporary building and sculpture. This is an intensive class, with a requirement of six hours of studio work outside scheduled meeting times. *Prerequisite:* ASSC 2300 (for 3340), ASSC 3300 or 3301 (for 4340), ASSC 4300 or 4301 (for 5340), or permission of instructor.

4300, 4301, 5300, 5301. Sculpture – Advanced. Advanced problems in sculpture, including analysis of form, theory, and technical processes. *Prerequisite:* ASSC 3300 or 3301 (for 4300 or 4301), ASSC 4300 or 4301 (for 5300 or 5301), or permission of instructor.

4315. Junior Independent Tutorial in Sculpture. Directed individual investigation leading to a sustained body of work within the student’s concentration. Taken during the spring term and leading to the Junior Exhibitions. May not be repeated unless due to a failing grade. *Prerequisite:* Junior standing, with permission of instructor (tutor).

5100, 5101, 5200, 5201, 5302, 5303. Directed Studies in Sculpture.

ART HISTORY

Associate Professor Janis Bergman-Carton, **Division Chair**

University Distinguished Professor: Annemarie Weyl Carr; **Professors:** Karl Kilinski II, P. Gregory Warden; **Associate Professors:** **Randall C. Griffin**, Adam Herring, Pamela Patton; **Assistant Professors:** Lisa Pon, Charissa N. Terranova. Adjunct Professor: Mark Roglán

Program of Study

B.A. in Art History

The B.A. degree in Art History places the history of art within the wider context of such humanistic disciplines as history, religion, aesthetics, politics, language and civilization generally. Through the study and analysis of art, architecture and objects of virtue, the program is intended to extend the student’s visual and cultural awareness. Because of the richness of its intellectual background, the B.A. in Art History provides one of the most diverse and stimulating of the liberal arts degrees. Students completing this course of study are prepared for advanced training either in the numerous related professions or within the field of art history.

NOTE: Only courses passed with a grade of C or better will count toward the major in art history. Courses passed with a grade of C- or less may count toward other, elective requirements in a student’s degree plan.

Requirements for B.A. in Art History

	<i>Credit Hours</i>
General Education Curriculum	41
Division of Art History	
Introduction to Art History (ARHS 1303, 1304, 1308)	6
The only 1000-level classes that count toward the art history major are 1303, 1304 and 1308. Two of these are required and should be taken during the first or sophomore year.	
Upper-Level Required Art History Courses	27
This requirement must be satisfied at the 3000-level or higher. These hours are distributed as follows:	
1. One course (3 hours) in each of the following five areas:	

- a. Ancient Art
 - b. Medieval Art
 - c. Renaissance and Baroque Art
 - d. Nineteenth- and Twentieth-Century Art
 - e. Non-Western Art
2. Electives in art history: four courses in any of the five areas.
Included in the 27 hours are at least two 4000-level seminars, in the subject areas or as art history electives, to be taken in the junior or senior year.
3. Architecture corequirement: discuss with adviser for appropriate course.

Studio Art	3
Foreign Language	12
Students must have completed the intermediate level (12-16 hours) in one foreign language.	
Meadows Elective (<i>outside of major</i>)	3
Other Electives	30

Students will be advised to take free electives in Art History, History, Studio Art, Literature, or other fields that are relevant to their areas of particular interest.

Total Hours 122

Art History majors should consider minors in Advertising, Anthropology, Chemistry (for conservation), Foreign Languages, International Business, International Studies and Psychology in order to maximize their opportunities in obtaining rewarding careers.

Honors Program

The Honors Program is designed for those majors whose academic standing is deserving of exceptional recognition and who seek a greater intellectual challenge in the discipline of art history. To be eligible for the Honors Program, students must have and maintain a minimum 3.50 G.P.A. in art history and a minimum 3.00 G.P.A. in their overall course credits. They must also successfully complete a three-hour directed studies tutorial in art history.

Distinction in Art History

Majors with a minimum 3.50 G.P.A. in art history will graduate with “Departmental Distinction in Art History.”

Minor in Art History

The minor in art history enables all students in the University to extend their study into the realm of the visual arts and so to broaden their appreciation of the cultural content of artistic form. As a discipline especially dedicated to the examination of art in context, art history is a natural complement to a major in history, languages, anthropology, political science, sociology, psychology, philosophy, religion, music or any of the humanities. It is also a rewarding minor for students who wish to combine business or engineering

with a study of the humanities.

Requirements: 18 credit hours in art history with a maximum of three 1000-level courses.

NOTE: Only classes passed with a grade of C- or better will count for credit toward the minor.

Art History Courses (ARHS)

Introductory Courses

1303. Introduction to Western Art I: Prehistoric through Medieval. An introduction in lecture form to the fundamentals of art history. Includes observations of historical styles, techniques and media of cultures.

1304. Introduction to Western Art II: Renaissance through Modern. A continuation of ARHS 1303. Can be taken separately or as part of a two-term survey of the history of Western art.

1305. Introduction to Far Eastern Art. A survey of the major monuments of China and Japan including paintings, ceramics, sculpture, bronzes and some minor arts. Some material from India is also included, especially for the beginnings of Buddhism.

1306. Introduction to Architecture. A contextual history of European and North American architecture from classical antiquity to the present century, with particular emphasis on 1400 to the present. Students will be introduced to basic principles and terminology, but the course will focus on the social and cultural meanings of the built environment in its urban context.

1307. World Art Traditions: A Survey. A survey of the visual arts (painting, sculpture, architecture, ceramics) of Asia, the Pacific World, Africa and the native New World peoples.

1308. Epic of Latin America. Examines art, society and culture in Latin America, 1450-1950. Presents art as a broad and multifaceted cultural problematic, and considers both the enduring legacies and the dynamic processes of change that have shaped the region and its art. Topics include: Pre-Columbian Empires; Royal Spanish Cities, Revolution, Reform and Modernism; Umbanda, Santeria and Vodou; Native American and Gendered Identities. An introductory survey intended for undergraduates of all academic and professional interests: no previous art history courses or experience with Latin America necessary. Slide lectures, classroom discussions, visits to SMU and Dallas museums.

1309. Image and Imagination: Myth and Narrative in Classical Art. An introduction to the ways and means Greek and Roman mythology is presented to the spectator in classical art. The interrelationships between poet and painter, author and artist are explored through the common medium of myth. Changing approaches to narrative in each medium and in different periods of classical antiquity are of prime importance as the student becomes familiar with the particulars, uses and interpretations of Greek and Roman sagas focusing on the gods and heroes of the classical past.

1311. Sport and Spectacle in the Ancient Mediterranean. Integrates the social and cultural functions of sport and spectacle in the ancient Mediterranean from the Bronze Age to late antiquity. Lectures and discussions focus on the institutions of sport and spectacle in ancient Greece, Etruria and Rome as evidenced by architecture, art, material culture and historical sources.

1315. Medieval Messages: Symbol and Storytelling in Medieval Art. Designed to introduce nonmajors to the many questions surrounding the making, meaning and interpretation of images in medieval art. Emphasis is placed on developing visual and critical skills through writing and discussion exercises. Weekly case studies are drawn both from the medieval secular and Christian West and from Byzantine, Islamic and Jewish artistic traditions.

1325. Picturing the American West. Explores the ways in which the American West

has been represented in visual imagery from the early 19th century to today.

1331. Nineteenth Century European Art. Major art movements of the 19th century from Gothic Revival, Neoclassicism, Romanticism and Realism to Impressionism, Post-Impressionism and Symbolism, with emphasis on parallel developments in politics, philosophy, literature, music and dance. (Also SMU-in-Copenhagen)

1332. Twentieth Century Art: Sources and Styles of Modern Art. Major art movements of the 20th century from Art Nouveau, Fauvism, Expressionism, Cubism and Futurism, the Bauhaus, and Surrealism to the contemporary, with emphasis on parallel developments in politics, philosophy, literature, music and dance. (Also SMU-in-Copenhagen)

1333. Introduction to Visual Culture. Designed to help students develop the skills necessary to negotiate the visual culture in which we now live. Organized as an introduction to the media, methods and issues of visual culture through the dialectic of copies and originals. Questions of originality and authenticity are particularly resonant today in the age of video and electronic media where digital technology has generated a world of endlessly reproducible, transmittable images. The class is particularly well-suited to students interested in art, art history, advertising, film and electronic media.

Ancient Art

3303. Archaeological Field Methods of Italy. Archaeological field experience in classical archaeology in Italy. Students will be introduced to the principles of archaeological field method through lectures and field experience. Lectures on Etruscan history, art and culture also will be provided.

3306. Mummies, Myths and Monuments of Ancient Egypt: Art and Expression of Eternal Egypt. Mummies, magic, pyramids and pharaohs provide the focus for a survey of the exotic world of the ancient Egyptians as seen through their brilliantly preserved art and architecture along the banks of the Nile. Egyptian artistic developments from Pre-Dynastic times through the New Kingdom are followed.

3307. Art and Society in Late Antiquity, 300-700. This class studies the complex artistic, religious and cultural transformations that occurred in the territory of the Roman Empire from the time of Constantine to the rise of Islam. Lectures will focus on the era's artistic and architectural creations; readings will include selections from its major primary documents.

3311 (CLAS 3311). Mortals, Myths and Monuments of Ancient Greece. A visual analysis of the rich tapestry of ancient Greek culture, fountainhead of Western civilization, with emphasis on mythological, archaeological and historical settings in which the art and architecture occur. Touches on various aspects of ancient Greek life including religious practices, Olympic contests, theatrical performances and artistic perfection, among others.

3312. Etruscan and Roman Art. A survey of the art, architecture and material culture of Etruscan and Roman Italy from about 800 BC to the advent of Christianity. Begins with the Etruscans and their neighbors in Iron Age Italy, and ends with Roman art in the age of Constantine. Special emphasis is placed on the interpretation of art within the historical, social and cultural context of ancient Italy.

3313. The Etruscans and Iron Age Italy. The art and architecture of early Italy, including Etruscan art, early Roman art and "Italic" art will be studied with respect to the cultural context and environment.

3314. The Art and Architecture of Ancient Pompeii. A survey of the history, monuments and society of Campania from the Iron Age to AD 79 as reconstructed from the excavations of Pompeii, Herculaneum and neighboring sites. The influence of the Pompeian discoveries on 18th- and 19th-century art will also be discussed.

3315. Classical Sculpture. A study of the styles, subjects and techniques of the sculptor's art during the ancient Greek, Hellenistic and Roman eras. Focuses on the functions of

sculpture in the round and in relief, free-standing and in architectural settings, with particular attention to historical background.

3316. Art in Rome. A broad survey that explores the wide range of art works from four major periods in Rome: Ancient, Medieval, Renaissance and Baroque. Art historical methodologies will be stressed in looking at painting, sculpture and architecture. On-site lectures will be given. (SMU-in-Rome)

3317. Ancient Painting. A study of the painter's art in the Egyptian, Greek, Etruscan and Roman eras encompassing murals, mosaics and ceramics. Iconographical and stylistic developments are given equal consideration.

3318 (CF 3392). Currents in Classical Civilization. Interdisciplinary study of the art, literature and history of the ancient Greek and Roman worlds, including ideals of democracy, individualism, immortality, heroism, justice, sexuality, nature, etc.

3319. Art of the Roman Empire. The art and architecture of Imperial Rome will be studied in relation to the complex artistic traditions of the Roman provinces. The monuments and art of all the provinces of the Roman Empire are surveyed, dealing with the problem of Roman interaction with alien cultures and styles.

3603. Archaeological Field Methods of Italy. Archaeological field experience in classical archaeology in Italy (SMU-in-Rome).

Medieval Art

3320. Medieval Art. An introduction to the art of Byzantium, Islam and the medieval West through study of five genres to which each of these cultures made distinctive contributions: the congregational worship space, imaging the sacred word, the court and its objects, the pilgrimage site, and the urban religious complex.

3321. Age of the Crusades. Looks at the art of the various Christian cultures that were swept into the Crusades — especially the northern European, Italian, Byzantine and Armenian — and examines both the changes and the interchanges that characterize the period between 1096 and 1291.

3322. Art and the Italian Commune. The interplay of artistic styles, workshop practice, religious change and political controversy in the century between St. Francis and the Black Death, emphasizing the art of the Pisani, Cimabue, Cavallini, Giotto, Duccio and the Lorenzetti.

3323. Romanesque Art and Architecture. Surveys the flowering of art and architecture that appeared throughout Western Europe at the threshold of the new millennium. Emphasis will be placed on issues of cultural exchange and conflict, the intensification of national identities, the role of spirituality, and the changing conception of the individual during the 11th and 12th centuries.

3324. Art and Cultures of Medieval Spain. Considers the art and architecture of the Iberian Peninsula within its highly diverse cultural context. Hispano-Roman, Visigothic, Romanesque, Gothic, Jewish and Islamic examples will be highlighted; classroom lectures will be supplemented by direct study of works in the Meadows Museum.

3325. The Gothic Cathedral. The social and spiritual centerpiece of medieval European life, the Gothic cathedral was also one of the greatest multimedia creations of its age. This lecture course uses the cathedral as a springing point for the investigation of the rich architectural and artistic traditions of the high and late Middle Ages in Europe.

3328. Byzantine Art. The art of the Byzantine Empire from the end of Iconoclasm through the 14th century, examining both major media — gold mosaics, mural painting, manuscript illumination, ivory carving and enamel — and the role that this art played in the lives, thoughts and writings of its contemporaries.

3329. Paris Art and Architecture I. Interweaves an investigation of the development of Paris from Roman times to the Renaissance with a history of French architecture during this period, revealing the major trends of both and their reciprocal relationship. Takes advantage of its Paris location to visit important monuments, buildings and features of

urban design. (SMU-in-Paris)

Renaissance and Baroque Art

3330. Renaissance and Baroque Architecture. An introduction to Renaissance and Baroque architecture through a focus on the fashioning of religious spaces in Italy from the 15th to 17th centuries. The work of artists and architects such as Bramante, Sangallo, Raphael, Michelangelo, Vasari, Bernini, Borromini, Tintoretto, Caravaggio, Guarini and others will be considered.

3331. Art and Culture of the Italian Renaissance. Surveys major artistic developments of the Renaissance (1300-1600), with special attention to the work of Giotto, Donatello, Leonardo, Raphael, Titian and Michelangelo. Includes study of the customs, literature and philosophy of the period through selected readings of primary sources.

3332. Sixteenth-Century Italian Art. Issues to be considered include the dominance of Leonardo, Michelangelo, Raphael and Titian in the 16th century; the High Renaissance in Florence and Rome and its aftermath, Mannerism, in Catholic courts across Europe; the development of art history as a discipline in conjunction with the rise of academics, art collecting, and the search for elevated status; and the challenge of women artists such as Sofonisba Anguissola to prevailing notions of creativity.

3333. Art and Architecture in Italy. A survey of major monuments in painting, sculpture and architecture through classroom lectures and visits to the actual sites. (SMU-in-Rome)

3335. Renaissance and Baroque Art in Northern Europe. A survey of major artists and monuments in France, Germany and the Low Countries from 1400 to 1700.

3336. Seventeenth-Century Dutch Art. An examination of visual culture of the Netherlands during the 17th century as an “art of describing” through the work of such painters as Hals, Vermeer, van Ruisdael and Rembrandt, the major figure of the period.

3337. The Baroque from a Northern Perspective. The world of Rembrandt, Rubens, Leyster, Vermeer, Van Dyck, De la Tour, Le Brun, Jones and Wren is explored in this course in the context of such contemporary events as the Thirty Years’ War and the Reformation, as well as such issues as art vs. craft, nationalism vs. internationalism, individual genius vs. market, colourism vs. classicism, collector vs. connoisseur. By considering a broad range of artworks – from tapestry to painting, from etching to architecture – in terms of the maker, patron/client and market, this survey will seek the underlying whys for this absorbing period.

3338. Baroque Art in Italy, Spain and the New World. A survey of artistic currents in Southern Europe and the Americas during the 17th century, this course concentrates on the achievements of such artistic giants as Bernini, Caravaggio, Artemisia Gentileschi, Murillo and Velázquez, studying the artistic controversies they ignited and placing them in the context of major social movements. Also looks at the work of artists who are less well-known and traces the development of Baroque styles in Central and South America.

3339. El Greco to Goya: Spanish Painting of the Golden Age. A survey of the incomparable painting traditions of Spain’s 15th through early 19th centuries, including such artists as El Greco, Velázquez, Ribera, Murillo and Goya. Lectures will be supplemented by direct study of Spanish paintings and prints in the Meadows Museum.

3343. Goya and His Time. A study of Goya’s versatile talents as painter, etcher, lithographer, miniaturist and a master of drawing. Through Goya’s work it will be possible to follow the most relevant events of a decisive period for contemporary Spain.

3344. Paintings at the Prado. A study of Spanish paintings at the Prado Museum. Familiarizes students with the most relevant Spanish artists and offers a general European view through differences and affinities between Spain and the rest of the continent. (SMU-in-Spain)

3346. Paris Art and Architecture II. Interweaves an investigation of the develop-

ment of Paris from the Renaissance to the present with a history of French architecture during this period, revealing the major trends of both and their reciprocal relationship. Takes advantage of the Paris location to visit important monuments, buildings and features of urban design. (SMU-in-Paris)

3347. Eighteenth-Century European Art and Theatre: Staging Revolution. Considers intersections between the visual arts and the theater in Western Europe between 1770 and 1850. In addition to the obvious genres of the actor portrait and the costume piece, students will examine the impact of changing theories of acting, gesture, set design and lighting on Neoclassical, Romantic and Realist art. The case studies around which the class is organized will include the work of Canova, David, Delacroix, Fuseli, Goya, Millais, Reynolds, Vigee-Lebrun and Watteau.

3348. Eighteenth-Century Art. A study of European visual culture, 1700-1800, in its many contexts. Topics to be considered include art and the public sphere; the rise of museums, exhibitions, criticism and theory; shifts in patronage and artistic practice; connections between commerce, industry and the arts; questions of identity; stylistic revivals and innovations; explorations of the past; and encounters with cultures outside Europe.

3399 (CFB 3399). The Medieval Jewish-Christian Dialogue in Art and Text. Examines the mutual perceptions, conflicts and commonalities among medieval European Christians and Jews, as reflected in works of visual art and in philosophical, theological, legal and literary texts.

Modern Art

3350. Modern Art and Media Culture 1789-1870. This class examines the emergence of a public sphere and a culture of looking in the 19th century. European visual art will be discussed in relation to the rise of museum and gallery culture, journalistic illustration, the department store display window, photography and the panorama.

3351. History of Modern Sculpture. A survey of the development of modern European and American sculpture from the late 19th century to the present. Also attempts to relate stylistic changes in sculpture to major trends in other mediums of expression and to art theory and criticism.

3352. Impressionism, Symbolism and the Deviant Body: Making a Difference. Examines Impressionist and Symbolist art in relation to the emergence of the modern metropolis and the concept of modernity in Europe from 1848-1914. The discourse of deviance and degeneration that emerged in the context of 19th-century racial theory, criminology and medical science will form the framework for discussion. (Also SMU-in-Paris)

3353. Impressionism in Context. Focuses on an in-depth study of the evolution of the Impressionist group with special emphasis on the historical and cultural dimensions of its work. Among the topics investigated are the changing conceptions of modernism and modernity, diverse representations of "City" and "Country," and the role and status of the artist in society. (SMU-in-Paris)

3356. Modern Architecture. Western architecture from the late 19th century to the present, focusing on the proto-modern trends of the late 19th century, and the major masters of the "modern" movement: Sullivan, Wright, Gropius, Le Corbusier, Mies van der Rohe.

3357. Women Artists. A study of notable women artists from the Renaissance to the 20th century. Introductory lectures on women artists of the past viewed in their cultural and political context. Student reports on more recent women artists.

3358. Women in the Visual Arts: Both Sides of the Easel. Offers an in-depth study of women in the visual arts in Europe and the Americas. Though introductory lectures will examine the historical exclusion of women from the canon, most of the class will look at images produced by and of women from 1850 to the present. Topics include feminist challenges to the history of art; abstraction and the female nude; the use of one's "self" as material for art; and feminist filmmaking.

3360. Modern Painters in Spain. Deals with Spanish art since the beginning of modernity in Spain from the early 19th century to the present. Focuses on the most important and internationally recognized Spanish painters of the 20th century (Picasso, Dali and Miró), and also emphasizes actual trends in painting. Special attention is given to integrating program activities into the syllabus, such as the study of Gaudi's architecture. (SMU-in-Spain)

3364. History and Theory of Prints. We are surrounded by printed things: newspapers, postage stamps, maps, works of art. This course offers a chance to be more attentive to how prints are made and how they can function, while providing an overview of the history of printmaking. Surveys established and emerging printmakers and major printmaking techniques from the 15th through 21st centuries. Considers fundamental issues regarding originality/copying, uniqueness/multiplicity, display and collecting as raised by the medium of print. First-hand experience of prints, through looking assignments and visits to local collections as well as in-class exercises, is a vital part of this course.

3367. History of Photography. A survey of the evolution of photography from its beginnings in the early 19th century. Focuses on the closely interwoven threads of technological and aesthetic developments in photography.

3368. Contemporary Art and Architecture, 1945-1965. A survey of American and European art and architecture from World War II to 1965. Within this chronological survey, broader themes of nationalism, race and gender will be discussed.

3369. Contemporary Art and Architecture, 1965-Present. A survey of American and European art and architecture from 1965 to the present. Within this chronological survey, broader themes of nationalism, race and gender will be discussed.

British and American Art

3370. British Architecture. Developments, architects and buildings in Great Britain from the late Middle Ages through the middle of the 19th century, emphasizing Smythson, Wren, Hawksmoor, Adam, Soane and Pugin.

3371. British Art: Elizabethan through Victorian. Examines landscape traditions, portraiture and genre painting in England from 1740 to 1860 and their relationship to the literature and politics of the period.

3372. American Architecture. A survey of building types and styles from the first European settlements to postmodernism, emphasizing the Mexican baroque, the American wooden vernacular, Richardson, Sullivan and Wright.

3373. American Art and Architecture to 1865. A survey of American painting, sculpture and architecture from the Colonial period through the Civil War.

3374. American Art and Architecture, 1865-1945. A survey of American painting, sculpture and architecture from the Civil War through World War II.

3375. Arts of the American Southwest. An overview of the visual culture of the region, defined as Texas, New Mexico, Colorado, Arizona and California. Focuses on the region's cultural landscape, its past and present identity as art colony, art subject and art center. Looks at works produced by indigenous inhabitants, later arrivals, and visitors; at cross-cultural connections and disconnections; at the roles played by the arts and tourism in the region's development; and at the validity of regionalism as a category of investigation.

World Art

3376. Latin American Art. A survey of art and architecture in Latin America from the initial contacts between European and American civilizations until the 20th century.

3377 (CF 3375). Art and Architecture of Hispanic New Mexico. Examines the artistic and cultural legacies of colonial New Mexico: Spanish city planning and church design; retablos, santos, and their place in religious experience; art in the secular life of towns and haciendas of colonial and post-colonial New Mexico. Emphasizes field trips to galleries, collections and historical sites of northern Mexico. (SMU-in-Taos)

3380. Native American Art: The Southwestern Traditions. Surveys, through field trip and lecture-discussion, two major traditions, Native American and Hispanic, which flourish in the American Southwest.

3381. American Indian and Eskimo Art. The ritual and everyday objects of the native inhabitants of North America, and the architecture of the Mound Builders and the Southwestern Indians.

3382. Arts of the Ancient Andean Tradition: Chavín to Inca. A survey of the major arts produced between ca. 1200 BC and AD 1530 by the indigenous peoples of modern western South America with greatest emphasis on the many successive art-producing cultures of Peru.

3383. The Ancient Maya: Art and History. Presents an introduction to the art and history of the Maya of Central America. Addresses the principal sites and monuments of the ancient Maya civilization, imparts a working understanding of the Maya hieroglyphic writing system, and surveys the political history of the fractious ancient Maya cities.

3385. The Aztecs Before and After the Conquest: Mesoamerica, 1400-1600. Examines the art and cultural history of Mexico in the centuries immediately before and after the Spanish arrival in Mesoamerica. Topics include the art and ceremony of the imperial Aztec state; the nature of the conflict between 1519 and 1521 that ended in the fall of the Aztec capital to the Spanish; and the monuments of Spanish conquerors, missionaries and native elite in Mexico's early colonial period.

3390. Traditional Arts of Africa. A survey of the art produced in traditional African societies with special emphasis on the sculpture of West and Central Africa.

3392 (CFA 3313). Islamic Art and Architecture: The Creation of a New Art. Treats issues significant to the creation and expansion of Islamic art from the 7th to the 15th century. Topics include the cultural and political exchange and conflict between Muslims and Christians; religious concerns and the artistic forms created to meet them; the importance of the book in Muslim culture; the distinctions between religious and secular art; and the appropriation of sacred space in Muslim architecture.

3394. Art and Architecture of Japan. Survey of religious and secular arts from prehistoric times through the Edo period. Field trips to Kyoto and Nara. (Also SMU-in-Japan)

3395. Art and Architecture of India. Designed to introduce the student to the major artistic expressions of India from the Indus Valley civilization through the time of the Mughals.

3396. Art and Architecture of China. Focuses on important monuments in China ranging from 2000 BC to the present day, in a variety of media: cast bronze, stone, sculpture, painting on silk and paper, porcelain and wooden architecture, among others. Selected objects and sites will illuminate the concept of "monument" from differing perspectives of technology, aesthetics, labor, religion, ethnicity and politics. Also discussed are comparisons to analogous monuments outside China, and visits to collections of Chinese art in Dallas-Fort Worth. (Also SMU-in-China)

3398. Introduction to Museum Studies. This course endeavors to introduce art history majors and graduate students to the basic principles of connoisseurship, conservation, framing, lighting and exhibition design in the context of the art museum today, with emphasis upon the interpretative, cultural and social role of museums over time. The course will evaluate specific collections and exhibitions in area museums and will examine a number of private collections, challenging students to make quality judgments based upon objective criteria and intuitive response. Students will be required to assess the meaning of art through visual analysis and comparison. The efficacy and ethics of museum management will also be considered.

Undergraduate Seminars: Primarily for Majors

4300 (CFA 3300). Calligraphy and Culture: Vision, Line and Design in World

Artistic Traditions. A multidisciplinary inquiry into the cultural history of calligraphy and line in several major cultural traditions of the world: readings and discussions will encompass philosophical, anthropological, archaeological, materialist, cultural-historical and art-historical perspectives on line and cultural signification in the visual arts.

4304. Urbs et Orbis: The City in Italy as Place and Concept. Given to us by ancient Roman reality and myth, the distinction between the city as a physical place, the *urbs*, and the city as an idea, the *orbis*, created a long-standing link between territory and ritual, locale and law, nation and citizen, and homeland and world. The class will investigate the city in Italy in space and time as it is the locus of such cultural to-and-fro. Our goal is to better understand the complexities of the Italian city as it is a living entity. In time, the period of study will span some 3,000 years, from the Etruscan foundations of Rome to Richard Meier's Jubilee Church located along the suburban periphery of the city. We will cover the Italian city of antiquity, early Christianity, the Middle Ages, the Renaissance, the Baroque and Modernism. The class will consist of city and museum tours, lecture, readings, discussion and short essays (SMU-in-Rome).

4310. Seminar in Ancient Art. Specific topics for investigation will be chosen by the instructor.

4320. Seminar in Medieval Art. Specific topics for investigation will be chosen by the instructor.

4321. World and Image in the Early Middle Ages. There are three purposes to this seminar: to encounter a distant but crucial moment in the history of our understanding of the image, to join powerful minds in thinking about the nature of the image, and to ask how it was that different stances to the image came to divide Byzantium, Islam and the medieval West in the decades between 692 and 843.

4324. Art History and the Work of Art. This undergraduate seminar investigates the many means by which art historians and others have grappled with the questions surrounding all works of art, including material and ethical concerns, traditional art historical methods, and newer theoretical and interdisciplinary approaches. Based in the Meadows Museum, the course will use objects in the collection to bring to life the challenges inherent in the study of any work of art.

4330. Seminar in Early Modern Art. Specific topics for investigation will be chosen by the instructor.

4332. Art and Drama in Classical Athens. This undergraduate seminar is an intensive reading and discussion course focused on the relationships between the visual arts and dramatic performances as seen against the historical background of golden-age Athens during the fifth century BC. The course is team-taught by senior faculty in the Divisions of Art History and Theatre.

4344. Images of Power: Kings, Nobles and Elites in 17th-Century France. Using art, literature, history and philosophy, this course explores the social, political and intellectual life of the French monarchy, aristocracy and elites of the 17th century in and around Paris. As the course is set both intellectually and physically in Paris, students will visit monuments and museums to encourage them to make immediate connections between what they read and what they see. (SMU-in-Paris)

4349. Seminar in Contemporary Art. Specific topics for investigation will be chosen by the instructor.

4350. Seminar in Modern Art. Specific topics for investigation will be chosen by the instructor.

4351. European Art and Media Culture 1789-1870. Examines the emergence of a public sphere and a culture of looking in the 19th century. Discusses European visual art in relation to the rise of museum and gallery culture, journalistic illustration, the department store display window, photography and the panorama, the art critic, and early cinema.

4352. Paris and London: Industrial Capitalism and the City. Offers a cultural history of Paris and London between 1850 and 1920. In addition to a discussion of the

architectural and social transformation of the cities into modern metropolises will be a look at responses to those transformations in the visual arts, music and literature. While lectures will emphasize the architecture, sculpture and photography of the period, they also will address subjects ranging from the operas of Offenbach to the novels of Flaubert to the world expositions of 1867 and 1889.

4362. The City of New York. Examines the changing art and architecture of the city of New York from the 18th century to the present.

4371 (CF 3381 and WS 3381). Modern Myth-Making: Studies in the Manipulation of Imagery. The quest for enduring cultural heroes and the projection of changing social messages as reflected in art from past epochs to modern times. Examples traced range from politician to musician, from the fine arts to television. Student reports on individual topics.

4380. Seminar in World Art. Specific topics for investigation will be chosen by the instructor.

4386 (CFB 3386). Patrons and Collectors. A social history of art from the point of view of its consumers. Examines art patronage and collecting from antiquity to the present, with emphasis on the modern period.

4101, 4201, 4301. Undergraduate Majors Directed Studies and Tutorials.

4111, 4211, 4311 Undergraduate Museum Internships.

CINEMA-TELEVISION

Professor: Rick Worland. **Chair**

Associate Professors: David Sedman, Pamela Elder, Sean Griffin, Kevin Heffernan; **Assistant Professors:** Carolyn Macartney Mark Kerins, Derek Kompare; **Lecturer:** Kelli Herd.

Students pursue a Cinema-Television curriculum that offers separate concentrations (tracks) in cinema and television. Both concentrations are designed to provide a well-rounded program of technical, scholarly and aesthetic training in the fields of film and television. Both programs also intend to prepare the student for a career in professional film/television production and/or writing, and to develop his or her creative abilities in the art form. A wide variety of courses in cinema and television history, theory and criticism provide a basic and necessary knowledge of these media as art forms and as vibrant social and cultural institutions. In addition, students are required to pursue co-curricular elective courses in the creation and study of the traditional fine arts in Meadows. Finally, students are encouraged to take an internship in the professional sector in order to take advantage of local industry activity, gain practical experience in the field, and establish professional contacts.

The Cinema track requires 48 hours and offers experience in writing, shooting, directing and editing film and video projects, as well as courses in the history, theory and aesthetics of the medium. A basic video production course and two 16mm film production courses are required for all majors. Advanced elective courses in screenwriting, production and editing are designed to develop students' technical skills, as well as their creativity as filmmakers.

The Television track requires 48 hours and offers experience in producing and editing electronic media and video projects, as well as courses in the history, criticism, economics, and social effects of the contemporary mass media and new moving-image technologies. Advanced elective courses in multimedia applications; global media systems; electronic media programming, sales and

policy; and audience research are designed to prepare students for rewarding careers in the modern television industry.

Instructional Facilities

The Division of Cinema-Television is located in the Umphrey Lee Center, which houses faculty offices; classrooms; audio, video and film production; and media support areas. These include basic video and audio modules; video logging rooms; off-line editing rooms; nonlinear video editing labs; film editing suites; advanced film editing modules; storage and equipment check-out; digital audio rooms; a 35mm film projection hall; a seminar room; a graphics lab; editing labs; viewing rooms; and production classrooms. Two additional screening classrooms equipped for film, video, and DVD projection are located in the Greer Garson Theatre.

Admission and Degree Requirements

To be admitted to the major in Cinema-Television, a student must complete the following courses with a cumulative 3.0 G.P.A.: ENGL 1301 and 1302; CTV 2320 Survey of Television and Media; CTV 2301 Film and Video Aesthetics; a math fundamentals course; and an approved liberal arts course. The ENGL and CTV courses require a minimum grade of B minus.

Students transferring from other universities must have completed equivalent courses and obtained the equivalent G.P.A. in those courses before they can be admitted to the major.

Scholarships

Communication Honors Scholarships are awarded each year to outstanding students who intend to major in Cinema-Television.

Honors Program

The Honors Program in Cinema-Television is highly selective; approximately 10 students are selected to participate as incoming first-years. Twelve hours of course work must be completed in Cinema-Television and/or related communications divisions Honors course sections. At midterm of the sophomore year, declared Cinema-Television majors with a G.P.A. of 3.50 or higher are invited into the Honors Program.

To remain in the program, students must maintain a *B* average in all work at SMU, a *B* average in Cinema-Television, and a *B* average in Honors courses.

For more information, contact the chair, Division of Cinema-Television, Southern Methodist University, Dallas, TX 75275.

Internships

Upon attaining upperclass status, qualified students are encouraged to pursue internships that enable them to work under the guidance of professionals in the motion picture, television, cable, and other electronic media industries. Non-classroom internship credit is limited to three credit hours taken as an elective on a pass/fail basis. Students must be a declared CTV major, must have taken CTV 2304, and must obtain permission of the chair.

Directed Studies

A directed study is a close collaboration between a professor and an advanced student with junior or senior standing who conducts a rigorous research

or creative project that goes beyond the experience available in course offerings. The student must secure formal approval from the professor to undertake a Directed Studies project.

Class Attendance

Due to limited class space and enrollment pressures, a student who fails to appear on the first day or who fails to attend three consecutive class meetings during an academic term without establishing contact with the instructor may be administratively dropped from a course.

B.A. Degree in Cinema-Television

Cinema (CTV)

	<i>Credit Hours</i>
General Education Curriculum	41
<i>Common Core Requirements</i>	9
CTV 2320 Survey of Television and Media	
CTV 2301 Film and Video Aesthetics	
CTV 2304 Basic Video and Audio Production	
<i>Cinema Course Requirements</i>	24
CTV 2307 Basic Audio Principles	
CTV 2351 International Film History	
CTV 2352 American Film History (formerly CCCN 2352 Film History II)	
CTV 2354 Basic Screenwriting	
CTV 3355 Film Production I	
CTV 3356 Film Production II <i>or</i>	
CTV 3357 Film/TV Lighting <i>or</i>	
CTV 3308 Non-Linear Editing	
CTV 4353 Film-Television Theory	
CTV 4316 Producers Seminar <i>or</i>	
CTV 3335 Film Exhibition and Distribution	
	<i>Credit Hours</i>
<i>Cinema-TV Electives</i> Any nine hours (may not be double-counted with any grouping above)	9
Any three CTV Courses (with approval of adviser); suggested courses include:	
CTV 2332 American Popular Film	
CTV 2344 History of Animated Film	
CTV 2353 American Television History	
CTV 2356 Writing the Fiction Script	
CTV 2360 The Black Experience in Cinema-TV	
CTV 2364 History of Cinema-TV Comedy	
CTV 2384 War on Film	
CTV 3300 Film/TV Genres	
CTV 3304 History of Documentary Film/Television	
CTV 3306 Documentary Film-Video Production	
CTV 3308 Non-Linear Editing	
CTV 3310 Screen Artists	
CTV 3311-15 Great Directors	
CTV 3350 Advanced Screenwriting	
CTV 3357 Film/TV Lighting	

CTV 3358 Directing the Screen Actor	
CTV 3359 National Cinemas	
CTV 3390 Italian Cinema	
CTV 3393 Video Production II	
CTV 4300 Cinema-Television Seminar	
CTV 4318 Advanced Television Production Workshop	
CTV 4339 Television Criticism	
CTV 5301-04 Topics in Cinema-Television	
<i>Fine Arts Component:</i>	
One course (three hrs.) selected from the following:	3
ASDR 1300 Introduction to Studio-Drawing	
ASPH 1300 Basics of Photography	
ASPH 2300 Black-and-White Photography	
ARHS 1303 Introduction to Western Art I: Prehistoric through Medieval	
ARHS 1304 Introduction to Western Art II: Renaissance through Modern	
ARHS 1331 Nineteenth Century European Art	
ARHS 1332 20th Century Art: Sources and Styles of Modern Art	
THEA 3311 The Art of Acting	
THEA 3313 Introduction to Design for the Theater	
THEA 3314 Lighting Design: Theater, Film and Television	
THEA 3316 Scene Design: Theater, Film and Television	
THEA 3318 Costume Design: Theater, Film and Television	
<i>Meadows Elective/Corequirement (in Meadows – outside the major)</i>	3
<i>Free Electives</i>	33
<hr/>	
Total Hours	122

Minor in Cinema Studies

The minor in cinema studies offers the opportunity to study the historical and critical background of the film medium and to broaden one's understanding and appreciation of a major 20th-century art form. Courses offered in the minor may be applied as required courses in the major.

Requirements: 18 credit hours, distributed as follows:

CTV 2301 Film and Video Aesthetics

CTV 2351 International Film History

Four additional courses (12 hours) selected from any film/history criticism o f f e r i n g .

The following courses may be repeated once for cinema studies minor elective credit provided that the course material/topic is completely different each time:

CTV 2332 American Popular Film

CTV 3310 Screen Artists

CTV 3311, 3312, 3214, 3315 Great Directors

CTV 5301-5304 Topics in Cinema - Television

B.A. Degree in Cinema-Television

Television (CTV)

	<i>Credit Hours</i>
General Education Curriculum	41
<i>Common Core Requirements</i>	9

CTV 2320 Survey of Television and Media	
CTV 2301 Film and Video Aesthetics	
CTV 2304 Basic Video and Audio Production	
Television Course Requirements	24
CTV 2332 American Popular Film -or	
CTV 3304 History of Documentary Film/TV	
CTV 2353 American Television History	
CTV 3303 Video Production	
CTV 3328 Media Management or	
CTV 3361 Media Programming	
CTV 3393 Video Production II or	
CTV 4318 Advanced Television Production Workshop	
CTV 4339 Television Criticism	
CTV 4360 Social Effects of Mass Media	
CTV 4361 Media Policy	
CTV 4390 Technology and the Mass Media or	
CTV 4395 Electronic Media Audience Analysis	
CTV 4399 Global Media Systems	
Cinema-TV Electives: Any nine hours (may not be double-counted with any grouping above)	9
Any three CTV Courses (with approval of adviser); suggested courses include:	
CTV 2354 Basic Screenwriting	
CTV 2360 The Black Experience in Cinema-TV	
CTV 2364 History of Cinema-TV Comedy	
CTV 3306 Documentary Film/Video-Production	
CTV 3308 Non-Linear Editing	
CTV 3335 Film Exhibition and Distribution	
CTV 3355 Film Production I	
CTV 3356 Film Production II	
CTV 3357 Film/TV Lighting	
CTV 3374 TV Production Process	
CTV 4300 Cinema-Television Seminar	
CTV 4316 Producers Seminar	
CTV 4328 Media Economics	
CTV 4353 Film-Television Theory	
CTV 4360 Social Effects of Mass Media	
CTV 4361 Media Policy	
Credit Hours	
Fine Arts Component	
One course (three hrs.) Selected from the following:	3
ASDR 1300 Introduction to Studio-Drawing	
ASPH 1300 Basics of Photography	
ASPH 2300 Black-and-White Photography	
ARHS 1303 Introduction to Western Art I: Prehistoric through Medieval	
ARHS 1304 Introduction to Western Art II: Renaissance through Modern	
ARHS 1331 Nineteenth Century European Art	
ARHS 1332 20th Century Art: Sources and Styles of Modern Art	
THEA 3311 The Art of Acting	
THEA 3313 Introduction to Design for the Theater	

THEA 3314 Lighting Design: Theater, Film and Television	
THEA 3316 Scene Design: Theater, Film and Television	
THEA 3318 Costume Design: Theater, Film and Television	
<i>Meadows Elective/Corequirement (in Meadows – outside the major)</i>	3
<i>Free Electives</i>	33

Total Hours **122**

Minor in Television and Media

The minor in television and media offers the opportunity to study in a focused way the historical, critical and production aspects of the television medium and to broaden one's understanding and appreciation of the most dominant mass medium in the modern world. Courses offered in the minor may be applied as required courses in the major.

Requirements: 18 credit hours, distributed as follows:

CTV 2320 Survey of Television and Media

CTV 2301 Film and Video Aesthetics

Four additional courses selected from any television or media courses in history, criticism, economics, management or social effects.

The Courses

Cinema (CTV)

2320. Survey of Television and Media. Survey of the history, programming practices, advertising techniques, regulations, and legal aspects of the television/media industries. The relationship between media and society will also be explored. Required of all majors.

2301. Film and Video Aesthetics. Introduction to the fundamental visual and audio techniques used in cinema and television to convey meaning and mood. Careful analysis of selected films, sequences and TV shows. Required of all majors.

2304. Basic Video and Audio Production. Practical training in the fundamentals of video and audio production techniques, including various exercises and hands-on demonstrations. Required of all majors.

2332. American Popular Film. An in-depth examination of specific aspects of the American popular cinema, focusing upon questions of popular culture and ideology, of the historical development of styles and genres, and of the impact of the Hollywood film industry. Specific topics and films will vary from term to term.

2344. History of Animated Film. Provides a critical and historical overview of the development of the animated film from its origins in the 19th century to the present.

2351. International Film History. Provides an overview of the development of the cinema as a technology, as an art form, as an industry, and as a social institution beginning with the origins of the medium and tracing its major movements and configurations up to the present.

2352. American Film History. An overview of U.S. film history from the silent period to the present day. Emphasis on the genres, directors, cinematic techniques and industrial factors that advanced the art of Hollywood and independent filmmakers.

2353. American Television History. Focuses on the history of American television with an emphasis on the industrial and sociocultural aspects of the medium's development. Issues of race, gender, class, genre, sexuality and national identity will be studied in the context of significant television shows of the past and present.

2354. Basic Screenwriting. Teaches the basic skills required for both fiction and nonfiction screenwriting, and includes such topics as research methods, script preparation,

differences in script formats, verbal-to-visual style, and the uses of music, effects, pacing, and rhythm.

2356. Writing the Fiction Script. Instructs the student in the development of short and feature-length fictional screenplays. *Prerequisite:* CTV 2354.

2360. The Black Experience in Cinema-TV. Students will incorporate readings, screenings, lectures and discussion to examine how the motion picture and television industry presented both unfeeling caricatures and accurate self-expressions of black culture from 1895 to the present, how negative stereotypes and idealized challenges to those stereotypes were represented in film and TV, how black artists were included and excluded in the creation of modern mass media, and how cultural representation in the media affects our perceptions of racial issues.

2364. History of Cinema-TV Comedy. Survey of the development of comedy in film and television, with an emphasis on a historical examination of comic films and TV shows and a theoretical analysis of the phenomena of humor and laughter.

2384. War on Film. An intensive examination of the period of the Second World War. Constructed around the cinematic records provided by newsreels, training films, propaganda films and wartime documentaries.

3300. Film/TV Genres. Examines questions of genre pertinent to film and/or television by focusing on various generic forms and their history. The specific genres under consideration will vary from term to term.

3304. History of Documentary Film/TV. An overview of the development of the documentary mode in cinema and television, offering a survey of the nonfiction film and video provided by newsreels, training films, propaganda movies, wartime documentaries and "reality" TV.

3306. Documentary Film-Video Production. Advanced-level course in documentary film-video production, including both conceptual and practical study. Through writing, shooting and editing, individually or in groups, students will create nonfiction productions in 16mm film and video formats. *Prerequisite:* CTV 2304.

3308. Non-Linear Editing. Focuses on the techniques of nonlinear editing and digital post-production in the media world. Students learn the craft and art of editing by using professional digital editing systems like the Avid and Final Cut Pro. Emphasis on cutting scenes, studying major films, and reviewing the latest technological advances. Provides a strong foundation on the media's most unique art form. *Prerequisite:* CTV 2304.

3310. Screen Artists. Examines the questions of authorship pertinent to the cinema by focusing on the works of one or more film artists. The specific directors, producers, screenwriters and other artists treated by the course will vary from term to term.

3311, 3312, 3314, 3315. Great Directors. Critical and historical review of the world's great directors and their works.

3335. Film Exhibition and Distribution. Offers a detailed examination of contemporary practices in the distribution and exhibition of theatrical feature films, including the roles of audience survey techniques, booking, publicity and advertising.

3350. Advanced Screenwriting. Through weekly story conferences with the instructor, each student develops a complete feature-length screenplay ready for submission to a producer or agent. *Prerequisite:* CTV 2354.

3355. Film Production I. This 16mm film production course teaches all phases of production and editing for two silent films and for a third, which utilizes sound-over interlock. *Prerequisite:* CTV 2304.

3356. Film Production II. This course in sync-sound film production provides an introduction to film industry practices and to the use of professional film equipment. Complete films are produced by students from concept through AB roll preparation to a final answer print. *Prerequisite:* CTV 3355.

3357. Film/TV Lighting. Examines all the major aspects of feature film as well as tele-

vision production studio lighting. Students learn the fundamentals of film and/or video setups. Detailed analysis of selected features/TV shows, and a brief overview of the history of cinematography and its ever-changing technology will provide a full understanding of the art. *Prerequisite:* CTV 3355.

3358. Directing the Screen Actor. Theoretical background and practical experience in directing performers for film and television productions. Blocking action, camera placement and movement, line deliveries, action scenes, hitting marks, props, costumes, lighting, makeup, dubbing, and the "Method" and other acting theories will be studied, discussed, and practiced on videotape through a series of exercises.

3359. National Cinemas. Examines the social, economic, technological and aesthetic histories of cinema from various nations, as well as examining the concept of "national cinema." The specific nations under consideration will vary from term to term.

3390. Italian Cinema. A chronological survey of Italian cinema from its beginnings to the present. Themes and cinematic styles of several internationally noted directors such as Rossellini, DeSica, Fellini, Antonioni and Bertolucci, with attention to the Italian cinema as a reflection of socio-political trends.

4300. Cinema-Television Seminar. An intensive study of a specific cinema or television-related topic. Topics vary each term.

4305. Motion Pictures of Paris. Ninety-three years of film history, focusing on Paris. Taken in Paris.

4316. Producers Seminar. Lectures and discussions by both faculty and guest speakers provide an overview of the basic business and legal aspects of film and television production.

4125, 4225, 4325. Internship. Allows students to earn academic credit through practical experience gained by working in the professional media, either part-time during the fall or spring terms, or full time during the summer. Students may take a maximum of three credit hours of internship. One hour of intern credit equates to 50 hours of work, two hours of credit equates to 100 hours of work and 150 hours of work per term is calculated as three credit hours. Internship credit is given on a pass/fail basis only. *Prerequisites:* Officially declared CTV major; CTV 2304; permission of Chair; Junior-Senior standing.

4329. Film Criticism. Examines various critical and analytic approaches to the cinema, emphasizing their application to specific films screened for the class. Students will learn to develop and scrutinize their own critical perspectives through regular writing assignments and discussions.

4333. Advanced Film Seminar. Film production career preparation and critical forum. Students will fine-tune editing and sound on their existing film (or video) projects, facilitated through group critique. The film festival process will be navigated as students prepare press kits for their projects and begin submitting their work to festivals. Students develop their resume and business card and compile a demo reel of their work. Industry guest speakers and field trips to local facilities expose students to the extensive career opportunities available within the film business. *Prerequisite:* CTV 3355

4353. Film-Television Theory. Provides an overview of major theoretical writings on the cinema and television (including the work of theorists such as André Bazin, Sergei Eisenstein, Rudolf Arnheim, Laura Mulvey and Christian Metz) and demonstrates the application of various analytical approaches to specific films and TV programs. *Prerequisites:* CTV 2301, 2351.

5110, 5210, 5310, 5311. Directed Study. Independent study under the direction of a faculty member. *Prerequisites:* Junior standing and permission of instructor.

5301-04. Topics in Cinema-Television. Focuses on a specific topic pertinent to film or television study. Subjects vary from term to term, and may include the areas of film/TV history, critical theory, the film/TV business, etc.

Television (CTV)

2320. Survey of Television and Media. Survey of the history, programming practices, advertising techniques, regulations, and legal aspects of the television/media industries. The relationship between media and society will also be explored. Required of all majors.

2301. Film and Video Aesthetics. Introduction to the fundamental visual and audio techniques used in cinema and television to convey meaning and mood. Careful analysis of selected films, sequences and TV shows. Required of all majors.

2304. Basic Video and Audio Production. Practical training in the fundamentals of video and audio production techniques, including various exercises and hands-on demonstrations. Required of all majors.

2306. History of Recorded Music. Chronologically examines the machines, minds and music that constitute our heritage of recorded music, 1877-present.

2307. Basic Audio Principles. Provides a survey of the theory and equipment used in sound recording.

2352. American Film History. An overview of U.S. film history from the silent period to the present day. Emphasis on the genres, directors, cinematic techniques and industrial factors that advanced the art of Hollywood and independent filmmakers.

2353. American Television History. Focus on the history of American television with an emphasis on the industrial and sociocultural aspects of the medium's development. Issues of race, gender, class, genre, sexuality and national identity will be studied in the context of significant television shows of the past and present.

2360. The Black Experience in Cinema-TV. Students will incorporate readings, screenings, lectures and discussion to examine how the motion picture and television presented both unfeeling caricatures and accurate self-expressions of black culture from 1895 to the present, how negative stereotypes and idealized challenges to those stereotypes were represented in film and TV, how black artists were included and excluded in the creation of modern mass media, and how cultural representation in the media affects our perceptions of racial issues.

2364. History of Cinema-TV Comedy. Survey of the development of comedy in film and television, with an emphasis on a historical examination of comic films and TV shows and a theoretical analysis of the phenomena of humor and laughter.

3357. Film/TV Lighting. Examines all the major aspects of feature film as well as television production studio lighting. Students learn the fundamentals of film and/or video setups. Detailed analysis of selected features/TV shows, and a brief overview of the history of cinematography and its ever-changing technology will provide a full understanding of the art.

3301, 3302, 3304. Topics in Television.

3303/5303. Video Production I. Basic principles and practices of television studio production are taught while rotating students through the various studio positions in a series of television production exercises. *Prerequisite:* CTV 2304.

3304. History of Documentary Film-Television. An overview of the development of the documentary mode in cinema and television, offering a survey of the nonfiction film and video provided by newsreels, training films, propaganda movies, wartime documentaries, and "reality" TV.

3306. Documentary Film-Video Production. Advanced level course in documentary film-video production, including both conceptual and practical study. Through writing, shooting and editing, individually or in groups, students will create nonfiction productions in 16mm film and video formats. *Prerequisite:* CTV 2304.

3328/5328. Media Management. Explores the relationship between the theory and practice of broadcast and cable management with emphasis on the legal and economic constraints on these media outlets.

3330/5330. Media Sales. Designed to examine the contemporary world electronic media sales. Goals are to combine strategic thinking with creative thought while keeping the target audience/client in mind.

3335. Film Exhibition and Distribution. Offers a detailed examination of contemporary practices in the distribution and exhibition of theatrical feature films, including the roles of audience survey techniques, booking, publicity and advertising.

3358. Directing the Screen Actor. Theoretical background and practical experience in directing performers for film and television productions. Blocking action, camera placement and movement, line deliveries, action scenes, hitting marks, props, costumes, lighting, makeup, dubbing, and the "Method" and other acting theories will be studied, discussed and practiced on videotape through a series of exercises.

3361/5361. Media Programming. Analysis of the development of program ideas and the research and strategies involved in programming media outlets.

3374/5374. TV Production Process. Examines the process of program production from conception to completion with an emphasis on the various elements that affect the process: staff, genre, format, technology. A field study of a production is a required part of the course.

3393/5393. Video Production II. Basic principles and practices of electronic field production and video editing techniques. Students rotate through various exercises to become familiar with many facets of field production and post-production, including computer editing. *Prerequisite:* CTV 2304.

3394. Video Production III. Produce and direct entertainment format programming exercises. *Prerequisite:* CTV 3303.

3395/5395. History of Broadcasting. Study of the origins and development of the electronic media with an emphasis on the people, events and issues that influenced that development.

4300/5300. Cinema-Television Seminar. Intensive study of a specific area in cinema-television; topics vary from term to term.

4316. Producers Seminar. Lectures and discussions by both faculty and guest speakers provide an overview of the basic business and legal aspects of film and television production.

4318. Advanced Television Production Workshop. Through various exercises and a final project, students share in varied production experiences. *Prerequisite:* CTV 2304.

4125, 4225, 4325/6325 Internships. Students earn academic credit through practical experience gained by working in the professional media either part-time during the fall or spring terms, or full time during the summer. Students may take a maximum of three credit hours of internship. One hour of intern credit equates to 50 hours of work, two hours of credit equates to 100 hours of work and 150 hours of work per term is calculated as three credit hours. Internship credit is given on a pass/fail basis only. *Prerequisites:* Officially declared CTV major; CTV 2304; permission of chair; junior-senior standing.

4328. Media Economics. Examination of corporations and industries involved in the mass media. Emphasis is on understanding the interplay of market's buyers, sellers, consumers and costs. Microeconomic and macroeconomic analyses are used in studying media organizations and industries.

4339/5339. Television Criticism. Examines contemporary critical methodologies as they apply to mass communications media.

4353. Film-Television Theory. An overview of major theoretical writings on the cinema and television (including the work of theorists such as André Bazin, Sergei Eisenstein, Rudolf Arnheim, Laura Mulvey and Christian Metz). Demonstrates the application of various analytical approaches to specific films and TV programs. *Prerequisites:* CTV 2301, 2351.

4360/5360. Social Effects of Mass Media. Critical analysis of research on the influ-

ence of mass media messages on individuals and groups. Attention is focused on communication theory and how society puts such theories into practice in using the media for information, entertainment and persuasion.

4361/5361. Media Policy. Emphasizes contemporary regulatory policy in the media. Discussion and readings deal with regulatory aspects of broadcasting, cable, telephone, personal communication services, and wireless communication. Students will become familiar with basics of legal research.

4390/5390. Technology and the Mass Media. Examines the way in which technology develops and is assimilated into the mass media.

4394/6394. Advanced Audio. Course in production and post-production audio for film and television using Avid and Pro Tools, with emphasis on the creative aspects of sound design.

4395/5396. Electronic Media Audience Analysis. Designs and methodologies employed in researching media usage, structure and development.

4399/5399. Global Media Systems. Interrelationship between broadcasting media in various areas of the world and the system of government under which they developed.

5110, 5210, 5310. Directed Study. Independent study under the direction of a faculty member.

5301-04. Topics in Cinema-Television. Focuses on a specific topic pertinent to film or television study. Subjects vary from term to term, and may include the areas of film/TV history, critical theory, the film/TV business, etc.

CORPORATE COMMUNICATIONS AND PUBLIC AFFAIRS

Professor Mark McPhail, Chair

Professor: Rita Kirk; **Assistant Professors:** Maria Dixon, Owen Lynch, Daniel Schill; **Senior Lecturer:** Nina Flournoy; **Visiting Senior Lecturers:** Christina Baily-Byers, Tony Kroll; **Adjunct Lecturers:** James Caswell, Cecilia Stubbs Norwood, Kelly Reddell, Eric Van Steenburg.

The Corporate Communications and Public Affairs (CCPA) program is accredited through the American Communication Association. The division is founded on the principle that business, government and nonprofit institutions must develop, plan and implement strategic communications programs that establish and maintain mutually beneficial relations with the publics on whom their success depends. Corporate Communications and Public Affairs creates professionals skilled in research, critical thinking, writing and advocacy who apply intellectual rigor and integrity to strategic communication.

Students seeking an undergraduate degree in Corporate Communications and Public Affairs receive a broad background in the liberal arts, followed by a major curriculum that prepares them for graduate and professional studies and/or to work in agencies, corporations, nonprofit organizations, cultural and educational institutions, associations and government. The CCPA curriculum is designed to introduce students to the historical development of the communications field, educate students about the principles and theories behind corporate and public affairs activities, develop requisite communication skills, raise awareness of the ethical responsibilities of professional communicators, and help them develop the strategic communication and management capabilities required for success in a global environment. After developing a strong core of fundamental skills and knowledge in strategic communication, students learn how to research, plan and execute corporate and public affairs

programs. The CCPA program emphasizes critical thinking, problem solving, research and writing.

In addition to major coursework in the division, Corporate Communications and Public Affairs students must complete a liberal arts or fine arts minor, which excludes journalism and advertising. Determination of the minor should be considered carefully and should enhance and broaden the student's learning experience at SMU beyond the major. In keeping with the recommendations of the American Communication Association, the Public Relations Society of America's Task Force on Undergraduate Education, and the standards of the Accrediting Council for Education in Journalism and Mass Communications, students should select minors that emphasize the liberal arts. No more than 36 percent of a student's total hours of study (SMU and transfer credit hours) may be in any combination of communication courses including CCPA-designated coursework. CCPA students must work closely with their academic adviser to ensure compliance with these standards. Students seeking to double major or minor in another communication-related field may need to complete more than the minimum 122 total hours required for graduation.

In close consultation with their faculty adviser, students can design a course of study to match their goals after graduation.

Students are encouraged to participate in service-learning opportunities and make important career connections through supervised internships with Dallas-area businesses.

To find more information about the Corporate Communications and Public Affairs degree program, please visit www.meadows.smu.edu/ccpa.

Admission

In addition to those requirements of the University and of the Meadows School of the Arts, undergraduate students planning to major or minor in Corporate Communications and Public Affairs must complete: ENGL 1301 and 1302, one math course chosen from: STAT 1301, STAT 2301, STAT 2331, MATH 1303, MATH 1304, MATH 1309 or MATH 1337; and nine hours of CCPA core coursework (CCPA 2300, CCPA 2310 and CCPA 2327). Students must earn a grade of C or better in *each* of these six core courses before a major or minor may be declared. A minimum G.P.A. of 3.0 is required in these 18 hours of core coursework before a student will be accepted and classified a CCPA major or minor. A core course may be repeated no more than once in order to meet requirements to declare CCPA as a major or minor.

Special Requirements

Transfer hours for core course requirements may be considered on petition and approval of the faculty. Courses satisfying major requirements should be taken through the SMU program.

CCPA coursework may not be double-counted toward the requirements for another major or minor. Students must earn a grade of C- or better for coursework toward their major or minor CCPA degree requirements.

Students majoring in CCPA also must take 8 hours of a foreign language and an approved ethics course as part of their degree requirements.

Scholarships

Communication Honors Scholarships are awarded each year to outstanding students who intend to major in Corporate Communications and Public Affairs. The Douglas Bauer Incentive Scholar-

ship is a competitive scholarship available to CCPA majors through an annual application process.

CCPA Honors Program

Students may apply for admission to the CCPA Honors track after completion of 45 hours with a 3.50 overall G.P.A. or better. To graduate "With Distinction," students must take six hours of honors-designated CCPA courses and the CCPA 4375 Honors Thesis in Communication Theory course. Students accepted to the CCPA honors track must maintain a 3.50 or higher overall G.P.A. in all SMU coursework to graduate with the honors distinction. The top 10 percent of each class is eligible for faculty nomination into Kappa Tau Alpha, the national communication honorary society.

Programs of Study

Bachelor of Arts in Corporate Communications and Public Affairs

(Note: No coursework may be double-counted for either a major or minor in

C C P A .)

	<i>Credit Hours</i>
General Education Curriculum	41
Foreign Language	8
Ethics Course Requirement	3
<i>Core Requirements:</i>	9
CCPA 2300 Free Speech and the First Amendment	
CCPA 2310 Rhetoric, Community and Public Deliberation	
CCPA 2327 Communication Theory	
<i>CCPA Course Requirements:</i>	9
<i>Core requirements must be completed before enrollment in any of the following.</i>	
Research:	
CCPA 3375 Research	
Skills Course – Choose One	
CCPA 3381 Strategic Communication: Audience and Advocacy	
CCPA 3382 Strategic Communication: Presentations and Campaigns	
CCPA 3387 Philanthropy and Donor Communication	
CCPA 4325 Internship* (<i>Prerequisite:</i> skills course, fourth-year standing and permission of adviser)	
<i>CCPA Upper-Level Electives (choose six of the following):</i>	18
CCPA 3310 Crisis Management	
CCPA 3321 Communication in Global Contexts	
CCPA 3341 Ethnicity, Culture and Communication	
CCPA 3345 Persuasion Theory and Practice	
CCPA 3347 Political Communication	
CCPA 3350 Integrated Marketing Communication	
CCPA 3355 Introduction to Public Relations	
CCPA 3360 Management Communication	
CCPA 3365 Communication in Organizational Contexts	
CCPA 3380 Communication in Civil Society Organizations	
CCPA 3381 Strategic Communication: Audience and Advocacy	
CCPA 3382 Strategic Communication: Presentations and Campaigns	
CCPA 3385 Civil Society Advocacy and Campaigns	
CCPA 3387 Philanthropy and Donor Communication	
CCPA 4300 Seminar in Political Communication	

CCPA 4327 Rational Discourse and Public Deliberation	
CCPA 4328 Media Convergence	
CCPA 4345 Rhetoric, Politics and the Mass Media	
CCPA 4350 Public Opinion, the Press and Public Policy	
CCPA 4375 Honors Thesis in Communication	
CCPA 4385 Communication, Technology and Globalization	
CCPA 4386 Financial Communication	
CCPA 5301-4 Advanced Topics	
CCPA XXXX Other approved CCPA course	
<i>Meadows Elective/Corequirement:</i>	6
At least 3 of these hours must be in a non-Communications discipline.	
<i>Minor and Other Electives</i>	
<i>(minor to be determined with counsel of adviser)</i>	28
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TOTAL	122

Minor in Corporate Communications and Public Affairs

Minors are accepted through evaluation by the faculty. In addition to meeting the requirements for the major, students must satisfactorily complete the minor exam and be accepted into the program prior to enrollment in upper-division courses.

Credit Hours

Minor Requirements:

21

CCPA 2300 Free Speech and the First Amendment

CCPA 2310 Rhetoric, Community and Public Deliberation

CCPA 2327 Communication Theory

CCPA Skills Class, Choose one from: 3381, 3382, 3387

CCPA 3375 Strategic Communication Research

CCPA XXXX Upper-level CCPA elective

CCPA XXXX Upper-level CCPA elective

The Courses (CCPA)

2300. Free Speech and the First Amendment. This course examines the philosophy, cases and issues relevant to the First Amendment right to free expression, with a focus on issues relevant to internal security, obscenity, pornography, slander and the regulation of communication. Foundations of legal argumentation will also be discussed.

2310. Rhetoric, Community and Public Deliberation. This course examines the role of rhetoric and public deliberation in the production and maintenance of communities and the larger public sphere, and includes such topics as the formation and rhetoric of social movements, the structural factors impacting the modern public sphere, and the skills necessary to be an informed citizen.

2327. Communication Theory. This course introduces the foundational concepts, theories and approaches to the study and practice of human communication. It includes a historical overview of communication theories as well as discussion of contemporary ethical questions.

3310. Crisis Management. This course examines different strategies and tactics organizations use after a crisis to respond to internal and external audiences. Theoretical models including apologia, attribution theory, and organizational identification theory are applied to specific types of organizational crises. Special emphasis is placed on the role emerging communication technologies play in the organization's crisis response. Prerequisite: Major or minor standing.

3321. Communication in Global Contexts. This course provides an international perspective to the study of corporate communication and public affairs. Emphasis on experiential study allows types of organizational crises. Special emphasis is placed on the role emerging communication technologies play in the organization's crisis response. Prerequisite: Major or minor standing.

3341. Ethnicity, Culture and Communication. This course explores the impact of culture on our understanding and practice of human communication in interpersonal, organizational and mass media contexts. Strong emphasis is placed on the role of globalization, gender, race and socio-economic dynamics as impediments and conduits of cross-cultural collaboration and interaction. Prerequisite: Major or minor standing.

3345. Persuasion Theory and Practice. This course provides a survey of major theories that explain how to influence attitudes and behaviors. Applications to persuasion within a variety of contexts, including relationships, organizations, legal campaigns and the mass culture. Prerequisite: Major or minor standing.

3347. Political Communication. This course examines political communication as it evolves throughout a political campaign, and includes such topics as political communication theory and research, communication strategies, the influence of the mass media, television advertising, candidate debates, news management, polling and the use of new technologies in political campaigns. Prerequisite: Major or minor standing.

3350. Integrated Marketing Communication. This course explores the concept of planning that recognizes the value of coordinating the media mix within a communication campaign to create maximum clarity and impact. This course covers the ways that a firm or brand communicates with its publics. Prerequisite: CCPA 3381.

3355. Introduction to Public Relations. This course introduces the basic theories, concepts and approaches to public relations. It includes a historical overview as well as discussions of the professional and ethical demands on practitioners. Prerequisite: CCPA 3381.

3360. Management Communication. This course emphasizes the role that communication plays in recruiting and selecting project team members, motivating employees, and understanding how to make a project team productive. Prerequisite: Major or minor standing..

3365. Communication in Organizational Contexts. This course explores the role of communication in key organizational processes in both corporate and nonprofit settings. Students will examine the multiple approaches to organizing and their implications for human communication. Prerequisite: Major or minor standing.

3375. Research. This course teaches students how to conduct professional research. Students identify an organization or individual with an emerging communication need and then analyze secondary sources in order to create an original research project that addresses that need. Prerequisite: Major or minor standing.

3380. Communication in Civil Society Organizations. This course explores the unique discursive context of not-for-profit organizations. Students examine the role of communication in the various stages of nonprofit organizational life including founding and incorporation, recruitment and retention of staff and volunteers, and external funding and philanthropic development. Prerequisite: Major or minor standing.

3381. Strategic Communication: Audience and Advocacy. This course introduces basic media writing skills used in producing materials commonly used by communication professionals to communicate messages to the mass media. Students develop research, interviewing, writing, and speaking skills by writing and presenting news stories, feature articles and press releases. Prerequisite: Major or minor standing.

3382. Strategic Communication: Presentations and Campaigns. This experiential course teaches students to strategize, develop, research and write in-depth articles, newsletters, speeches, press releases and position papers. Prerequisite: Major or minor standing.

3385. Civil Society Advocacy and Campaigns. This course, which must be taken in conjunction with an internship at an approved nonprofit organization, combines classroom exploration with real-world writing as students complete 150 hours in a service learning environment. Students identify the unique “publics” of the nonprofit and create materials directed at specific goals such as the media, donors, volunteers, client base, board, foundations and corporations. *Prerequisite:* CCPA 3381.

3387. Philanthropy and Donor Communication. This course is designed to introduce the fundamentals of philanthropy in the organizational process of the non-profit organization. The course will review historical, economic and political forces that formed and continue to influence the development and funding of non-profit organizations. Additionally, building on Persuasion, Interpersonal and Organizational communication theory students will explore the unique communication of philanthropy, grant writing and donor relations. *Prerequisites:* CCPA 3365 and CCPA 3380.

4300. Seminar in Political Communication. This course is offered only as appropriate occasions arise. It provides advanced study of the role of communication within specific public affairs settings such as political summits, party conventions or other major venues. Instructor approval is required. *Prerequisite:* Major or minor standing.

4302, 4303, 4304. Washington Term Studies. This course offers students an opportunity to study and work in Washington, D.C., as part of American University’s Washington Semester. Instructor approval is required. *Prerequisite:* Major or minor standing.

4305. Washington Term Directed Studies. This is an independent study with the goal of producing original research while students are enrolled in American University’s Washington Semester. Instructor approval is required. *Prerequisite:* Major or minor standing.

4325. Internship. Students in approved positions gain career-related experience and establish professional contacts. At the conclusion of the internship, students prepare a report that allows for academic reflection on that experience. Offered on a Pass/Fail basis only. *Prerequisites:* Skills course, 90 or more hours of coursework, 2.75 overall G.P.A., 3.00 G.P.A. in CCPA coursework, and permission of faculty adviser. May be taken earlier with adviser approval. Major standing only.

4326. Washington Term Internship. This course is offered in conjunction with courses taken in Washington, D.C. This internship provides students with experience working in public affairs in the nation’s capital, supervised by a faculty member there. Major standing only.

4327. Rational Discourse and Public Deliberation. This course explores concepts characterizing rational discourse, with a concern for examining validity and fallacy. Students consider traditional and contemporary models for analyzing argument, including an examination of the philosophy of argument and a practical inquiry into the uses of debates on contemporary social issues. *Prerequisite:* Major or minor standing.

4328. Media Convergence. This course explores the intersection of mass communication technologies. Students examine the digital future of media and the impact of media convergence on business, politics and society. *Prerequisite:* Major or minor standing.

4345. Rhetoric, Politics and the Mass Media. This course examines the dynamic and interpersonal relationship between the news media and politics. The media’s influence on the political process, the relationship between reporters and public officials, the impact of media-based campaigns and the ethical impact of media manipulation by political strategists are examined. *Prerequisite:* Major or minor standing.

4350. Public Opinion, the Press and Public Policy. This course examines the interdependent relationships among media coverage, public opinion and public policy. Students consider the influence of press coverage on electoral and policy-making processes in which the public voice is presumed to impact democratic outcomes. *Prerequisite:* Major or minor standing.

4375. Honors Thesis in Communication. This course provides advanced students

with the opportunity to do original research on a topic related to communication. Students learn how to write research questions, conduct a literature review, engage in qualitative or quantitative methodologies, and present findings. *Prerequisite:* CCPA 3375, senior standing, 3.5 G.P.A., major standing.

4385. Communication, Technology and Globalization. This course examines how various communication technologies are used within a strategic communication context. Historical, ethical and legal issues surrounding the use of these technologies are addressed. *Prerequisite:* Major or minor standing.

4386. Financial Communication. This course familiarizes students with terms, principles, theories and practices in financial communication. Students examine techniques used in investor relations and consider the legal and ethical responsibilities. *Prerequisite:* Major or minor standing.

4395. Strategic Communication Campaigns. This course demonstrates how strategic communication contributes to problem-solving in corporate and nonprofit settings. Students apply their skills toward practical challenges as they prepare and present complete plans for a corporate client. *Prerequisites:* CCPA 3381, CCPA 3375 and fourth-year standing.

5110, 5210, 5310. Directed Study. A directed study is a close collaboration between the professor and an advanced student who conducts a rigorous project that goes beyond the experience available in course offerings. The student must secure written permission from the instructor and return a completed form to the Corporate Communications and Public Affairs office before the start of the term. *Prerequisites:* Junior standing and permission of instructor. Major or minor standing.

5301, 5302, 5303, 5304. Advanced Topics. These courses encourage students to examine the role of communication within contemporary issues and social problems. Topics vary by instructor. *Prerequisite:* Major or minor standing.

DANCE

Professor Myra Woodruff, **Division Chair**

Associate Professors: Shelley C. Berg, Danny Buraczeski, Patty Harrington Delaney, Nathan Montoya, Leslie Peck; **Musicians:** Dick Abrahamson, Jamal Mohamed, Mina Polevoy, Edward Lee Smith, Daniel J. Sullivan, Janeen Vestal; **Adjunct Lecturers:** Mary Condon, Shelley Estes, Kirt Hathaway, Jamal Mohamed, Susan White; **Professor Emerita:** Elizabeth A. Ferguson; **Associate Professor Emeritus:** Robert Beard

The Division of Dance offers professional dance training within the context of a comprehensive liberal arts education. The goal is to develop the disciplined, versatile dance artist through a balanced study of ballet, modern dance and jazz dance techniques, complemented and reinforced by a broad range of theoretical studies and performance opportunities. The program provides an atmosphere in which students are nurtured and stimulated in their quest for artistic achievement, technical mastery and scholarly excellence. Undergraduate majors study dance as a performing art with the intent to become practicing artists. The core of the dance curriculum is designed with this goal in mind. The combination of performance and liberal arts education courses serves to develop the articulate dancer.

The Division of Dance has four dance studios, three of which are located in the Owen Arts Center. Each studio is equipped with a sprung floor, vinyl covering, sound system, grand piano, ballet *barres* and mirrors. The Charles S. Sharp Performing Arts Studio doubles as a performing space and is equipped with an adjustable black traveler, a control booth, state-of-the-art sound equipment, and a theatrical lighting system. Adjacent to the Sharp Studio

(B100) is Studio B120. The third facility in the Owen Arts Center is Studio 1430, adjacent to the Margo Jones Theatre and the stage of the Bob Hope Theatre. A fourth studio is located in McFarlin Auditorium. Live accompaniment is provided for all studio classes.

Admission, Audition and Financial Aid

Acceptance as a dance major or minor requires a performance audition. This is a separate process from application to the University and is the principal factor in determining an applicant's eligibility to major or minor in dance. Campus and national auditions occur throughout the year and serve to establish a candidate's level of competence, class placement and merit scholarship recommendation.

Applicants who audition in Dallas are observed in a ballet class, in modern dance sequences and in a jazz dance combination. Faculty representatives from the Division of Dance also conduct an annual audition tour to selected cities.

At auditions, select candidates are asked to perform a brief (90-second) improvised or prepared solo dance. Students are expected to bring to the audition a brief résumé with Social Security number, a wallet-sized photograph, applicable recorded music and appropriate studio clothes and footwear. To confirm a campus audition, call the Dance Office at 214-768-2718. For information regarding admission procedures for the University, a national audition or financial aid, contact the Associate Dean's Office at 214-768-2174. Undergraduate applicants are encouraged to seek early admission to the University. Important factors in the evaluation of an applicant are the quality of the applicant's high school academic program, the student's record of performance, class rank and scores from the Scholastic Aptitude Test and/or American College Test. Transfer applicants are evaluated by the Office of Admission.

Admission procedures for transfer students are the same as those for first-year applicants, including the audition. With few exceptions, all new students begin work in the fall term.

Performance

All dance majors have opportunities to perform and choreograph as an integral part of their performance studies. The Dance Performance Series includes main stage concerts in the Bob Hope Theatre, concerts in the Sharp Studio and noontime Brown Bag performances in the Owen Arts Center lobby. Other opportunities include special events, outreach programs and interdisciplinary projects within and beyond the Meadows community. Dance majors are required to participate in Dance Performance Series events as partial fulfillment of the degree program.

Program of Study

B.F.A. in Dance Performance

The Bachelor of Fine Arts degree in Dance Performance is accredited by the National Association of Schools of Dance. Successful completion of this program will enhance the student's personal growth as well as technical development in ballet, modern dance and jazz dance. The degree requires 73 credit

hours in dance, of which a minimum of 38 are in studio training. The remaining 35 credit hours provide students with the opportunity to develop scholarly and creative abilities in dance and related areas of interest.

Students whose hours in the General Education Curriculum, the major requirements, and the major's supporting course requirements exceed a total of 122 will be exempt from three hours of Perspectives and an additional three hours of either Perspectives or Cultural Formations.

	<i>Credit Hours</i>
General Education Curriculum (GEC)*	35
Required Electives	12
Division of Dance:	
Performance Technique	32
A minimum combined total of 32 credit hours is required in Ballet (12), Modern Dance (12) and Jazz Dance (8). These courses are taken during the first two/three years of study.	
Advanced Performance Technique	6
These hours must be at the 3000 or 4000 level of proficiency in at least one major area of performance technique.	
Ensemble Performance	0
A minimum of four terms of ensemble work is required for a grade without credit. Enrollment will be processed by the administration after casting is determined for each term.	
Composition	8
Four terms of course work in dance composition are required beginning in the sophomore year.	
Theoretical and Applied Studies	19
Required course work consists of Dance Orientation, Dance Production I and II, Introduction to Pilates, Music: The Art of Listening (MUHI 1321), Musical Concepts, Dance Notation I, Dance History I and II, and Kinesiology for Dance.	
Dance Electives	8
These hours may be taken in Advanced Performance Technique, Theoretical and Applied Studies, or Directed Studies. Electives taken within the Meadows School may also be used to fulfill this requirement. However, no single course may fulfill the Dance Electives requirement and the Meadows co-curricular requirement simultaneously.	
Meadows Elective/Corequirement	3
The Meadows School requires three term credit hours of course work within the Meadows School but outside of the Division of Dance. Dance Electives may not be used to fulfill this requirement	

*Two credit hours of Wellness to be earned by: (1) one term of Wellness Choices I in the first year, and (2) the Wellness Choices II requirement fulfilled by dance majors with one term of Introduction to Pilates to be completed by the end of the Sophomore year.

Regulations

The faculty expects dance majors to apply themselves scholastically and to assume responsibilities conscientiously. Students are required to maintain a minimum G.P.A. of 2.70 in dance courses to continue in the dance major. Grades lower than *C* are not acceptable in any required dance course and will necessitate a repeat enrollment. If requirements are not met, the student is placed on academic probation. To be eligible for scholarship, students are required to maintain a minimum cumulative G.P.A. of 2.70 in dance courses and be enrolled in a minimum of six credit hours in dance. Full participation in the program and in Division performances is expected of every student who receives a merit scholarship award. Performance studies and production activities take precedence over dance work outside of the Division.

Evaluation

High standards of discipline and execution are essential for artistic growth, progress and success. Regular class attendance, attendance at auditions, classroom and theatre etiquette, punctuality and attendance at student meetings are essential. Students meet with individual faculty at midterm for a progress report and to establish individual goals. At the close of each term, each student receives a performance evaluation by the collective faculty. Various aspects of a student's work are examined, including technical progress, capacity for and commitment to class work, personal growth and maturity, attitude, academic performance, production support, program participation, performance artistry and weight control. When standards are not met, a student is advised that significant improvement must take place to remain in the program. Poor critiques may result in immediate dismissal from the dance major program, and/or loss of dance scholarship funding. All dance scholarships are reviewed annually. Further details on standards and requirements for the dance major are included in the *Division of Dance Student Handbook*.

Dance Performance Minor

The minor in dance is available to majors in all disciplines, and is designed for students with previous dance training who wish to continue the pursuit of their interests within the context of their liberal arts studies. Acceptance criteria for the dance minor include audition and class placement prior to enrollment in studio classes. Students also selectively engage in the study of the creative process/performance, dance history/literature, and/or theory/analysis.

The minor requires a minimum of 18 credit hours in dance as outlined below.

Credit Hours

Select from the following:

3

DANC 2370 Movement as Social Text

DANC 2373 Dance History I: Court and Ballet	
DANC 2374 Dance History II: Modernism	
Select from the following:	6
DANC 1151 Dance Production I	
MUHI 1321 Music: The Art of Listening	
DANC 1242 Musical Concepts	
DANC 2107 World Rhythms I	
DANC 2160 Introduction to Pilates	
DANC 2241 Dance Composition I	
DANC 2361 Dance Notation I	
DANC 2370 Movement As Social Text	
DANC 2373 Dance History I: Court and Ballet	
DANC 2374 Dance History II: Modernism	
	Credit Hours
DANC 4260 Pilates	
DANC 4363 Kinesiology for Dance	
DANC 4366 Ballet Pedagogy	
Select from the following:	9
DANC 1311-1314; 2311-2316; 3311-3318, and 4311-4316 Performance Technique, Ballet	
DANC 1321-1324; 2321-2324; 3321-3324; 4321-4324 Performance Technique, Modern Dance	
DANC 1231-1234; 2231-2234; 3231-3234; 4231-4234 Performance Technique, Jazz Dance	
DANC 4003-4008; 4103-4108 Pas de Deux	
TOTAL	18

The following dance courses are open to all students from any field of study. It should be noted that not all courses are offered in any given academic year.

1301,1302. Beginning Ballet. Introduction to the fundamentals of classical ballet. Not applicable to the dance major or minor.

1303, 1304. Beginning Modern Dance. Introduction to basic movement skills, experiences and concepts of modern dance. Not applicable to the dance major or minor.

1305, 1306. Beginning Jazz Dance. Introduction to the fundamentals of jazz dance with emphasis on rhythm and theatrical style. Not applicable to the dance major or minor.

2107. World Rhythms I. Listening, analysis and performance of African, Latin American and other rhythms. Techniques of playing percussion will be explored. Opportunities will be provided for students to accompany dancers using authentic instruments.

2108. World Rhythms II. Continued listening, analysis and performance of African, Latin American and other rhythms. Techniques of playing percussion will be explored in greater depth with more emphasis on performance. Further opportunities for students to accompany dancers using authentic instruments. *Prerequisite:* DANC 2107 or instructor approval.

2301, 2302. Intermediate Ballet. Further exploration of classical ballet. Previous experience in the study of classical ballet is required. Not applicable to the dance major or minor.

2303, 2304. Intermediate Modern Dance. Further exploration of modern dance. Previous experience in the study of modern dance is required. Not applicable to the dance major or minor.

2305, 2306. Intermediate Jazz Dance. Further exploration of jazz styles. Previous experience in the study of jazz dance is required. Not applicable to the dance major or minor.

2345. Improvisation and Movement Studies. The development of individual movement skills through the exploration of images and elements from all of the arts, emphasizing the concepts of line, rhythm, mass and weight. Special attention will be placed on individual creative problem-solving through movement as it pertains to space, time and energy. *Prerequisite:* One year of dance technique and instructor approval.

2370. Movement as Social Text. Investigation of ways in which movement and dance have meaning in different cultural, social and historical contexts. Examples of dance in a cross-cultural context, encompassing both Western and non-Western dance forms will be included. Emphasis will be placed on the nature of movement, its unique properties, the ways in which it conveys meaning, and its relationship to culture and society.

2371. Ballet Tradition. A historical perspective of classical ballet from the Renaissance to contemporary ballet. Emphasis is directed toward traditional developments, artistic changes and performance practices. Not applicable to the dance major or minor.

2372. Twentieth-Century Dance. The study of Western theatre dance from 1900 to the present. Attention is given to various contemporary forms and practices and to the history of dance for film and theatre. Not applicable to the dance major or minor.

3374. The Evolution of American Musical Theatre. This course examines the evolution of American musical theatre from its roots in minstrelsy, burlesque and vaudeville, to its adolescence in comic opera, operetta and musical comedy to its codification as musical theatre. The first unit of the class examines the early forms of popular entertainment, the second unit looks at the development of the integration of dance, music and drama into the form we know as musical theatre and the last unit examines the figures of the 20th century who refined this integration both on Broadway and in Hollywood.

4370. Dance Criticism and Aesthetics. A practical introduction to writing about dance performance. Works of master critics are examined to gain a historical perspective and to become familiar with a variety of methodologies in analyzing dance texts. Emphasis placed on observation and writing skills. *Prerequisite:* DANC 2371 or 2372 and instructor approval.

Dance Courses for Dance Performance Majors (DANC)

The following dance courses are restricted to dance majors unless otherwise indicated. Dance minors must obtain departmental approval to enroll in these courses. Dance minors must qualify for performance technique classes by audition.

Performance Technique

1311, 1312, 1313, 1314. Ballet I. Introduction to and development of the fundamentals of classical ballet and *pointe* technique. Inclusive of *pointe* class and men's class.

1321, 1322, 1323, 1324. Modern Dance I. Introduction to and development of the fundamentals of contemporary dance.

1231, 1232, 1233, 1234. Jazz Dance I. Exploration of the basics of jazz dance technique and styles (classic, musical theatre and contemporary forms), including studies in basic positions, placement, isolations and jazz rhythms.

2311, 2312, 2313, 2314, 2315, 2316. Ballet II. Continuing exploration of classical ballet technique on the intermediate level with an emphasis on more complex *port de bras*, *adagio*, *tourner enchaînement* and *allegro batterie*. Inclusive of *pointe* class and men's class. *Admission by placement.*

2321, 2322, 2323, 2324. Modern Dance II. Continuing exploration of contemporary dance technique at an intermediate level with emphasis on more complex movement

phrasing, rhythmic variation and use of space. *Admission by placement.*

2231, 2232, 2233, 2234. Jazz Dance II. Continuing development of jazz dance technique and styles with focus on dynamics, rhythm and directional changes. Classic jazz, blues and contemporary jazz styles will be explored. *Admission by placement.*

Advanced Performance Technique

3311, 3312, 3313, 3314, 3315, 3316, 3317, 3318. Ballet III. Continuing development of classical ballet technique on the advanced level with an emphasis on technical proficiency, musicality and movement dynamics. *Admission by placement.*

3215, 3216, 4215, 4216. Men's Ballet Technique. Emphasis on the virtuosity specific to the male dancer in the ballet idiom. The class objective is to strengthen and develop the dancer to his utmost potential. Includes variations. *Admission by placement.*

3217, 3218, 4217, 4218. Women's Pointe Technique. Emphasis on the virtuosity specific to the female dancer in the ballet idiom. The class objective is to strengthen and develop the dancer to her utmost potential. Includes variations. *Admission by placement.*

3321, 3322, 3323, 3324. Modern Dance III. Continuing development of contemporary dance technique at an advanced intermediate level with emphasis on refining performance quality, depth of physicality, dramatic expression and individual style. Introduction of repertory. *Admission by placement.*

3231, 3232, 3233, 3234. Jazz Dance III. Exploration of more advanced technique and styles of jazz dance, performance projection, individual style, characterizations and musical theatre themes. Focus on retaining extensive combination sequences. *Admission by placement.*

4311, 4312, 4313, 4314, 4315, 4316. Ballet IV. Advanced ballet technique, offering a transition from dance study to professional-level work with an emphasis on technical proficiency, musical phrasing, stylistic variables and individual interpretation. *Admission by placement.*

4321, 4322, 4323, 4324. Modern Dance IV. Advanced contemporary dance technique, offering a transition from dance study to professional-level work. *Admission by placement.*

4231, 4232, 4233, 4234. Jazz Dance IV. Further exploration of advanced techniques and styles of jazz dance, performance projection, individual style, characterizations and musical theatre themes. Focus on extensive combination sequences and jazz repertory. *Admission by placement.*

4110. Ballet – Supplemental. Advanced ballet technique. May be taken as a supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval. *Corequisite:* DANC 3215, 3216, 3217, 3218, 3311, 3312, 3313, 3314, 3315, 3316, 4215, 4216, 4217, 4218, 4311, 4312, 4313 or 4314.

4111. Ballet – Supplemental II. Advanced ballet technique. May be taken as a supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval. *Corequisite:* DANC 3215, 3216, 3217, 3218, 3311, 3312, 3313, 3314, 3315, 3316, 4215, 4216, 4217, 4218, 4311, 4312, 4313 or 4314.

4119. Ballet – Supplemental III. Advanced ballet technique. May be taken as a supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval. *Corequisite:* DANC 3215, 3216, 3217, 3218, 3311, 3312, 3313, 3314, 3315, 3316, 4215, 4216, 4217, 4218, 4311, 4312, 4313 or 4314.

4120. Modern Dance – Supplemental. Advanced contemporary dance technique. May be taken as a supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3321, 3322, 3323, 3324, 4321, 4322, 4323 or 4324.

4126. Modern Dance – Supplemental II. Advanced contemporary dance technique. May be taken as a supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3321, 3322, 3323, 3324, 4321, 4322, 4323 or 4324.

4129. Modern Dance – Supplemental III. Advanced contemporary dance technique. May be taken as a supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3321, 3322, 3323, 3324, 4321, 4322, 4323 or 4324.

4130. Jazz Dance – Supplemental. Advanced jazz dance techniques and styles. May be taken as a supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3231, 3232, 3233, 3234, 4231, 4232, 4233 or 4234.

4136. Jazz Dance – Supplemental II. Advanced jazz dance techniques and styles. May be taken as a supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3231, 3232, 3233, 3234, 4231, 4232, 4233 or 4234.

4139. Jazz Dance – Supplemental III. Advanced jazz dance techniques and styles. May be taken as a supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing and instructor approval. *Corequisite:* DANC 3231, 3232, 3233, 3234, 4231, 4232, 4233 or 4234.

4210. Ballet – Immersive. Advanced ballet technique. May be taken as a stand-alone course or as an immersive supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval.

4211. Ballet – Immersive II. Advanced ballet technique. May be taken as a stand-alone course or as an immersive supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval.

4219. Ballet – Immersive III. Advanced ballet technique. May be taken as a stand-alone course or as an immersive supplement to Ballet III, Ballet IV, Men's Ballet Technique or Women's Pointe Technique. *Prerequisites:* Junior or senior standing, Ballet III or IV placement, and instructor approval.

4220. Modern Dance – Immersive. Advanced contemporary dance technique. May be taken as a stand-alone course or as an immersive supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing, Modern Dance III or IV placement, and instructor approval.

4226. Modern Dance – Immersive II. Advanced contemporary dance technique. May be taken as a stand-alone course or as an immersive supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing, Modern Dance III or IV placement, and instructor approval.

4229. Modern Dance – Immersive III. Advanced contemporary dance technique. May be taken as a stand-alone course or as an immersive supplement to Modern Dance III or IV. *Prerequisites:* Junior or senior standing, Modern Dance III or IV placement, and instructor approval.

4230. Jazz Dance – Immersive. Advanced jazz dance techniques and styles. May be taken as a stand-alone course or as an immersive supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing, Jazz Dance III or IV placement, and instructor approval.

4236. Jazz Dance – Immersive II. Advanced jazz dance techniques and styles. May be taken as a stand-alone course or as an immersive supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing, Jazz Dance III or IV placement, and instructor approval.

4239. Jazz Dance – Immersive III. Advanced jazz dance techniques and styles. May be taken as a stand-alone course or as an immersive supplement to Jazz Dance III or IV. *Prerequisites:* Junior or senior standing, Jazz Dance III or IV placement, and instructor approval.

Ensemble Performance

1080. Ensemble Performance I. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. Required.

2080. Ensemble Performance II. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. Required. *Prerequisite:* DANC 1080.

3080. Ensemble Performance III. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. Required. *Prerequisite:* DANC 2080.

4080. Ensemble Performance IV. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. Required. *Prerequisite:* DANC 3080.

4081. Ensemble Performance V. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. *Prerequisite:* DANC 4080.

4082. Ensemble Performance VI. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. *Prerequisite:* DANC 4081.

4083. Ensemble Performance VII. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. *Prerequisite:* DANC 4082.

4084. Ensemble Performance VIII. Rehearsal and public performance of existing repertory and/or original works. By audition. Departmental approval and administrative enrollment. *Prerequisite:* DANC 4083.

Composition

2241. Dance Composition I. Introduction to the fundamental elements of dance composition, including Laban-based movement vocabulary, dynamics, motivation, gesture, spatial concepts, elementary phrasing, abstraction and motif writing. Students participate in solo and small group studies with an emphasis on improvisation. Course includes visit to the Dallas Museum of Art. Required. *Prerequisite:* DANC 1242.

2242. Dance Composition II. Generation of solo movement through improvisation, recognizing spontaneous structures, and working with stage space, groups, and inspiration from other media, including music. Required. *Prerequisites:* DANC 2241 and DANC 2361 or instructor approval.

3243. Dance Composition III. Exploration of elements of choreographic form with emphasis on sequencing, balance, phrasing, transition, choreographic device and compositional structure. Introduction to Life Forms™ computer software for choreography. Utilization of videotape for self-analysis and critique. Opportunity for visits to the Meadows Museum for the study of form. Required. *Prerequisite:* DANC 2242.

3244. Dance Composition IV. Synthesis, application and elaboration of previously introduced choreographic principles and concepts. Exploration of ethical issues and social responsibilities of the choreographer. Emphasis placed on collaborative, multidisciplinary, and community service projects. Areas for collaboration may include music, visual arts, video, spoken and written text, elements of design, and emergent technology. Required. *Prerequisite:* DANC 3243.

Theoretical Studies

1050. Dance Orientation. Preparation for a successful educational experience as a major in dance. Seminars conducted by professionals from dance-related fields, including nutrition, weight management, physical therapy and strengthening, injury prevention and care, psychology and stress management. Designed to give students a perspective of themselves as movement professionals with a broad base of opportunities. *Required in first term of study.*

2370. Movement as Social Text. Investigation of ways in which movement and dance have meaning in different cultural, social and historical contexts. Examples of dance in a cross-cultural context, encompassing both Western and non-Western dance forms will be included. Emphasis will be placed on the nature of movement, its unique properties, the ways in which it conveys meaning, and its relationship to culture and society. Open to all students.

2373. Dance History I: Court and Ballet. The development of ballet as a Western theatre art, from its roots in the French court to contemporary ballet in Europe and America. Emphasis will be placed on choreographic schools and styles as well as the consideration of the ballet aesthetic in a broader cultural context. *Required.*

2374. Dance History II: Modernism. The development of modernism in dance from the turn of the century to the present. Emphasis will be placed on the evolution of choreographic schools and styles as well as the relationship of dance to the arts and humanities and to the culture in which it is created. *Required. Prerequisite:* DANC 2373 or instructor approval.

4190, 4290, 4390. Directed Studies. Supervised projects and/or research in theoretical studies, inclusive of community service projects. Arranged. *Prerequisite:* Instructor approval.

4363. Kinesiology for Dance. Exploration of basic anatomy and the human body in motion. Normal and deviated skeletal structures and muscular development are assessed in regard to movement efficiency, injury potential and dance aesthetics. *Required.*

4365, 4366. Ballet Pedagogy. Analysis of ballet techniques, comparing the vocabulary and methods of the Russian, Italian and French Schools. Emphasis on literal translation of French terminology, class structure, and varied approaches to teaching classical ballet.

4370. Dance Criticism and Aesthetics. A practical introduction to writing about dance performance. Works of master critics are examined to gain a historical perspective and to become familiar with a variety of methodologies in analyzing dance texts. Emphasis placed on observation and writing skills. Open to all students. *Prerequisite:* DANC 2373 or 2374 and instructor approval.

Applied Studies

1151. Dance Production I. Introduction to the technical preparation, production and running of dance performances. Scheduled classes provide orientation and information for providing support in areas of lighting, sound, costumes and scenery. In addition, in-service assignments provide hands-on training in mounting a main stage production, as well as load-in and strike of dance productions in other venues. *Required* of all first-year dance majors.

1152. Dance Production II. Service assignments for performance activities as a continuation of material introduced in the previous term. Development of production skills through verbal and visual communication. This course includes lab hours outside of and in addition to the regularly scheduled class meeting times. *Required.*

1242. Musical Concepts. Basic analysis of music in terms of its form and structure, as related to dance composition and performance. Musical vocabulary, analysis of selected masterworks, and in-class performances are included. *Required. Prerequisite:* MUHI 1321 or instructor approval.

2107. World Rhythms I. Listening, analysis and performance of African, Latin American and other rhythms. Techniques of playing percussion will be explored. Opportunities

will be provided for students to accompany dancers using authentic instruments.

2108. World Rhythms II. Continued listening, analysis and performance of African, Latin American and other rhythms. Techniques of playing percussion will be explored in greater depth with more emphasis on performance. Further opportunities for students to accompany dancers using authentic instruments. *Prerequisite:* DANC 2107 or instructor approval.

2160. Introduction to Pilates. A non-impact body conditioning method based on principles of abdominal and scapular stabilization. Introduction to the essential and intermediate mat work, which consists of non-weight bearing exercises. Designed to give the student an understanding of the principles and muscular emphasis behind the Pilates method. Proper alignment, full range of motion, and patterned breathing will be emphasized. Fulfills the General Education Curriculum (GEC) Choices II Wellness requirement for dance majors only. Required of all second year dance majors.

2345. Improvisation and Movement Studies. The development of individual movement skills through the exploration of images and elements from all of the arts, emphasizing the concepts of line, rhythm, mass and weight. Special attention will be placed on individual creative problem-solving through movement as it pertains to space, time and energy. *Prerequisite:* One year of dance technique and instructor approval. Open to all students.

2361. Dance Notation I. Introduction to Labanotation, with emphasis on reading dance notation of ballet, modern dance, jazz dance and multicultural dance forms. Introduction to LabanWriter, computer software for dance notation. Introduction to motif writing. Required. *Prerequisite:* DANC 1242 or instructor approval.

2362. Dance Notation II. Continuing studies in Labanotation, including reading dance scores and working with computer applications for choreography. Inclusion of projects in documentation as opportunity allows. *Prerequisite:* DANC 2361.

2381. Repertory and Performance I. Rehearsal and performance of world dances and major works of ballet and modern dance repertory, with discussion of the choreographic structure of the dances, to develop performance interpretation. *Prerequisite:* Instructor approval.

2382. Repertory and Performance II. Rehearsal and performance of world dances and additional works of ballet and modern dance repertory, with discussion of the choreographic structure of the dances, to develop performance interpretation. *Prerequisite:* DANC 2381 or instructor approval.

3381. Repertory and Performance III. Rehearsal and performance of master works of choreography, with emphasis on refinement of detail, clarity of phrasing, expression, musicality and versatility within a broad range of styles. *Prerequisite:* DANC 2382 or instructor approval.

3382. Repertory and Performance IV. Rehearsal and performance of additional master works of choreography, with emphasis on refinement of detail, clarity of phrasing, expression, musicality and versatility within a broad range of styles. *Prerequisite:* DANC 3381 or instructor approval.

4003, 4004, 4103, 4104. Pas de Deux I. Introduction to the basic elements of partnering inherent in classical ballet. Emphasis on technical skills and classical style. Includes excerpts from classical repertory. Admission by invitation. *Prerequisite:* Instructor approval.

4005, 4006, 4007, 4008, 4105, 4106, 4107, 4108. Pas de Deux II. Further exploration of the elements of partnering with an emphasis on more complex technical skills and stylistic versatility. Includes excerpts from classical repertory. Admission by invitation. *Prerequisite:* Instructor approval.

4045, 4145, 4245. Advanced Choreographic Projects. Individual directed studies in choreography with a culminating performance. *Prerequisites:* DANC 3244 and instructor approval.

4260. Pilates. A non-impact body conditioning method based on principles of abdominal and scapular stabilization. A continuation of DANC 2160, this course adds advanced mat work and Reformer exercises. Designed to give the student further understanding of the principles and muscular emphasis behind the Pilates method. Proper alignment, full range of motion, and patterned breathing will be emphasized. *Prerequisite:* DANC 2160 or instructor approval.

JOURNALISM

Tony Pederson, **Belo Distinguished Chair of Journalism**

Assistant Professors: Mel Coffee, Craig Flournoy, Camille Kraeplin, J. Richard Stevens; **Executive-in-Residence:** Lucy L. Scott; **Senior Lecturers:** Carolyn Barta, Michele Houston, Lori Stahl, Jayne Suhler. **Adjunct Professors:** Robert Hart, Pam Harris.

The world of journalism is changing fast. Once-divergent media forms are rapidly coming together in ways that make it essential for 21st-century journalism education to reflect the complexity of actual practice. Graduates must be prepared to function and lead in a new and changing environment. The Division of Journalism prepares students to succeed in this dynamic setting.

Majors will study multimedia journalism, including broadcast, print and online options. They will learn professional skills that will enable them to adapt swiftly to a changing journalism environment. Content that is useful and interesting will have value regardless of the delivery system or systems of a particular era. For this reason, students also are taught the intellectual and theoretical skills they will need to help them interpret the world around them and understand the role of the media in society. They will graduate as clear, concise thinkers and writers.

Instructional Facilities

The Division of Journalism is located in the Umphrey Lee Center, which houses faculty and administrative offices, audio and video production, and media support areas, including a new digital newsroom. Over time this facility will be a place where journalism students can write, edit and produce their work across a digital network that will give them skills to work in print, broadcast and on the Internet.

The division also has basic video/audio modules; video logging rooms; off-line editing rooms; a nonlinear video editing lab; equipment storage and checkout; digital audio rooms; a teaching radio studio; a seminar room; classrooms; a graphics lab; an editing lab; viewing rooms; and production classrooms.

Admission and Degree Requirements

Strong writing skills are essential to the student's success in the division's journalism curriculum and later in the profession of journalism. Students may enroll in journalism classes as first-year students. Those wishing permission to major in the Division of Journalism must have completed ENGL 1301 (Introduction to College Writing) and ENGL 1302 (First-Year Seminar in Rhetoric: Contemporary Issues). The student must compile a minimum G.P.A. of 3.00 (*B*) in both courses. Essay and grammar, spelling and punctuation tests must be successfully completed before students are allowed to declare journal-

ism as a major. Students transferring from other universities must have completed equivalent courses and obtained the equivalent G.P.A. in those courses before they can be considered a major candidate in the Division of Journalism.

Scholarships

Honors Scholarships are awarded each year to outstanding students who intend to major in journalism. Other scholarships are available to journalism students through a variety of foundations and gifts to the division.

Honors Program

The Honors Program in Journalism is highly selective. At midterm of the sophomore year, and again at midterm of the junior year, declared journalism majors with a G.P.A. of 3.50 or better can apply to the Honors Program. All interested students, including those who have been previously awarded honors scholarships, need to apply for admission to the program. At midterm of the senior year, the top 10 percent of the graduating class is invited for membership in Kappa Tau Alpha, the Journalism Mass Communication Honor Society. Those wishing to graduate with distinction in journalism must complete 12 hours of coursework in honors course sections within the various communications divisions. In addition, seniors must complete an honors directed study and produce an honors thesis. For further information, contact the Honors Program director, Division of Journalism, Meadows School of the Arts, 280 Umphrey Lee, Southern Methodist University, Dallas, TX 75275.

Internships and Practica

Upon achieving junior and senior status, students are encouraged to take on experiences that enable them to work under the guidance of professionals in the news industry (internships). Many on-campus activities also offer practical experience (practica), and students are strongly urged to take advantage of the opportunities available to them through both the Student Media Company, which publishes a daily newspaper and a yearbook, and the Journalism Division. Practica are taken for one credit hour at a time. Internships may be taken for one, two or three credit hours at a time, depending on the number of hours worked. A total of three credit hours of internships and practica may be counted toward a student's degree requirements but may not be counted toward the required six credit hours of electives within the division. Internships and practica are taken on a pass/fail basis only.

Class Attendance

Due to limited class space and enrollment pressures, a student who fails to appear on the first day of class may be administratively dropped from the class at the instructor's discretion. Furthermore, students must comply with any more specific attendance policies spelled out in course syllabuses; creation and enforcement of such policies are entirely at the instructor's discretion. The division strives to keep class size small enough for individual attention, and large enough to ensure discussion and interaction among students. Very large enrollments will be limited and very small classes may be merged or canceled.

Off-campus Programs

American University. Through a cooperative program with American

University in Washington, D.C., students have an opportunity to study in the nation's capital as a part of the Washington Term Program. Students may obtain credit for courses such as Reporting I, Reporting II and Internship, as well as courses in other disciplines.

SMU-in-London. SMU students can earn six credit hours by enrolling in the SMU-in-London Communications program. Conducted each year during the second session of summer school, the program allows students to study in London, a hub for international communications. Courses offered carry three credit hours. They do not require prerequisites and are designed to take full advantage of London's importance as an international center. Students live in dormitories in London. As part of their international experience, students are encouraged to explore the culture and fine arts offerings of London and European countries on their own, as class schedules permit.

Program of Study

The role of the journalist in today's society has become increasingly complex and important because of a paradox: as the world shrinks amid the communication revolution, the journalist's horizons and responsibilities have vastly expanded. The rapid development of converging media technologies means journalists of the 21st century must know more about the world and also be capable of working in a variety of new media. At the same time, the next generation of journalists must retain the core ethics and values of the craft. Journalism students will study multimedia journalism, learning the basic skills and conventions of broadcast journalism, print journalism and the emerging skill set needed to practice journalism on the Internet. The major requires 36 credit hours within the division. A total of 80 credit hours must be taken outside the division. At least 65 of these hours must be in the arts and sciences. The only exceptions for the 65 hours in arts and sciences allowed are for those students with a second major or minor in a field not related to arts and sciences. A foreign language capability of eight credit hours or its equivalent is required, and students also must satisfy Meadows School of the Arts requirements with three credit hours outside the Meadows communication divisions. Courses may be used to fulfill only one of the student's divisional requirements (i.e., a student may not fulfill two divisional requirements with one course). Note: All journalism majors must declare and complete a second major or a minor of their choosing outside of communications.

NOTE: Only CCJN courses passed with a grade of C- or better will count for credit toward the major in journalism.

Bachelor of Arts in Journalism

	<i>Credit Hours</i>
General Education Curriculum	41
<i>Journalism Core Curriculum (21 Hours):</i>	
CCJN 2302 Ethics of Convergent Media	3
CCJN 2303 Writing and Editing for Journalists	3
CCJN 2304 Basic Video and Audio Production	3
CCJN 2312 Reporting I	3
CCJN 2313 Reporting II	3

CCJN 2380 Digital Journalism 3
CCJN 4316 Communication Law 3

Skills Requirement: 3

All Journalism majors are required to take 3 credit hours of Journalism Skills courses. Students may choose any of the CCJN courses from the list below:

CCJN 3357 Photojournalism
CCJN 3360 Computer Assisted Reporting
CCJN 3358 New Media News
CCJN 3365 Investigative Reporting
CCJN 3382 Feature Writing
CCJN 4310 Editorial/Opinion Writing
CCJN 3385 On-Air Reporting
CCJN 4320 TV News Reporting
CCJN 4321 Radio News
CCJN 4383 TV News Producing
CCJN 4384 Advanced TV News
CCJN 4385 Graphics and Design

Credit Hours

CCJN 4388 Print Design and Editorial Decision-Making
CCJN 4390 Advanced Web Mastery

Topical Studies Requirement: 3

All Journalism majors are required to take 3 credit hours of Journalism Topical Studies courses. Students may choose any of the CCJN courses from the list below:

CCJN 3325 Technology Reporting
CCJN 4300 Broadcast News Seminar
CCJN 4306 Business and Journalism
CCJN 4344 Sports Journalism
CCJN 4345 Media and Politics
CCJN 4387 Arts Criticism
CCJN 4392 Journalism and Religion
CCJN 4395 Pin Journalism
CCJN 5302 Topics in Public Affairs Reporting
CCJN 4396 International Reporting
CCJN 5301 Topics in Journalism
CCJN 5303 Topics in Journalism
CCJN 5304 Topics in Journalism

Critical Studies Requirement: 3

All Journalism majors are required to take 3 credit hours of Journalism Critical Studies courses. Students may choose any of the CCJN courses from the list below:

CCJN 3390 Literary Journalism
CCJN 3396 History of Journalism
CCJN 4331 Current Issues in the News
CCJN 4360 Women and Minorities in the Media
CCJN 4370 Law and Ethics in a High-Tech World
CCJN 4380 Objectivity and Bias

CCJN 4394 Media Effects	
CCJN 4393 Civil Rights and the Media	
CCJN 4397 Journalism in Latin America	
Journalism Electives (any Journalism course):	6
All Journalism majors are required to take at least 6 credit hours of Journalism Electives. Students may choose any CCJN course.	
Meadows Elective/Corequirement	3
Foreign Language	8
Free Electives	34
<hr/>	
TOTAL	122

Minor in Journalism

The minor in Journalism provides a basic understanding of the role of the news media in American society and an introduction to the basic skills necessary for the practice of the field.

Requirements: 24 term hours, distributed as follows:

- CCJN 2302** Ethics of Convergent Media
- CCJN 2303** Writing and Editing for Journalists
- CCJN 2304** Basic Video and Audio Production
- CCJN 2312** Reporting I
- CCJN 2313** Reporting II
- CCJN 2380** Digital Journalism
- CCJN 4316** Communication Law

Three additional credit hours in any CCJN course.

The Courses (CCJN)

2301. Mass Media and Society. A survey of all print and broadcast media – their backgrounds as well as their current status as industries. Ethics, law, effects of mass media, international communication, advertising and public relations are also treated.

2302. Ethics of Convergent Media. An exploration of the ethical issues that provide the foundation for all communication fields. These issues have become more complex as media and industries have converged. Topics include free speech, privacy, government regulation and censorship.

2303. Writing and Editing for Journalists. Introduction to the fundamentals of working journalism. Students master English grammar, become versed in the Associated Press writing style, and develop critical thinking skills necessary to evaluate the news.

2304. Basic Video and Audio Production. Offers students practical training in the fundamentals of broadcast communication. Students learn the basic techniques, including field production and editing, control room and studio editing. *Prerequisite:* CCJN 2303.

2312. Reporting I. The division's rigorous foundation writing and reporting course. Students gain critical skills needed to complete the major, including the fundamentals of gathering, documenting, organizing and writing news stories in an accurate, fair, clear and concise manner. *Prerequisites:* CCJN 2302, 2303.

2313. Reporting II. Builds on the foundation of Reporting I. Students learn to analyze information quickly and accurately while applying critical thinking skills. Introduces students to the basics of broadcast writing. *Prerequisite:* CCJN 2312.

2380. Digital Journalism. Students study the convergence of traditional media as they apply to new communication technologies and produce multimedia Web sites that incorporate photography, videography, audio and graphics. *Prerequisites:* CCJN 2304, 2312.

3325. Technology Reporting. Helps journalists of tomorrow understand complex technologies like the World Wide Web in a way that will help them foresee the impact of those technologies on society, our culture and our way of life. *Prerequisite:* CCJN 2312.

3357. Photojournalism. Training in the techniques and execution of digital photojournalism including computer processing of images. Students produce digital photojournalism and have the opportunity to generate photographic images for the division's convergence Web site. *Prerequisite:* CCJN 2302, 2303.

3358. New Media News. Focuses on using new media presentation methods and design skills to produce new forms of communication for news outlets. *Prerequisite:* CCJN 2380.

3360. Computer Assisted Reporting. Emphasizes a hands-on approach through the gathering and organizing of computerized data. Students learn techniques for locating, retrieving and verifying information from electronic sources including libraries, research institutions, government documents, databases, court cases and experts. *Prerequisite:* CCJN 2313.

3365. Investigative Reporting. Intensive introduction to the art of generating original news ideas about issues of public significance, developing critical news judgment, unearthing often difficult-to-access information, and organizing the information into focused, well-documented and compelling stories. *Prerequisite:* CCJN 2313.

3382. Feature Writing. Emphasizes the conceptual and technical skills needed to develop one's own voice, bring a literary quality to one's journalism, and produce professional-level descriptive pieces and features for various media. *Prerequisite:* CCJN 2313.

3385. On-Air Reporting. Students work in small groups to produce news and commentary segments for television and radio. Goal is to provide substantive analysis of social, cultural and economic issues of interest to college students. *Prerequisites:* CCJN 2304, 2312.

3390. Literary Journalism. Students explore and analyze nonfiction through roundtable discussion, book reviews and creative writing. Course requires heavy reading with an emphasis on books and essays of the last 100 years. *Prerequisite:* Sophomore standing.

3396. History of Journalism. The story of how American journalism became what it is today. The course emphasizes the people and events that transformed the media from the colonial printer into 21st century media conglomerates. *Prerequisite:* Sophomore standing.

4300. Broadcast News Seminar. A small group of selected students conduct an in-depth study of current events, examining and analyzing issues and producing sophisticated television programming. *Prerequisite:* CCJN 4320.

4306. Business and Journalism. Designed to bridge the gap between journalists and business professionals by providing insight into the inner workings of both professions. Course is team taught by a journalism and a business professor and includes lectures, guest speakers and case studies. *Prerequisite:* CCJN 2313.

4310. Editorial/Opinion Writing. Examines the role of opinion writing in American journalism and teaches techniques that will help students develop clear and effective editorials and columns on a range of topics. The course emphasizes critical thinking and writing skills. *Prerequisite:* CCJN 2313.

4316. Communication Law. Exploration of the historical and philosophical basis for freedom of expression. Practical applications of the law in such areas as libel, censorship, access, privacy, obscenity, copyright and government regulations affecting broadcasting, advertising and the press. *Prerequisite:* Sophomore standing.

4320. TV News Reporting. Writing, videotaping and editing news reports for television. Includes live reporting. *Prerequisite:* CCJN 3385.

4321. Radio News. Fundamentals of reporting and news writing are adapted to a radio environment. Students do original reporting, write radio copy from wire and campus sources and read copy on air. *Prerequisite:* CCJN 2312.

4331. Current Issues in the News. Encourages students to think critically about

important issues in journalism today, acquaints them with the classic writings and ideas that have shaped modern journalism, and identifies the key concepts that have formed recent journalism criticism. Goal is to teach communications majors to become more creative problem-solvers as professionals, and more critical as media consumers. *Prerequisite*: Sophomore standing.

4344. Sports Journalism. Emphasizes the particular narrative style and newsgathering techniques of sports stories and coverage. Students will learn how to interview sports personalities and compose stories relating to the competitive events and social issues surrounding the world of sports. *Prerequisite*: CCJN 2313.

4345. Media and Politics. Increased understanding of the political and elections process enables students to evaluate and practice political journalism. The course covers campaigns and governance and features analysis of media coverage and practical application. *Prerequisite*: CCJN 2312.

4360. Women and Minorities in the Media. Examines the impact and representation of women and minorities in the mass media from historical and critical perspectives. *Prerequisite*: Sophomore standing.

4370. Law and Ethics in a High-Tech World. Encourages students to investigate the real and possible boundaries in cyberspace between open and closed systems of code, commerce, governance and education, while examining the relationship of law and ethics to each. Students will engage with a wide spectrum of Net issues, including privacy, intellectual property, antitrust concerns, content control and electronic commerce. *Prerequisite*: Sophomore standing.

4380. Objectivity and Bias. Identifies the various forces that critics say bias the news media and looks for evidence of these biases in media products. *Prerequisite*: Sophomore standing.

4383. TV News Producing. Develops producing, anchor and management skills. Students exercise journalistic and ethical judgment under deadline pressure. Designed to prepare students for first job in a TV newsroom. *Prerequisite*: CCJN 4320.

4384. Advanced TV News. Sharpens basic general assignment TV reporting skills by emphasizing long-form reporting. Goal is to produce substantive specialty pieces such as trend, consumer or feature stories of cultural and social interest suitable for air in a medium-size TV market. *Prerequisite*: CCJN 4320.

4385. Graphics and Design. Introduction to the principles and processes associated with visual design. Students examine the roles of visual design as both a tool and a medium of communication and cultural production. Assignments include creating, altering, editing and processing images; conceptualizing, formatting, analyzing and refining typography; and preparing materials for production and publication, utilizing one or more media. *Prerequisite*: CCJN 2312.

4387. Arts Criticism. Students gain experience writing reviews of movies, books, art exhibits, concerts, etc. The course includes sessions with local critics and experts in various areas of arts and literature. *Prerequisite*: CCJN 2313.

4388. Print Design and Editorial Decision-Making. The fundamentals of newspaper layout and design, including an emphasis on news selection, decision making and publication trends. *Prerequisite*: CCJN 2312.

4390. Advanced Web Mastery. Builds on the online journalism skill sets of students and trains them to create dynamic online news packages to leverage the flexibility of the Internet in order to increase the public's understanding of news stories. Students will learn how to compose their own Web sites, how to use technology to assist in newsgathering and how to unleash their creativity in online presentation. *Prerequisite*: CCJN 2380.

4392. Journalism and Religion. Introduces students to the basics of the world's major religions and describes how journalists should cover faith-based organizations and interview religious leaders. *Prerequisite*: CCJN 2313.

4393. Civil Rights and the Media. Prior to the 1950s, the mainstream press was one of the major obstacles to black progress. But during the Civil Rights Movement, the media became a primary force in helping blacks achieve equal rights. Course explores how and why this revolutionary change took place. *Prerequisite:* Sophomore standing.

4394. Media Effects. A critical study of how mediated messages influence behavior, attitudes and feelings within a society. The course will survey historical research efforts to examine effects on individuals, groups and institutions, as well as contemporary social critiques in the American mass media. *Prerequisite:* Sophomore standing.

4395. Public Affairs Reporting. Emphasis on skills required for the reporting of news emanating from governmental bodies or politics. *Prerequisite:* CCJN 2313.

4396. International Reporting. Prepares students to work as foreign correspondents by helping them understand international production processes. Students will profile current American correspondents who work in foreign countries, comparing their work to those of their contemporaries. Students also engage in news-gathering assignments to encourage them to publish on matters of international interest. *Prerequisite:* CCJN 2313.

4397. Journalism in Latin America. Provides students with an understanding of the practice of journalism in Latin America. Students will profile specific regions, examining the historical, political, economic, cultural, ethnic and even geographical differences, in order to better understand the issues that affect the struggle for the freedom of the press. *Prerequisite:* Sophomore standing.

4101-2. Journalism Practica. One credit hour for work at on-campus media positions. Maximum of two credit hours may be earned and counted toward degree requirements. See restrictions on allowable credit hours for practica and internships below. Offered on a Pass/Fail basis only. *Prerequisites:* Junior standing and permission of instructor and adviser.

5110, 5210, 5310. Directed Study. Independent study under the direction and supervision of a faculty member. In close collaboration with the instructor, the student conducts a rigorous project that goes beyond the experience in course offerings. Written permission from the instructor is required and a completed directed studies form must be filed in the Division of Journalism office before the start of the term during which the study is to be undertaken. *Prerequisite:* Junior standing and permission of instructor.

5301-4. Topics in Journalism. Designed to provide a study and discussion setting for an issue or topic of current interest in the journalism profession. The courses will be offered on an irregular basis, depending on the significance and timeliness of the topics to be studied.

4125, 4225, 4325. Internships in Journalism. Internship credit for off-campus work in the field during the regular term or in the summer. Students will be limited to a total of three credit hours for internships and practica. These three hours will not count toward the six hours of required elective credit in the division. Offered on a Pass/Fail basis only. *Prerequisites:* Junior standing and permission of adviser.

4302-5. Washington Term Directed Studies. Offers students an opportunity to study and practice journalism in the nation's capital.

4326. Washington Term Internship. Internship opportunities in the nation's capital.

5308. Honors Thesis. Students research and write a thesis examining an aspect of or an issue in the field of journalism. This course is required for all students wanting to graduate with an honors degree in journalism.

MUSIC

Nancy Cochran, **Director**

Samuel S. Holland, **Associate Director for Academic Affairs**

Alan Wagner, **Assistant Director for Student Affairs**

Joel Estes Tate Professor of Piano: Joaquin Achucarro; **Professors:** , José Antonio Bowen, Jack Delaney, Virginia Dupuy, Samuel Holland, David Karp, Barbara Hill

Moore, Alfred Mouldous, Larry Palmer, Paul Phillips, Simon Sargon, Thomas Tunks; **Associate Professors:** Andres Diaz, Robert Frank, Kevin Hanlon, Michael Hawn, Carol Leone, David Mancini, Donna Mayer-Martin, Martin Sweidel.; **Assistant Professors:** Marciem Bazell, Stuart Cheney, Jacqueline Hale, Bonnie Jacobi, Robert Krout.; **Senior Lecturer:** Joan Heller; **Lecturers:** Dale Dietert, Matthew Kline, Catharine Lysinger, Jamal Mohamed; **Adjunct Professors:** Robert Guthrie, Gregory Hustis; **Adjunct Associate Professors:** Christopher Adkins, Thomas Booth, Kalman Cherry, Donald Fabian, Gary Foster, Paul Garner, Matthew Good, Erin Hannigan, Douglas Howard, John Kitzman, Jean Larson, Thomas Lederer, Ronald Neal, Wilfred Roberts, Ellen Rose, Jan Mark Sloman, Barbara Sudweeks; **Adjunct Assistant Professors:** Deborah Baron, Alessio Bax, Kim Corbet, Susan Dederich-Pejovich, Mark Feezell, Haley Hoops, Diane Kitzman, Brian Merrill, Deborah Perkins, Heather Schmidt, Timothy Seelig, Kara Welch; **Adjunct Lecturers:** Barbara Bastable, John Bryant, Mary Cates, Martha Gerhart, Kevin Gunter, Lynne Jackson, Drew Lang, Jon Lee, Akira Sato, Edward Smith, James Tran; **Mustang Band Staff:** Don Hopkins, Tommy Tucker; **Accompanists:** Wesley Beal, Tara Emerson; **Vocal Coach:** Hank Hammett, **Visiting Artist:** Chee-Yun Kim.

Admission

In addition to meeting University admission criteria, entering undergraduate students intending to major in music must audition prior to matriculation. These auditions serve the purpose of determining the prospective student's previous experience and potential for success in the intended major. (Entering students intending to major in composition must submit a portfolio of original compositions and pass a performance audition.) Both the Division of Music and the University must accept the candidate in order for him or her to be classified as a music major. Information regarding auditions may be obtained by writing to the Assistant Director for Student Affairs of the Division of Music. The Division of Music considers transfer credits and AP test results in decisions regarding advanced placement. Departments reserve the right to give additional tests to determine the most appropriate placement in any course sequence.

Facilities

Concert performances are presented in Caruth Auditorium, a 490-seat concert hall that can be acoustically "tuned" for any type of musical presentation; the 168-seat Robert J. O'Donnell Lecture-Recital Hall; and the Dr. Bob and Jean Smith Auditorium in the Meadows Museum. Opera productions are presented in the 295-seat Bob Hope Theatre. The Jake and Nancy Hamon Arts Library houses an inspiring collection of over 110,000 books and scores, over 30,000 audio and video recordings, and over 100,000 items in Special Collections of research materials such as the Van Katwijk Music Collection.

The electronic keyboard laboratory, used for class instruction in piano, theory and improvisation, is equipped with Yamaha 88-key digital pianos, a MLC 100 Communications Center, computers at each station, and a variety of sequencers, tone modules, and software applications.

Student recitals and faculty and ensemble performances are digitally recorded. All recordings are mastered as a CD and are of a quality acceptable for auditions, competitions, applications and archival purposes.

The Meadows Center for Instructional Technology in the Arts features some

of the most current instructional software in music theory, analytical research, music printing, music therapy and music education.

The Group and Individual Music Therapy Clinics, connected by an observation room, offer student therapists opportunities for clinical practicum experiences under faculty supervision.

The Division of Music has an impressive inventory of grand pianos including 30 Steinways, three harpsichords (two double-manuals by Schuetze and Dowd, and a single-manual by Martin), and nine pipe organs (an original Iberian organ built by Caetano in 1762, a four-stop continuo and an eight-stop practice organ built by Alfred Kern, a three-manual 51-stop tracker organ built by C.B. Fisk, a 22-stop Holtkamp, a three-manual tracker by Robert Sipe, and three tracker organs built by von Beckerath).

The Electronic Music Studio is a digital multitrack facility featuring the latest hardware and software on a Macintosh/ProTools-based platform. The studio is also equipped with a full range of MIDI equipment for synthesis, sampling, sequencing, signal processing, video post scoring, and recording (digital and analog).

Act of Enrollment

When a student enrolls with Meadows School of the Arts Division of Music for participation in a music course — whether as a music major, music minor or through elective study — by the act of enrollment and in consideration of the right to participate in such course, the student (1) acknowledges his or her willingness to accept and comply with the standards and policies set forth in the *Division of Music Handbook*, the *Graduate Supplement to the Division of Music Handbook*, and all other University rules and regulations; (2) assigns to the University the exclusive right to use the proceeds from any curricular or extracurricular promotional, publicity or entertainment activities associated with the course, including but not limited to photographs, television, recordings, motion pictures, concerts and theatrical productions, and any right the student may have to receive any royalties and/or other sums that may be due to the student from such activities; (3) releases the University, its trustees, officers, agents, employees, and assigns from any obligation to pay any proceeds, royalties and/or other sums that may be due to the student in connection with the course; and (4) agrees, on request of the University, to periodically execute all documents necessary to acknowledge the assignment and release set forth herein.

Specific Music Requirements

During the second year of study, each pre-music major or transfer student must apply for upper division degree/major status. The Associate Director for Academic Affairs of the Division of Music reviews applications.

All full-time music majors are required to enroll for Recital Attendance (MUAS 1010) each term of residence for which they will receive a grade of Pass or Fail. Minors are required to enroll for four terms. To complete the requirements of the course and receive a passing grade, majors must attend a minimum of 15 (minors 10) recitals each term, in addition to those in which

the student is participating for credit. A grade of Incomplete may be awarded by the Associate Director in case of illness or other reason based on student petition.

All second-year students shall present one solo performance in general recital each term.

All music majors, with the exception of guitar, piano, organ, composition and music therapy, are required to enroll in one large ensemble (wind ensemble, orchestra or choral ensemble) each term of residence. Wind and percussion students are required to enroll for both Meadows Symphony Orchestra and Meadows Wind Ensemble at the discretion of the directors. Exemptions may be granted by written approval of the ensemble director and the applied faculty in an area. Transfer students will not be exempted from the large ensemble requirement based on transfer credits.

Each performance major is required to perform in recital at least one piece representing each major style period in which solo music was composed for the student's instrument (including voice). This is meant to encourage performance of contemporary works, including music written during the student's lifetime.

The Division of Music requires attendance at all scheduled class meetings, lessons and ensemble rehearsals. The instructor determines in all instances the extent to which absences affect each student's grade. Students should become thoroughly acquainted with the class attendance policy established by their teachers and ensemble directors. Instructors are in no way obligated to make special arrangements for the student to accommodate any level of absence. All reasons for absence should be submitted in advance to the instructor. Failure to do so may result in a student being dropped from a course with a grade of *WP* (before the calendar deadline to drop) or receiving a grade of *F* for the course.

All undergraduate music majors must receive a minimum grade of *C-* in all courses specified in the major. The major consists of all courses listed in the student's degree plan with the exception of GEC, free electives and course work in a minor or second major. Students must retake major courses in which a grade below *C-* is received. A course may be repeated only once.

When the total number of hours required to satisfy the General Education requirements and the major requirements along with the major's supporting course requirements exceeds 122 term hours, students in such majors will be exempt from three (3) hours of Perspectives and an additional three (3) hours taken from either Perspectives or Cultural Formations.

Programs of Study
Bachelor of Music in Performance

	<i>Credit Hours</i>			
	Organ	Orch	Voice	Piano
<i>General Education Curriculum (GEC)</i>	35	35	35	35
<i>MUAS 1010 (MUAS 1020 first-year fall term)</i>	0	0	0	0
<i>MUTH 1129, 1130, 1229, 1230, 2129, 2130, 2229, 2230, 3350</i>	15	15	15	15
<i>MUTH elective at the 3000 level or above</i>	3	3		3

MUHI 1202, 3301, 3302,4000 level elective	11	11	11	11
PERB 1131, 1132, 2131, 2132 (or 1233, 1234)	4	4	4	4
PERB 1001	0	0	0	0
	Credit Hours			
	Organ	Orch	Voice	Piano
MUPR (Performance Studies)	16	16	16	16
MUCO 3208 or 3209	2	2	2	2
PERE (Any Choral Ensemble)			6	
PERE (Large Ensemble)	6	6		3
PERE (Chamber Ensemble)	1	3		2
PERB 3116 (Contemporary Music Workshop) (vocalists may substitute MREP 5210)	1	1	1	1
Music Electives	10	11	5	5
Electives	9	9	9	9
For Organ: MURE 3101, 4201	3			
MUHI 4320, 5207; MPED 5114	6			
MUAC 2101, 2102	2			
For Orchestral: MURE 3101, 4201		3		
MPED 4305 (MPED 4303 is required for Guitar majors.)		3		
MREP 5130 or 5140 or 5150 or 5160 or 5170		2		
For Voice: MURE 3001, 4101			1	
VOIC 3015, 3116, 4017, 4118			2	
PERB 2117 or PERE 4150 (two terms)			2	
PERB 2106, 2108, 2107, 2109; MPED 5216			6	
MPED 5217 or two additional terms of PERB 2117		2		
Two terms of Foreign Language			8	
For Piano: MURE 3101, 4201				3
PERB 1011, 1012				1
MUAC 2101, 2102				2
MUAC 3100				3
MUPD 4125, 4126, 4396, 4397				8
MREP 4114, 4115				2
Meadows Elective/Corequirement	3	3	3	3
TOTAL	124	124	125	125

Guitar majors follow the Orchestral Instruments curriculum and are required to take only four credits of large ensemble.

Percussionists take 16-20 credits of applied study. Elective hours are reduced accordingly.

Piano majors may earn an Emphasis in Piano Pedagogy by substituting MUPD 5325 and 5326 for MUPD 4125 and 4126.

Bachelor of Music in Composition

	Credit Hours
General Education Curriculum (GEC)	35
MUAS 1010 (MUAS 1020 First-year fall term)	0
MUTH 1129, 1130, 1229, 1230, 2129, 2130, 2229, 2230, 3350	15
MUTH 3110, 4300, 4310, 5360, 5370	13
MUTH 1225, 1226, 2225, 2226, 3325, 3326, 4329, 4330	20

MUHI 1202, 3301, 3302	8
PERB 1131, 1132, 2131, 2132 (or 1233, 1234)	4
MUPR (Performance Studies)	4
MURE 4201	2
MUCO 3208 or 3209	2
PERE/PERB (Ensemble)	8
(Must include two terms of large ensemble and two terms of Contemporary Music Workshop [PERB 3116])	
	Credit Hours
Music Electives	5
Electives	9
Meadows Elective/Corequirement	3
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TOTAL	125

Each year students must present at least one performance of an original work on a general/studio recital or in another appropriate form or medium (i.e. a film score, incidental music, dance, electronic music installation, etc.).

Attendance at regularly scheduled composition seminars is expected of all students enrolled in private composition study; failure to attend will be reflected in the grade given for composition.

Bachelor of Music in Music Therapy

	Credit Hours
General Education Curriculum (GEC)	35
Specific GEC requirements:	
Math – STAT 1301	
Science – BIOL 1303	
Perspectives – PSYC 1300	
MUAS 1010 (MUAS 1020 first-year fall term)	0
MUTH 1129, 1130, 1229, 1230, 2129, 2130, 2229, 2230	12
MUHI 1202, 3301, 3302	8
PERB 1131, 1132, 2131, 2132 (or 1233, 1234)	4
MUAS 3152, 3155, 5110	3
PERB 1103	1
MUPR (Performance Studies)	10-12
MURE 3101 (optional)	0-1
MUCO 3208 or 3209	2
PERE (Ensemble) and/or Contemporary Music Workshop (PERB)	4
Electives	11
MUTY 1120, 1320, 3211, 3212, 3213, 3214, 3141, 3142, 3143, 3144, 4340, 4341, 4144, 4145, 4141, 4142	26
PSYC 3332, 3382, 5334, 5355	12
PSYC choose from 3380, 3383, or 5388	3
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TOTAL	132

Students with a concentration in voice, percussion or guitar must substitute music electives for the corresponding technique class.

Students completing this program of study will also attain a minor in Psychology.

c h o l o g y .

Students majoring in Music Therapy have two junior-level performance options: (1) to present a minimum of one solo performance in general recital each term of the junior year, or (2) to present a half recital of 30 minutes.

Before enrolling for internship MUTY 4144, the student must meet the following conditions:

1. Completed all course, practicum and preclinical work
2. Demonstrated good physical health and emotional stability..
3. Achieved functional competency on piano, guitar, percussion and voice.
4. Achieved a cumulative G.P.A. of 2.50 and a 2.75 in all music therapy courses..

The B.M. degree in Music Therapy is approved by the American Music Therapy Association. Successful completion of this program entitles the graduate to take the national board examination in music therapy administered by the Certification Board for Music Therapists. The official designation by the board is MT-BC, the nationally accepted credential of qualified music therapists.

Bachelor of Music (Teacher Certification*)

	<i>Credit Hours</i>	
	<i>Instrumental</i>	<i>Vocal or Keyboard</i>
<i>General Education Curriculum (GEC)</i>	35	35
<i>MUAS 1010 (MUAS 1020 first-year fall term)</i>	0	0
<i>MUTH 1129, 1130, 1229, 1230, 2129, 2229, 2130, 2230, 5330</i>	15	15
<i>MUHI 1202, 3301, 3302</i>	8	8
<i>PERB 1131, 1132, 2131, 2132 (or 1233, 1234)</i>	4	4
<i>MUPR (Performance Studies)</i>	14	14
<i>MUCO 3208 & 3210 (vocal), 3209 & 3211 (instrumental)</i>	4	4
<i>PERE (Large Ensemble)</i>	5	5
<i>PERE (Chamber Ensemble)</i>	1	1
<i>Keyboard concentrations may substitute one credit of MUAC 2101 or 2102</i>		
<i>Vocal concentrations may substitute one credit of Large Ensemble</i>		
<i>PERB 3116 (Contemporary Music Workshop)</i>	1	1
<i>MUAS 2149, 3152, 5110</i>	3	3
<i>Instrumental: 3146, 3147, 3148, 3149, 3150, 3151, 3155, 5154 (optional for strings)</i>	8	
<i>Vocal or keyboard: 3146 or 3147, 3148 or 3149, 3150 or 3151, 4230, MPED 5216 (Keyboard may substitute MUAS 3155)</i>		7
<i>MUED 2250, 3330</i>	5	5
<i>MUED 3331 (instrumental) or 3332 (vocal/keyboard)</i>	3	3
<i>PERB (Diction: Choose any two from the following: 2106, 2108, 2107, 2109)</i>		2

<i>EDU 5335 and EDU 5368/5369</i>	6	6
<i>PSYC 2331 or EDU 2350</i>	3	3
<i>Free Electives</i>	9	9
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TOTAL	124	125
*Additional requirements for Teacher Certification:		
<i>EDU 5363 or 5364 (Student Teaching Elementary)</i>	3	3
<i>EDU 5373 or 5374 (Student Teaching Secondary)</i>	3	3
<i>Successful completion of the state TExES examination.</i>		

The senior major has three performance options: (1) to continue the study of the instrumental or vocal concentration, with one solo performance in general recital; (2) to divide study between the concentration and a secondary instrument or voice; or (3) to engage in the private study of one or more instruments or voice other than the concentration. Prior to student teaching certification, students must submit documentation of 45 observation hours in K-12 schools.

Student teaching, in addition to being subject to the eligibility requirements published by the School of Education, must be approved by the Music Education department, must follow successful completion of all methods (MUED) and techniques (MUAS) courses, and is considered a full-time endeavor, with no daytime course work or concurrent ensemble assignments.

Dual Degree in Performance and Music Education

Students who meet degree candidacy criteria in both performance and music education, can pursue dual degrees in these fields. If begun by the second or third term, the second degree can usually be achieved with a range of 9-17 additional credits (approximately one term), through wise use of electives and curricular planning. Students considering these plans should consult their adviser and the department heads as early as possible in their academic program.

The state mandated "TExES" examination is usually taken during the term of student teaching and requires concurrent attendance in preparation seminars. Students are not eligible to apply for certification until completion of degree requirements, student teaching, and successful completion of the TExES.

Bachelor of Arts in Music

	<i>Credit Hours</i>
<i>General Education Curriculum (GEC)</i>	41
<i>MUAS 1010 (MUAS 1020 first-year fall term)</i>	0
<i>MUTH 1129, 1130, 1229, 1230, 2129, 2130, 2229, 2230</i>	12
<i>MUHI 1202, 3301, 3302</i>	8
<i>MUTH or MUHI elective at the 4000 level or above</i>	3
<i>PERB (Class Piano, according to proficiency)</i>	0-2
<i>MUPR* (Private Studies) or MUTH (Composition in combination with Performance Studies)</i>	8-14
<i>PERE (Ensemble)</i>	4
<i>Music electives (may include senior project)†</i>	9-11
<i>Electives outside of music</i>	32
<i>Meadows Elective/Corequirement</i>	3

The B.A. degree is intended to serve students seeking to combine a music degree with interests in one or more of the following: a broad liberal arts education, the possibility of exploring the interdisciplinary relationship of music course work to course work in other areas of the Meadows School and the University as a whole, a dual degree, a minor, preparation for medical school, preparation for graduate study in music, participation in the SMU Honors Program, or a term or summer of study abroad.

Dual Degree with Computer Science

A special four and one-half year program leading to the degrees of Bachelor of Arts in Music and Bachelor of Science in Computer Science is available. Contact the Division of Music for more details.

Music Minor

The minor is designed to provide one of the following objectives:

1. *A course of study in music with sufficient breadth and depth to satisfy the artistic aspiration of students from any major who have some background and experience in music, or*
2. *An alternative to the rigorous course of study required for the major in music for those students who do not aspire to a musical career.*

Acceptance criteria for the minor include a successful audition and a theory/aural skill assessment prior to enrollment in private lessons or the theory sequence. The ability to read music is required. Aural and Written Music Theory must be taken concurrently. In any given term, the private study fee will not be waived unless the student is enrolled for at least one other course (not including MUAS 1010) required for the minor. The maximum number of credits for which the private study fee will be waived is four. Ensemble participation is encouraged.

*B.A. students normally take private studies up to a maximum of 14 credits.

†A maximum of six credits in applied lessons, ensembles, performance fundamentals, and repertoire classes may count toward the nine to 11 credits of music electives. Other electives must be at the 3000 level or above.

Requirements for the minor in music (18 term hours):

****MUTH 1129 and 1229** *Aural Skills and Music Theory I*

****MUTH 1130 and 1230** *Aural Skills and Music Theory II*

MUHI 1202 *Introduction to Music in World Societies*

MUHI 3301 and 3302 *Survey of Music History I and II*

MUPR or MUTH *Private study in instrument, voice or composition. Composition study, if approved, must be taken with an instrument or voice. (Four term credit hours, typically one per term)*

MUAS 1010 *Recital attendance for four terms (see the Division of Music Handbook for course requirements)*

Music Courses Open to All University Students

The following courses are open to all students from any field of study.

Performance Classes (PERB) and Ensembles (PERE)

- PERB 1203, 2203** Class Guitar
- PERB 1205, 2205** Class Piano
- PERB 1206, 2206** Class Voice
- PERE 1112** Mustang Marching Band
- PERE 1113** Meadows Chorale
- PERE 1114** Meadows Concert Choir
- PERE 1115** Meadows Jazz Orchestra
- PERE 1118** Meadows Symphony Orchestra
- PERE 1119** Meadows Wind Ensemble
- PERE 3120** Meadows World Music Ensemble
- PERE 1176** Meadows Choral Union
- PERE 3173** Meadows Percussion Ensemble

Music Theory, History and Literature

- MUHI 1321** Music: The Art of Listening
- MUHI 2310** The Broadway Musical: Vaudeville to Phantom
- MUHI 3339** Music for Contemporary Audiences
- MUHI 3340** Jazz: Tradition and Transformation
- MUHI 3341** Women and Music, "Like a Virgin": From Hildegard to Madonna
- MUHI 4350** Music in World Cultures
- MUTH 4310** Introduction to Electro-Acoustic Music

Private Studies

MUPR. Specific Prefixes Indicate Instruments and Voice. A fee is required for students who are not majoring in music and for majors or minors taking lessons in excess of degree requirements.

Limited to one credit per term; permission of Division Director is required prior to enrollment.

Music Courses

Music Pedagogy (MPED)

- 4184, 4284, 4384. Directed Study – Pedagogy.** *Prerequisite:* Permission of instructor.
- 4303. Guitar Pedagogy.** Prepares guitarists for studio teaching. Offered spring term of even-numbered years.
- 4305. Introduction to Instrumental Pedagogy.** Prepares instrumental private teachers for studio teaching. Fall term.
- 4308. String Pedagogy I.** A survey of methods, materials and curriculum for teaching strings at the beginning level. Focus on the philosophical, psychological and developmental bases of string study. Review and evaluation of current educational materials. Additional topics include current trends, history of string education, and pedagogical situations. *Prerequisites:* Proficiency on a string instrument as a major, or techniques courses equivalent to MUAS 3146 Upper Strings and 3147 MUAS Lower Strings, or permission of the instructor. Fall term.
- 4309. String Pedagogy II.** A continuation of the skills and concepts developed in String Pedagogy I as well as an in-depth study of methods, materials and curriculum for teaching strings at the intermediate and advanced levels. *Prerequisite: MPED 4308.* Spring term.
- 5114. Organ/Harpsichord Pedagogy.** A survey of teaching materials and pedagogical methods, both historical and modern, for organ and harpsichord students. Class pro-

jects include compilation of graded repertoire lists and preparation/presentation of a supervised private lesson. Offered fall term of even-numbered years.

5216. Vocal Pedagogy I. A study of vocal techniques. Information useful to the singer, studio voice teacher and choral director. Vocal acoustics, breathing and laryngeal function are studied. Fall term. *Prerequisite:* Permission of instructor.

5217. Vocal Pedagogy II. Teaching strategies and philosophies, diagnosis of vocal problems, stage deportment, vocal repertoire, and ethics for teachers are studied. Students gain practical, supervised experience in teaching. Spring term. *Prerequisite:* MPED 5216.

Music Psychology (MPSY)

5340. Acoustics of Music. Study of acoustical foundations of music. Topics covered include basic acoustics, acoustics of musical instruments and voice, room and auditorium acoustics, acoustical principles of sound systems, and psychoacoustics. Three hours of lecture and one laboratory period (MPSY 5340-N10) per week. Fall term.

Music Repertoire (MREP)

4114, 4115. Piano Repertoire. A broad survey of piano literature, including lectures and performances by the students enrolled. Performance styles and practices of every historical period are emphasized. Fall term.

4209. Classical and Romantic Song Literature. An overview of song literature from the Classical and Romantic periods. Students will prepare repertoire for performance in class and make presentations on topics of specialized interest. Lectures will focus on specific developmental trends such as the genesis of the song cycle, the evolution of the piano accompaniment in the 19th century, and links between poets and composers.

5030, 5130. Guitar Repertoire. Student performances of their solo repertoire and individual instruction in a master-class setting.

5040, 5140. Orchestral Repertoire – Woodwinds.

5050, 5150. Orchestral Repertoire – Brass.

5060, 5160. Orchestral Repertoire – Strings and Harp.

5070, 5170. Orchestral Repertoire – Percussion.

5210. Twentieth-Century Song Literature. A survey of repertoire and performance practices of song literature from the 20th century. The course is designed to provide a general knowledge of the literature, to acquaint students with performance notational practices, and to develop the musical skills necessary to perform this literature.

Accompanying (MUAC)

2101. Techniques of Vocal Accompanying. A course designed for pianists to acquaint them with the various skills associated with accompanying and to familiarize them with some of the vocal repertoire. Fall term.

2102. Techniques of Instrumental Accompanying. A course designed for pianists to acquaint them with the various skills associated with accompanying and to familiarize them with some of the instrumental repertoire. Spring term.

3100. Practicum in Collaborative Performance. Practical application of collaborative performance skills through studio assignments and performance. *Prerequisite:* MUAC 2101 and 2102.

Music Arts and Skills (MUAS)

1010. Recital Attendance. Required of all music majors each term in residence (minimum seven terms). First-year students attend MUAS 1020 in the fall term.

1020. Career Orientation. Required orientation for all first-year music majors. Provides valuable information about college life and professional opportunities in music. Fall term.

1202. Musical Theatre Workshop. Aspiring singers and actors develop their artistic

talents in the craft of musical theatre in this comprehensive two-week program. Students study acting, movement and voice and participate in individual singing and coaching lessons with experts. Solos, scenes and ensemble work are presented at a final class performance open to the public.

2149. Introduction to Music Education. A broad-based survey of the issues, aims and opportunities in music education programs of all levels with an introduction to music education philosophies and methodologies. Fall term.

3146. Upper String Techniques. Basic principles involved in playing and teaching violin and viola. Fall term.

3147. Lower String Techniques. Basic principles involved in playing and teaching cello and bass. Spring term.

3148. Single-Reed and Flute Techniques. Basic principles involved in playing and teaching single-reeds and flute. Fall term.

3149. Double-Reed Techniques. Basic principles involved in playing and teaching double-reed instruments. Spring term.

3150. Low-Brass Techniques. Basic principles involved in playing and teaching low brass. Fall term.

3151. High-Brass Techniques. Basic principles involved in playing and teaching trumpet and horn. Spring term.

3152. Percussion Techniques. Basic principles involved in playing and teaching percussion. Fall term.

3155. Vocal Techniques. Basic principles involved in singing and teaching voice. Spring term.

4230. General Music Practicum. Focus of this course is on crafting and teaching mini-lessons for peers in the college classroom as well as in area public school classrooms. Video camera is used extensively for accurate feedback. Fall term. *Prerequisite:* MUED 3330.

5110. Computers, Keyboards and MIDI for Musicians. Introductory concepts and functional skills in contemporary electronic music technology. Operation of tone generators, samplers, synthesizers. Digital sequencing and music notation software. Basic applications in composition, performance and pedagogy. Fall term.

5145. Piano Technology for Pianists. Basic skills to enable a pianist to solve problems and tune his or her own piano. Offered irregularly.

5154. Marching Band and Jazz Techniques. For music education majors, this course develops techniques for designing and teaching marching band shows, and methods and materials for teaching jazz. Resources will include state-of-the-art software and audio and video materials. The development of fundamental skills and improvisation on the jazz rhythm instruments will be required. Offered fall term of even-numbered years.

Conducting (MUCO)

3208. Fundamentals of Choral Conducting. All basic beat patterns, subdivision, fermata problems, beat character. Introduction to left-hand usage, basic score reading. Emphasis on the psychophysical relationship between conductor and ensemble. Fall term. *Prerequisite:* MUTH 2130 and 2230.

3209. Fundamentals of Instrumental Conducting. Focus includes basic conducting technique, score reading, score analysis and general rehearsal procedures. Attention is given to rehearsal techniques in a laboratory setting. Fall term. *Prerequisite:* MUTH 2130 and 2230.

3210, 5210. Choral Conducting Practicum. Stresses development of rehearsal techniques in a laboratory setting. Students choose, prepare and rehearse music with other students in class to develop skills in error detection, rehearsal pacing, sequencing and ordering of music for optimum rehearsals. Spring term. *Prerequisite:* MUCO 3208 or

equivalent.

3211. Instrumental Conducting Practicum. Stresses development of rehearsal techniques in a laboratory setting. Students prepare and rehearse music in sectional and full ensemble settings to develop skills in error detection, rehearsal pacing, sequencing and ordering of music for optimal rehearsals. Concurrent enrollment with MUED 3331. Spring term. *Prerequisite:* MUCO 3209 or equivalent.

4184, 4284, 4384. Directed Studies in Conducting.

5309. Advanced Instrumental Conducting. Stylistic analysis of a range of large ensemble repertoire, with emphasis on historical context, performance practice, interpretive issues, performance techniques and conducting problems. Study of baton and rehearsal technique. Spring term.

Music Education (MUED)

2250. New Horizons In Music Education. Observation and discussion of teaching methodologies conducted primarily in the public schools. Includes "hands-on" teaching experiences with supervision by SMU faculty and public school cooperating teachers. Spring term.

3330. General Music Methods and Materials. An investigation of major approaches for teaching elementary general music. Includes public school classroom observations. Fall term.

3331. Band and Orchestra Music Education Methods, Literature and Materials. Covers materials for instruction, motivation, administration, class control and performance preparation. Concurrent enrollment with MUCO 3211. Spring term.

3332. Choral Music Methods and Materials. Focus on the art and practice of developing successful choral programs for grades 5-12. Topics include recruitment, auditions, behavior management, vocal techniques, the changing voice, choice of music, rehearsal planning and management of nonmusical details. Includes public school observations. Spring term.

4194, 4294, 4394. Directed Studies in Music Education.

5115. Music Education Methods and Materials in the Church. The principles and practices of music education useful to church music professionals and others who may be interested in church work. Offered spring term of odd-numbered years.

5149, 5150, 5151, 5152, 5153, 5154. Workshop in Music Education. Offered irregularly.

5252. Wind Literature for the Secondary School. Survey of new and standard literature suitable for secondary school students. Music for instrumental solo, ensemble, band and orchestra will be examined. Fall term.

5253. Vocal and Choral Literature for the Secondary School. Survey of new and standard vocal solo, ensemble and choral literature suitable for the secondary school. Fall term.

5257. Computer Applications in Music Education. The investigation of the potential for computer use in music education, including computer-assisted instruction, information storage and retrieval, book and record keeping, and specialized uses such as computer-assisted management of schools of music; and the development of basic techniques for designing and implementing such uses. Offered irregularly.

Music History (MUHI)

1202. Introduction to Music in World Societies. Offers an introduction to basic elements of music within the context of cultural traditions of world music. Students will study musical traditions of Western art music, jazz, African American gospel music, and music of India, China, Africa and Latin America. Musical forms, techniques, terminology and chronology are presented, but primary emphasis is placed upon listening to and experiencing a diverse sample of music and its roles in societies. Spring term.

1321. Music: The Art of Listening. An investigation of the elements of music (melody, rhythm, harmony, form, timbre) as they develop and change throughout the various historical periods of music. Emphasis is on active listening. For nonmajors. Does not satisfy music history requirements for music majors.

2310. The Broadway Musical: Vaudeville to Phantom. The explosion of American musical theater beginning in the 1890s, tracing the stars, the shows and their creators from vaudeville through Broadway and up to the works of Stephen Sondheim and Andrew Lloyd Webber.

3301. Survey of Music History I. A survey of the origins and evolution of musical forms, compositional procedures, performing practices, and musical instruments in the West from the rise of the Christian liturgy through the death of J.S. Bach. As time permits, this survey will be presented within the contexts of related arts and historical events. Course content will include listening, score analysis and practice in writing about music. Fall term. *Prerequisite:* MUHI 1202.

3302. Survey of Music History II. A survey of musical forms, styles, compositional procedures and performing practices from the late 18th century until the present day. As time permits, this survey will be presented within the contexts of related arts and historical events. Course content will include listening, score analysis and practice in writing about music. Spring term. *Prerequisites:* MUHI 1202 and MUHI 3301

3339. Music for Contemporary Audiences. An examination of the interaction of the various forms of popular musical expression (folk, blues, soul, rock, Muzak and film music) and their impact upon American culture.

3340. Jazz: Tradition and Transformation. Bunk, Bird, Bix, Bags and Trane. From blues to bop, street beat to free jazz. A study of the people and music from its African/Euro-American origins through the various art and popular forms of the 20th century.

3341. Women and Music, "Like a Virgin:" From Hildegard to Madonna. An introduction to the rich traditions of musical women and to the variety of roles women have played in both "art" music and popular music. Also introduces feminist and gender theories as related to the music of women and men.

4192, 4292, 4392. Directed Studies in Music History. Must be approved by department head.

4301. Research Project in Music History.

4302. Undergraduate Seminar in Music History. This course will provide advanced investigation into a variety of topics in music history. The undergraduate seminar will be writing intensive and will consider such topics as music aesthetics, the works of a specific composer or compositional school, music within the context of a specific time and/or place, or in-depth studies of works relative to a particular genre. Topics to be announced each term. Students may take this seminar more than once. Offered every term. *Prerequisite:* MUHI 3301 and 3302.

4316. Chamber Music of the 18th and 19th Centuries. An examination of chamber music literature from Haydn to Debussy and Ravel by means of analysis, recorded performances, open rehearsals and live concerts. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4320. Organ History and Literature. A survey of the literature for the organ, Renaissance to contemporary. Required of organ majors and concentrations (undergraduate). Spring term.

4334. Survey of Vocal Literature. Covers Western secular art song. Representative literature from the Renaissance, Baroque, Classic and Romantic periods and the 20th century in terms of stylistic characteristics, text-music relationships and performance practices. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4341. Women Composers and Performers in the 19th and 20th Centuries. Examines women musicians from the early 19th century to the present. Included are con-

siderations of women's professional and private music education. Women's contributions in a wide variety of professional areas (performance, composition, education, scholarship) are examined within the changing social contexts of the two centuries. Class activities include a variety of types of readings (memoirs, journals, newspaper reviews), videos, recordings, scores and analyses, and live student performances. *Prerequisite:* MUHI 3301, 3302.

4342. Music, Musicians and Audiences in 19th-Century Paris. Explores music and musicians living and performing in Paris, the city considered to be Europe's glittering capital of the arts during the 19th century. Discussions of the political and social roles of music following the Revolution (such as the establishment of the Paris Conservatory and the National Opera) will provide the foundation for a focus on the Parisian musical scene during the years 1830-1870. Class trips to events at 19th-century concert halls (Palais Garnier, Théâtre Chatelet), modern halls performing 19th-century repertoire, churches (Madeleine, St. Sulpice), and café-cabarets. Offered fall term of odd-numbered years. (SMU-in-Paris.)

4345. Survey of Opera Literature. A chronological survey of opera, beginning with a brief introduction to Medieval and Renaissance precedents, followed by an in-depth presentation of selected Baroque and Classical masterworks. The study of 19th-century opera will emphasize the many ways in which Romantic opera synthesized music, literature and art, as well as elements of politics and culture. The musical language and dramatic substance of selected works from 20th-century operatic repertoire will be investigated. Students will be expected to spend a significant amount of time viewing operas on video and laser disc, and in certain cases making comparative studies of productions. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4346. Survey of Piano Literature. Historical and stylistic study of music for the piano. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4347. Symphonic Literature. An examination of representative orchestral works from the late Baroque to the present day. Attention will be directed to the forms, compositional procedures, and orchestration devices employed by selected composers who reflect the various stylistic orientations within this time frame. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4348. Guitar History and Literature. Examines the history of guitar and its music from the early 16th century to the present. Included are the vihuela and Baroque guitar, four-string Spanish guitar, and related literature. Emphasis is given to the evolution of the modern instrument and its repertoire. Offered spring term of odd-numbered years. *Prerequisite:* MUHI 3301, 3302 or written permission of department head.

4350. Music in World Cultures. Musical activities and principles selected from various geographical areas of the world. Emphasis is on non-Western materials, but significant cross-cultural encounters will also be studied. Offered irregularly.

4373. History of Musical Instruments. Study of musical instruments from the early Christian times to the 20th century. Attention is given to performance practices, treatises concerning construction and pedagogy, and the influences of the various instrumental families upon compositional procedures and forms. Offered irregularly.

4375. History of American Music. American music from colonial times to the present. Course includes an examination of compositional forms, procedures and techniques of selected composers. *Prerequisite:* MUHI 3301, 3302.

4384. Survey of Choral Literature. A survey of choral music from the medieval era to the present. Examination of representative compositions will be made with regard to genre, form, compositional procedures and stylistic aspects. Discussion of the works will also include the social-political conditions, intellectual-artistic states of mind of patrons and composers, and other external influences. Offered spring term of even-numbered years. *Prerequisite:* MUHI 3301, 3302 or permission of department head.

5206. Performance Practices in Early Music. Studies in the interpretation of Ba-

roque music from a stylistic point of view. Offered spring term of even-numbered years.

5207. Organ Survey. Organ building — fundamentals of construction and design; organ history as it relates to the development of a style-conscious concept of enrollment. Required of organ majors and concentrations (undergraduate). Recommended elective for M.M. and M.S.M. degree. Fall term.

Piano Pedagogy (MUPD)

4125, 4126. Piano Pedagogy Practicum. Observation and supervised teaching experience; specific goals and projects are agreed upon for the term. Required for all piano majors.

4396. Piano Pedagogy I. In-depth study of methods and curriculum for teaching piano at the elementary level. Focus on philosophical and physiological bases of piano study. Survey and evaluation of current educational materials. Offered fall term of even-numbered years.

4397. Piano Pedagogy II. In-depth study of methods, materials and curriculum for teaching piano at the intermediate and advanced levels. Additional topics: current trends (including technology), professionalism, history of piano pedagogy, employment opportunities. Offered fall term of odd-numbered years.

5103, 5203. Creative Piano Teaching. Pedagogical projects designed to meet the needs of the piano teacher. Offered in conjunction with the National Piano Teachers Institute each July. Majors are limited to one credit.

5210. Class Piano Procedures. The psychological principles operative in group and class environments are explored through student participation and observation, with emphasis on teacher effectiveness. Survey of college-level keyboard texts. Offered spring term of even-numbered years.

5312. Survey of Precollege Piano Literature. Survey and performance of standard piano literature in all style periods for precollege students. Emphasis on technical preparation and curriculum-building. Offered spring term of odd-numbered years.

5325, 5326. Piano Pedagogy Internship I and II. Supervised teaching experience; specific goals and projects are agreed upon for the term. Required of all undergraduate piano majors with an emphasis in piano pedagogy performance.

Private Studies (MUPR)

The following numbers for private study apply to all instruments and voice.

3100. One-Credit Courses. One half-hour lesson each week (14 per term) with a jury examination at the conclusion of each term. These repeatable course numbers are offered each fall, spring and summer. Students are required to accept internships in performance or private teaching, subject to availability and/or scheduling conflicts with other SMU courses

3200. Two-Credit Courses. One-hour lesson each week (14 per term) with a jury examination at the conclusion of each term. These repeatable course numbers are offered each fall and spring. Majors are required to enroll in private studies each term until degree requirements are completed. Students are required to accept internships in performance or private teaching, subject to availability and/or scheduling conflicts with other SMU courses

The following subject prefixes will be used to designate study in the specific instrument or in voice. Section numbers, which indicate the specific teacher with whom the student should enroll, are listed in the Schedule of Classes for each term.

<i>BSSN</i>	<i>Bassoon</i>	<i>HARP</i>	<i>Harp</i>	<i>TROM</i>	<i>Trombone</i>
<i>CELL</i>	<i>Cello</i>	<i>HARS</i>	<i>Harpsichord</i>	<i>TRPT</i>	<i>Trumpet</i>
<i>CLAR</i>	<i>Clarinet</i>	<i>OBOE</i>	<i>Oboe</i>	<i>TUBA</i>	<i>Tuba</i>
<i>DBBS</i>	<i>Double Bass</i>	<i>ORG</i>	<i>Organ</i>	<i>VLA</i>	<i>Viola</i>
<i>FLUT</i>	<i>Flute</i>	<i>PERC</i>	<i>Percussion</i>	<i>VIOL</i>	<i>Violin</i>
<i>FRHN</i>	<i>French Horn</i>	<i>PIAN</i>	<i>Piano</i>	<i>VOIC</i>	<i>Voice</i>

GUIT Guitar

SAX Saxophone

Vocal coaching (for upper-division voice performance majors only) course numbers are: VOIC 3015, 3116, 4017, 4118. The instructor coaches the singer on interpretation, style and diction in art song, opera and oratorio.

Recitals (MURE)

3001. Junior Recital for Voice Majors. Solo performance of approximately 30 minutes of music. Graded Pass/Fail by committee.

3101. Junior Recital. Solo performance of approximately 30 minutes of music. Graded Pass/Fail by committee.

4101. Senior Recital for Voice Majors. Solo performance of approximately one hour of music. Graded Pass/Fail by committee.

4201. Senior Recital. Solo performance of approximately one hour of music. Graded Pass/Fail by committee.

Composition and Theory (MUTH)

1129, 1130. Aural Skills I and II. Beginning studies in solfeggio, melodic and harmonic dictation. Must be taken in sequence. Fall and spring terms. *Corequisites:* MUTH 1229, 1230.

1225, 1226. Composition. Individual study with the composition faculty and regularly scheduled seminars with faculty and visiting guests. Fall and spring terms. *Prerequisite:* First-year composition major or permission of instructor.

1229, 1230. Theory I and II. Rudiments (notation, clefs, key signatures, intervals, scales, modes), diatonic and chromatic harmony, figured bass, part-writing, analysis. Must be taken in sequence. Fall and spring terms. *Corequisites:* MUTH 1129, 1130.

2129, 2130. Aural Skills III and IV. Continuation of Aural Skills I and II. Solfeggio, melodic and harmonic dictation employing chromaticism, 20th-century materials. Must be taken in sequence. Fall and spring terms. *Prerequisites:* MUTH 1130, 1230. *Corequisites:* MUTH 2229, 2230.

2225, 2226. Composition. Individual study with the composition faculty and regularly scheduled seminars with faculty and visiting guests. Fall and spring terms. *Prerequisite:* Second-year composition major or permission of instructor.

2229, 2230. Theory III and IV. Continuation of Theory I and II covering the Romantic and 20th-century repertoires. Emphasis on traditional harmonization exercises, beginning studies in musical form, and introduction to current analytical methods. Must be taken in sequence. Fall and spring terms. *Prerequisites:* MUTH 1130, 1230. *Corequisites:* MUTH 2129, 2130.

3110. Keyboard Skills. Score reading in all clefs, sight reading, figured bass realization. *Prerequisites:* MUTH 2130, 2230.

3325, 3326. Composition. Individual study with the composition faculty and regularly scheduled seminars with faculty and visiting guests. Fall and spring terms. *Prerequisite:* Third-year composition major or permission of instructor.

3350. Form and Analysis. Study of musical form through examples from pre-tonal and tonal literatures. *Prerequisites:* MUTH 2130, 2230.

4184, 4284, 4384. Directed Studies in Music Theory. *Prerequisite:* Permission of instructor.

4190, 4290, 4390. Directed Studies in Music Composition. *Prerequisite:* Permission of instructor.

4300. Analysis of Contemporary Music. Detailed analysis of recent music written in a variety of styles and using diverse techniques. The course will also explore early 20th-century antecedents of more recent music. Analysis and discussion will be supported by

readings from theoretical articles and composers' writings. *Prerequisites:* MUTH 2130 and 2230.

4310. Introduction to Electro-Acoustic Music. An introduction to the techniques, concepts and historical perspective of composing, performing and listening to electro-acoustic music. Topics covered include acoustics, psychoacoustics, sound reproduction systems, tape techniques, analog and digital synthesis, and the history and literature of electronic music. Students have three hours of studio time each week to complete required projects. Fall term. *Prerequisite:* Permission of instructor.

4311. Advanced Electro-Acoustic Music. Continuation of the introductory course with an emphasis on mastery of the studio equipment and its application to compositional problems. Students will complete individual and group composition projects in the studio. Spring term. *Prerequisite:* MUTH 4310 or permission of instructor.

4329, 4330. Composition. Individual study with the composition faculty and regularly scheduled seminars with faculty and visiting guests. Fall and spring terms. *Prerequisite:* Fourth-year composition major or permission of instructor.

5330. Instrumentation and Arranging. An overview of the ranges and performing characteristics of orchestral/band instruments and vocalists, with practical application via scoring and arranging for a variety of small instrumental and vocal ensembles. Fall term. *Prerequisites:* MUTH 2130, 2230.

5350. Advanced Musicianship. This course seeks to develop the student's musicianship skills beyond the level attained in the basic aural skills sequence of courses. Activities of the course include sight-reading and improvisation studies in a range of musical styles for both voice and instruments, advanced melodic and harmonic dictation exercises, aural analysis of musical examples from a wide range of style periods, and the use of the keyboard to support the continued development of skills. *Prerequisites:* MUTH 2130, 2230 for undergraduates; graduate students must pass the theory placement exam or complete all review courses. Permission of instructor.

5360. Advanced Orchestration. More advanced techniques of orchestration are explored through a series of scoring projects for a variety of ensembles. Spring term. *Prerequisites:* MUTH 5330 or permission of instructor.

5370. Survey of Counterpoint. Through exercises in analysis and composition, this course provides a study of contrapuntal techniques from the Middle Ages to the 20th century, with emphasis on traditional modal and tonal styles. *Prerequisites:* MUTH 2130, 2230.

Music Therapy (MUTY)

1120. Clinical Orientation. The study of music therapy assessment, treatment procedures, and evaluation, through observation as well as literature and repertoire review. Each student will participate on a working music therapy team. *Prerequisite:* Permission of instructor.

1320. Introduction to Music Therapy. An overview of the function of the music therapist, the history of the music therapy profession, and music in treatment procedures. Required of all music therapy majors and open to others who may want information about the professional field of music therapy. Fall term.

3130, 3230, 3330. Directed Studies in Music Therapy: Medicine and Health.

3141. Developmental Music Therapy Practicum I. Supervised observation of and therapeutic experience with persons who exhibit developmentally delayed disorders. Fall term. *Corequisite:* MUTY 3211.

3142. Psychiatric Music Therapy Practicum II. Supervised observation of and therapeutic experience with persons who exhibit psychopathological disorders. Fall term. *Corequisite:* MUTY 3212.

3143. Medical Music Therapy Practicum III. Supervised observation and development of clinical skills with patients in medical settings. Spring term. *Corequisite:* MUTY 3213.

3144. Gerontological Music Therapy Practicum IV. Supervised observation and development of clinical skills with elderly clients. Spring term. *Corequisite:* MUTY 3214.

3211. Developmental Music Therapy. A study of music therapy with developmentally disabled children and adults such as mentally retarded, visually disabled and speech-impaired individuals. Fall term. *Corequisite:* MUTY 3141.

3212. Psychiatric Music Therapy. A study of music therapy with persons with psychopathological disorders such as schizophrenia, depression and dementia. Fall term. *Corequisite:* MUTY 3142.

3213. Medical Music Therapy. A study of music therapy with the health impaired, such as burn patients, AIDS patients and obstetric patients. Spring term. *Corequisite:* MUTY 3143.

3214. Gerontological Music Therapy. A study of music therapy with elderly, gerontological clients. Spring term. *Corequisite:* MUTY 3144.

4141. Music Therapy Practicum V. Supervised clinical experience in the treatment and health maintenance of clients with clinical disorders.

4142. Music Therapy Practicum VI. Continued supervised clinical experience in the treatment and health maintenance of clients with clinical disorders.

4144. Internship I. Three months, or 520 clock hours, of continuous full-time music therapy experience in an AMTA-approved clinical facility. Reports from the intern and music therapy supervisor required before, during and after the internship. Because the internship extends beyond the regular four-month term, enrollment for MUTY 4144 will occur for the term during which the internship begins; and for MUTY 4145, concurrently or the term immediately following. *Prerequisites:* Before the internship, all course, clinical and preclinical work must be completed in the undergraduate music therapy degree or graduate equivalency program.

4145. Internship II. Second term continuation of Internship I (MUTY 4144). An additional three months, or 520 clock hours, of continuous full-time music therapy experience in an AMTA-approved clinical facility. Reports from the intern and music therapy supervisor required before, during and after the internship. *Prerequisite:* Concurrent registration in or completion of MUTY 4144.

4340. Music Psychology: Research, Methods and Materials. A study of research methods in music psychology, therapy and education; with emphasis on research designs, analysis and interpretation of research literature. Spring term.

4341. Survey of Music Psychology. Basic study of music systems, with emphasis on perception of and responses to musical stimuli. Interpretation of the interdependence of psycho-socio-physiological processes in musical behavior, such as musical ability and preference. Fall term.

Class Instruction for Performance (PERB)

Harpsichord (PERB)

3115. Harpsichord: Early Music Workshop. Intensive study of harpsichord and continuous playing for advanced players (the complete harpsichord works of Rameau, chamber music with professional players of period instruments). Beginning harpsichord classes for those keyboard players who wish to explore the harpsichord, its techniques and repertoire. Summer term.

5118. Introduction to the Harpsichord. Designed to present a variety of topics related to the harpsichord and its music. Provides keyboard musicians, especially pianists, with knowledge and practical experience at the harpsichord to enable them to face future contacts with the instrument in a more informed, confident, and artistic manner. Offered spring term of even-numbered years.

5213. Studies in Continuo Playing. Designed for the harpsichord major, to fill the need for a well-developed skill in playing Baroque through bass accompaniments from an unrealized figured bass and/or from an unfigured bass with style performance suitable to

the period. Offered fall term of even-numbered years.

Instrumental (PERB)

1001. Departmental Performance Class. Departmental recitals, performance classes, master classes, guest artist performances, and lectures related to performance specialization. Students enroll concurrently with studies in applied music.

1011. Piano Sight Reading I. A requirement for first-year, pre-music majors in piano performance. Techniques to improve music reading at the keyboard through supervised practice and reading of various keyboard literature. Fall term.

1012. Piano Sight Reading II. A requirement for first-year, pre-music majors in piano performance. Emphasis on reading skills that are useful in collaborative playing, including exposure to various types of scores and score preparation. *Prerequisite:* PERB 1011. Spring term.

1103. Modern Acoustic Guitar I. Beginning steel-string acoustic guitar skills with emphasis on flat-picking and finger-picking chords, strums, and additional left- and right-hand techniques for accompanying folk and popular songs in music therapy, music education and recreational music settings. Fall term.

1104. Modern Acoustic Guitar II. Intermediate steel-string acoustic guitar skills with emphasis on enhanced flat-picking and finger-picking chords, strums, and additional left- and right-hand techniques for accompanying popular, jazz, blues, rock and world music-style songs in music therapy, music education, and recreational music settings. Spring term.

1203. Classic Guitar. Basics of reading music; technique; simple chord progressions as applied to popular music; performance of simple classic guitar pieces.

2203. Classic Guitar. Continued development of technical skills and performance repertoire. *Prerequisite:* PERB 1203 or equivalent proficiencies.

2215. Introduction to Jazz Theory and Improvisation. Introduction to jazz improvisation through applied theory. Theoretical and practical experience in jazz improvisation using common jazz chord progressions and chord/scale relationships. Study of jazz recordings designed to explore and understand the link between chords, scales and melodies. *Prerequisite:* MUTH 1119/1229. Open to music majors, music minors or by consent of instructor.

3016, 3116. Contemporary Music Workshop. Exploration of contemporary music techniques, including improvisation for instrumentalists and vocalists in a workshop setting. Course work includes master classes on contemporary performance techniques and performance of contemporary chamber works in chamber music recitals, in general music recitals, and in workshop presentations.

3202. Master Class in Classic Guitar. Master classes, lectures, discussions and recitals. Summer term.

5011, 5111. Directed Studies in Music Performance. Enrollment for directed studies or approved internships in performance or pedagogy.

Piano (PERB)

1131, 1132, 2131, 2132. Class Piano. A four-term sequence required for non-keyboard music majors. Emphasis on sight-reading, technique, harmonization, transposition, improvisation and appropriate literature. Fall and spring terms. *Corequisites:* MUTH 1229, 1230, 2229, 2230; MUTH 1129, 1130, 2129, 2130. Open to music majors only.

1205. Beginning Class Piano. Designed for students with no previous piano study. Emphasis placed on the development of basic music reading and functional keyboard skills. Open to non-music majors only.

1233, 1234. Advanced Class Piano. A two-term sequence (for keyboard majors or advanced non-keyboard music majors). Emphasis on sight reading, harmonization, transposition, improvisation and technique. Fall and spring terms. *Prerequisites:* MUTH 1130,

1230.

2205. Elementary Class Piano. Continued development of fundamental keyboard skills. Emphasis on sight reading, harmonization, transposition, improvisation, technique and repertoire study. *Prerequisite:* PERB 1205 or equivalent, audition for placement required. Not open to music majors.

Voice (PERB)

1206. Class Voice. A course in basic singing techniques and interpretive skills, suitable for both beginning singers and for students with singing experience but little formal training.

2206. Class Voice. A course in singing techniques and interpretive skills, suitable for students with some singing experience but little formal training. *Prerequisite:* PERB 1206.

2106. Diction: Italian. Principles of pronunciation and enunciation for singing in Italian. Phonetic practice and practical application to the performance of art songs and arias. Fall term.

2108. Diction: English. Principles of pronunciation and enunciation for singing in English. Phonetic practice and practical application to the performance of art songs and arias. Fall term.

2107. Diction: German. Principles of pronunciation and enunciation for singing in German. Phonetic practice and practical application to the performance of art songs and arias. Spring term.

2109. Diction: French. Principles of pronunciation and enunciation for singing in French. Phonetic practice and practical application to the performance of art songs and arias. Spring term.

2017, 2117, 5017, 5117. Meadows Opera Workshop. Exploration of operatic styles, role study, basic acting techniques and dramatic analysis. Eligibility by audition for the annual main stage production. Meets concurrently with Meadows Opera Ensemble. Open to all undergraduate and graduate voice majors.

5101, 5201. Directed Studies in Voice.

5208. Advanced Acting for Voice Majors. Scene study, character development, preparing and researching repertoire, sets, props and costumes. Fall term. Not repeatable for credit. *Prerequisite:* Concurrent enrollment in VOIC, two terms of Opera Workshop or Opera Ensemble completed, and consent of applied teacher.

Performance Ensembles (PERE)

Large Ensembles (PERE)

1012, 1112. Mustang Marching Band. Experience in preparation and performance of music for field performances. May be taken for large-ensemble credit by majors.

1013, 1113. Meadows Chorale. A select mixed ensemble open to all students by audition. Spring term participants in the ensemble will be required to attend an additional 50-minute rehearsal weekly to prepare for a combined choral-orchestra concert.

1014, 1114. Concert Choir. A choral organization open to all students by audition. Non-music majors are encouraged to participate. Placement hearings will be held at the beginning of each term. Spring term participants in the ensemble will be required to attend an additional 50-minute rehearsal weekly to prepare for a combined choral-orchestra concert.

1018, 1118. Meadows Symphony Orchestra. The Symphony is a large orchestra that performs major repertoire. Non-majors who want an orchestral performance experience are invited to audition.

1019, 1119. Meadows Wind Ensemble. The Wind Ensemble is open to all students on an audition selection basis. Although the majority of the membership is composed of students who are majoring or minoring in music, any University student may audition. The Wind Ensemble performs a wide variety of literature that encompasses both the sym-

phonic band and wind orchestra idioms.

1076, 1176. Choral Union. A large mixed ensemble open to students, faculty, staff and the greater SMU community. Repertoire includes major works with orchestra. Does not satisfy the vocal or large-ensemble requirement for voice majors or concentrations. *Prerequisite:* Permission of instructor.

4050, 4150. Meadows Opera Ensemble. Musical preparation, rehearsal and performance of one-act operas, opera excerpts and/or a complete role. Eligibility, by audition, for the annual main stage production. Dramatic coaching and role study. Meets concurrently with Meadows Opera Workshop. Spring term participants in the ensemble will be required to attend an additional 50-minute rehearsal weekly to prepare for a combined choral-orchestra concert. For Senior Voice Performance and second year Master of Music Voice Performance majors only. *Prerequisite:* Two terms of Opera Workshop or equivalent previous experience.

Chamber Ensembles (PERE)

1015, 1115. Meadows Jazz Orchestra. Rehearsal and performance of standard and original works for jazz ensembles. By audition.

3020, 3120. Meadows World Music Ensemble. Exploration of rhythms, melodies, forms and basic ethnic percussion techniques from a variety of cultures including Africa, Asia and Latin America. Composition, improvisation and performances within forms of ethnic traditions adapted to Western instruments. *Prerequisite:* Music major or consent of instructor.

3030, 3130. Meadows Guitar Ensemble. *Prerequisite:* Guitar major or consent of instructor.

3070, 3170. Chamber Ensemble: Instrumental. Chamber music from the Baroque period to the 20th century. Each ensemble is individually coached. By audition.

3071, 3171. Chamber Ensemble: Keyboard. Chamber music of the past 200 years with piano as a member of a trio, quartet or quintet with strings or winds. By audition.

3073, 3173. Meadows Percussion Ensemble. Rehearsal and performance of standard percussion ensemble literature. By audition.

3074, 3174. Chamber Ensemble: Voice. Vocal chamber music from the Renaissance to the 20th century. By audition.

INTERDISCIPLINARY STUDIES IN THE ARTS

Program Director: Dr. Gregory Warden, **Associate Dean for Academic Affairs**

The major in Interdisciplinary Studies provides an opportunity for outstanding students to design interdisciplinary programs that bring together multiple disciplines within the Meadows School of the Arts. Another option is to combine a discipline or disciplines housed in the Meadows School of the Arts with areas of study found elsewhere in the University for the purpose of exploring new forms of artistic expression or communication.

Academically qualified students may explore the possibility of a specialized major with the Program Director. If the proposed plan appears to have merit, the Program Director will suggest faculty advisers who can provide further assistance in designing the program.

Program Description

Students with at least a 3.0 G.P.A. in the first 24 term hours taken in residence at SMU are eligible to pursue the program.

The program consists of individually designed majors in the arts of at least 36 term hours, with a minimum of at least 24 term hours of advanced courses

(3000 level or above). At least two-thirds of the courses that count toward the major must be taken in the Meadows School of the Arts. The program must satisfy the General Education Curriculum (GEC) requirements and all other University and Meadows School graduation requirements. Students are responsible for fulfilling all prerequisites for courses taken.

This program is designed to allow exceptional students an opportunity to design an interdisciplinary program; it is not intended to be a way of avoiding divisional requirements. Certain Meadows courses are open only to majors or by audition. Admission to such courses is at the discretion of the faculty of the division in which such courses are offered.

The degree will be identified as a Bachelor of Arts. The transcript will refer to the major as "Interdisciplinary Studies in the Arts." A note on the transcript will denote the specialization. Students intending to seek admission to graduate schools are encouraged to include at least 30 hours of a coherent set of courses in an identifiable disciplinary field.

ADMINISTRATIVE PROCEDURES

The Meadows Academic Policies Committee shall have the final authority to approve all specialized programs. Prior to declaring the major, a number of steps must be completed: In order to initiate discussion of a specialized major, a student must submit a preliminary plan of study in the form a brief statement of goals and a course list made in consultation with appropriate faculty advisers.

1. If the Program Director approves the program, the student and the faculty advisers must form a Supervisory Committee with a minimum of three members. The Supervisory Committee will provide advice and guidance to the student. At least two members, including the chair of the committee, shall be resident members of the Meadows School faculty. The chair of the committee will normally be the faculty adviser.
2. The student will submit a formal plan of study to the Supervisory Committee. The plan of study must include a proposal for a special project such as a thesis, exhibition or performance. Satisfactory completion (in the judgment of the Supervisory Committee) of this special project is a requirement. If the committee approves the plan, the plan must then be submitted for approval by the Meadows Academic Policies Committee.
3. Once approved by the Meadows Academic Policies Committee, the plan will be transmitted to the office of the Meadows Associate Dean for Student Affairs. The plan of study normally should be submitted to the Meadows Academic Policies Committee for approval before the completion of 60 total term hours of course work.
4. The chair of the Supervisory Committee and the Program Director will recommend candidates for graduation. The chair of the Supervisory Committee will certify that the required project has been completed to the satisfaction of the Committee. The Supervisory Committee may recommend that the degree be awarded "with distinction" if the grade point average in the courses required for the major exceeds or equals 3.5 and if the project

is deemed excellent. The Associate Dean for Student Affairs will be responsible for verifying and certifying graduation requirements.

THEATRE

Associate Professor Cecil O'Neal, Chair

Professors: Rhonda Blair, Carole Brandt, Kevin Paul Hofeditz, Cecil O'Neal; **Associate Professors:** Michael Connolly, Charles Helfert, , Bill Lengfelder, Russell Parkman, Virginia Ness Ray, Sara Romersberger, Gretchen Smith, Claudia Stephens, Steve Woods; **Assistant Professors:**, Leslie Brott, James Crawford, Ashley Smith; **Adjunct Lecturers:** Linda Blase, Steve Leary, Melinda Robinson, Giva Taylor, Kathy Windrow.

Undergraduate education in the Division of Theatre reflects a commitment to the rigorous study of theatre within a liberal arts context. To this end, undergraduate theatre majors pursue course work not only in theatre, but also in the social and natural sciences, literature, the arts and humanities, and other areas of human culture and experience. A faculty adviser works closely with each student to develop a program of study best suited to the individual's needs and career goals. In addition, the Division of Theatre presents an annual season of public productions chosen for their timeliness, public appeal and suitability for training. Practical experience in all areas of theatre operation is considered a vital part of the educational program.

Instructional Facilities

The Division of Theatre is housed in the well-equipped facilities of the Meadows School of the Arts. These facilities include the Greer Garson Theatre (a 380-seat classical thrust stage), the Bob Hope Theatre (a 400-seat proscenium theatre), the Margo Jones Theatre (a 125-seat "black box" theatre), the Hamon Arts Library, and numerous rehearsal studios.

Admission

Prospective theatre majors at SMU are admitted by audition and interview. All prospective students prepare an audition, consisting of two contrasting monologues and a song. Candidates may also be asked to demonstrate improvisational skills. Students seeking admission into the B.F.A. in Theatre Studies program may also be asked to demonstrate ability in their particular area of interest by supplying writing samples, portfolio materials, etc.

Transfer Students. Admission procedures for applicants seeking to transfer from other schools are the same as those for first-year applicants. Transfer students may begin work only in the fall term.

Evaluation of Progress and Artistic Growth

Students must continually demonstrate a high order of talent and commitment in both class work and production work to progress in the curriculum. At the end of each term the faculty of the Division of Theatre evaluates each student's progress, examining all aspects of a student's academic and production participation.

Every student meets with the faculty to receive this evaluation. An unsatisfactory evaluation is accompanied by the reasons for this evaluation and the terms for continuation in the program. An unsatisfactory evaluation may also result in a student's immediate dismissal from the program.

Degrees and Programs of Study

The Division of Theatre offers the Bachelor of Fine Arts degree in Theatre with a specialization in Theatre Studies, and the Bachelor of Fine Arts degree in Theatre with a specialization in Acting.

When the total number of hours required to satisfy the General Education requirements and the major requirements along with the major's supporting course requirements exceeds 122 term hours, students in such majors will be exempt from three (3) hours of Perspectives and an additional three (3) hours taken from either Perspectives or Cultural Formations.

Bachelor of Fine Arts in Theatre with a Specialization in Theatre Studies

The B.F.A. degree in Theatre with a specialization in Theatre Studies reflects our commitment to theatre training within the context of liberal education. Based on the Division's philosophy that an understanding of and experience with the actor's process is essential to education and training in all areas of theatre, all undergraduate theatre majors focus on foundational actor training during the first two years of their program of study. Focused study in one area of theatre, chosen from Directing, Playwriting, Stage Management, Critical Studies, and Design is required to complete the major. With the approval of the student's theatre adviser and the Chair of the Division of Theatre, this emphasis may be individualized to suit the specific goals of the student. All Theatre Studies students must complete at least 12 hours of upper-level courses among those offered in Directing, Playwriting, Critical Studies or Design.

	<i>Credit Hours</i>
General Education Curriculum	35
Division of Theatre	
Dramatic Arts Today (THEA 1303, 1304)	6
Stage Makeup (THEA 2263)	2
Running/Construction Crews (THEA 2140, 2141, 2142)	3
Practicum (THEA 2240, 2241, 2242)	6
Acting I, II (THEA 2303, 2304)	6
Voice for the Stage I, II (THEA 2305, 2306)	6
Movement I, II (THEA 2307, 2308)	6
Introduction to Stage Management (THEA 2361)	3
Acting III, IV (THEA 3303, 3304)	6
Text Analysis (THEA 2322)	3
Theatre and Drama History I, II (THEA 3381, 3382)	6
One 12-credit-hour emphasis chosen from:	
Directing, Playwriting, Stage Management,	
Design or Critical Studies	12
Theatre Electives	11
Design, or Critical Studies	12
Theatre Electives	11
Electives	9
Meadows Elective/Corequirement	3

TOTAL 123

Bachelor of Fine Arts in Theatre with a Specialization in Acting

The B.F.A. degree in Theatre with a Specialization in Acting is a unique program of specialized acting study within a liberal arts context. Although it is concerned with intense study of acting at the highest level, and shares faculty with SMU's graduate professional actor training program, the undergraduate acting major is not, nor does it seek to be, a professional training program. If theatre artists are to make the most meaningful and powerful theatre possible, they must acquire personal and intellectual experience of the world in which they live concurrently with theatre training. Upon completion of two years of foundational actor training, students in the acting major receive advanced training in the areas of acting, stage movement and stage voice.

	<i>Credit Hours</i>
General Education Curriculum	35
Division of Theatre	
Dramatic Arts Today (THEA 1303, 1304)	6
	<i>Credit Hours</i>
Stage Makeup (THEA 2263)	2
Running/Construction Crews (THEA 2140, 2141, 2142)	3
Practicum (THEA 2240, 2241, 2242)	6
Acting I, II (THEA 2303, 2304)	6
Voice for the Stage I, II (THEA 2305, 2306)	6
Movement I, II (THEA 2307, 2308)	6
Text Analysis (THEA 2322)	3
Introduction to Stage Management (THEA 2361)	3
Acting III, IV (THEA 3303, 3304)	6
Voice for the Stage III, IV (THEA 3205, 3206)	4
Movement III, IV (THEA 3207, 3208)	4
Theatre and Drama History I, II (THEA 3381, 3382)	6
Acting V, VI (THEA 4303, 4304)	6
Voice for the Stage V, VI (THEA 4105, 4106)	2
Movement V, VI (THEA 4207, 4208)	4
Business and Professional Aspects of the Theatre (THEA 4309)	3
Electives	9
Meadows Elective/Corequirement	3

TOTAL 123

Theatre Courses Open to All University Students (THEA)

The following classes are open to all students. **Please note: There are no performance opportunities for nonmajors.**

1380. Dramatic Arts: Mirror of the Age. Introduction to theatre emphasizing the role of the audience in the experience of performance. Semiotic and communications models are used to explore the dynamic interaction and changing relationship between performance, audience and society. Theatre-going experiences are discussed and analyzed.

2319. Fashion: History and Culture. How and why does what we wear tell us who

we are? A study of clothing: its role in and reflection of various historical cultures, including the relationship between fashion, art, architecture and the decorative arts of selected time periods. For majors and nonmajors.

2321. Spectacle of Performance. Ever wonder how they do that? Spectacle is part of our life and culture. Students will learn to deconstruct spectacle and analyze its influence upon themselves and society at large. Go backstage to experience firsthand how effects are achieved. Students will be required to attend performances in a wide range of “live” venues and discuss what they observe, enabling them to view performance on a critical level. For majors and nonmajors.

3311. The Art of Acting. Basic work in acting, voice and movement for the nonmajor. Relaxation, concentration, imagination and the actor’s exploration and use of the social world.

3313. Introduction to Design for the Theatre. An analytical study of stage design, including an introduction to the basic history, principles and languages of stage design. The course will include text analysis, elements and principles of design, and critical discussion of current theatre productions. For majors and nonmajors.

3314. Lighting Design: Theatre, Film and Television. An introduction to the practice of lighting design. Students will be required to study techniques, complete projects, and make presentations in the discipline.

3316. Scene Design: Theatre, Film and Television. An introduction to the practice of scenic design. Students will be required to study techniques, complete projects, and make presentations in the discipline.

3318. Costume Design: Theatre, Film and Television. An introduction to the practice of costume design. Students will be required to study techniques, complete projects, and make presentations in the discipline.

3381, 3382. Theatre and Drama History I and II. An examination of key moments in the history of Western theatre. Particular attention is given to selected dramatic texts and their social and cultural contexts, and to the dynamic interaction and changing relationship between performance, audience and society as this is influenced by the advent of actors, playwrights, designers and directors, and by changes in theatre architecture and the social definition of space.

4373. Creative Dramatics. Creative problem-solving using the medium of improvisational theatre. Develops spontaneity and a sense of humor. *Prerequisite:* Permission of instructor.

4381, 4382, 4383, 4384. Studies in Theatre, Drama and Performance. An examination of selected topics in theatre, drama and performance. Texts, topics and critical approaches vary.

Courses For Theatre Majors (THEA)

2101, 2201, 2301, 3101, 3201, 3301, 4101, 4201, 4301, 5301. Directed Study. Independent work with theatre faculty on a specific topic chosen by the student.

1303, 1304. Dramatic Arts Today. An introduction to theatre and performance for entering theatre majors. Considers basic artistic concepts, disciplines, and vocabulary common to this program, providing an elementary foundation in theatre with an emphasis on acting.

2011, 2012. Production. Rehearsal and performance in a Division of Theatre production. *Prerequisite:* Permission of instructor.

2140. Lighting Running/Construction Crew. Practical application of skills and knowledge studied in THEA 2240 to the mounting and running of a theatrical production; involves either serving on the running crew of a Division production or completing 65 hours of work mounting a production. Theatre majors should complete this course by the end of the junior year. Departmental approval required for nonmajors. Must be taken

concurrently with *or* subsequent to completion of THEA 2240.

2141. Scenery Running/Construction Crew. Practical application of skills and knowledge studied in THEA 2241 to the mounting and running of a theatrical production; involves either serving on the running crew of a Division production or completing 65 hours of work mounting a production. Theatre majors should complete this course by the end of the junior year. Departmental approval required for nonmajors. Must be taken concurrently with *or* subsequent to completion of THEA 2241.

2142. Costume Running/Construction Crew. Practical application of skills and knowledge studied in THEA 2242 to the mounting and running of a theatrical production; involves either serving on the running crew of a Division production or completing 65 hours of work mounting a production. Theatre majors should complete this course by the end of the junior year. Departmental approval required for nonmajors. Must be taken concurrently with *or* subsequent to completion of THEA 2242.

2240. Lighting Practicum. An introduction to the backstage crafts of theatrical lighting intended to give the student a broad understanding of the basic principles and technical procedures used in the design of lighting. Fifty-hour lab required. Departmental approval required for nonmajors.

2241. Scenery Practicum. An introduction to the backstage crafts of theatrical scenery intended to give the student a broad understanding of the basic principles and technical procedures used in the design of scenery. Fifty-hour lab required. Departmental approval required for nonmajors.

2242. Costume Practicum. An introduction to the backstage crafts of theatrical costume intended to give the student a broad understanding of the basic principles and technical procedures used in the design of costumes. Fifty-hour lab required. Departmental approval required for nonmajors.

2263. Stage Makeup. Instruction in basic makeup, wig and hair styling, and beard building.

2303. Acting I. Exploration of the actor's imagination and the nature of acting, embracing training concepts of ease, honesty, sense memory, and concentration.

2304. Acting II. Beginning script work, in which the actor learns to analyze a scene for its events and to particularize these events in a series of expressive action tasks. Sophomore course. *Prerequisite:* THEA 2303.

2305, 2306. Voice for the Stage I and II. Connecting text/sound impulses to acting challenges, an introduction to breath and volume support, and vocal exercises.

2307. Movement I. Teaches students to individuate internal energies of the body; to use these energies to move the body to create precise statuary mime for the stage; and to begin to synthesize physical listening skills for ensemble acting. Skills taught include juggling, Hatha yoga, corporal mime, illusionistic pantomime, Tai Chi Ch'uan, and the improvising of mime pieces.

2308. Movement II. Increases students' physical listening skills and practices these in unarmed stage combat. Skills taught include T'ui Sh'uo, Chi Sao, foil fencing (left and right), French sabre, Kung-fu animals, and conventions of unarmed stage combat. *Prerequisite:* THEA 2307.

2322. Text Analysis. Teaches skills necessary to read a play as an actor, director, playwright, designer and student of drama. Explores key styles and genres of dramatic literature.

2361. Introduction to Stage Management. An exploration of the methods and techniques of theatrical stage management, including preproduction planning, scheduling and conducting rehearsals and performances. Assignments are both theoretical and practical. Permission of instructor required for nonmajors and first-year students.

3011, 3012. Production. Rehearsal and performance in a Division of Theatre production. *Prerequisite:* Permission of instructor.

3205, 3206. Voice for the Stage III and IV. Experiences and exercises designed to

free and develop the voice of the actor, explorations of speech sounds, text work. Alleviating physical barriers to sound production, beginning to discover a full vocal range of 2-3 octaves. *Prerequisites:* THEA 2305, 2306.

3207. Movement III. Teaches extension of energy and physical listening skills. Skills taught include quarterstaff, rapier and dagger, court sword, and broad sword. *Prerequisite:* THEA 2308.

3208. Movement IV. Allows the student to process personal experience into the movement and sound of a character. Skills taught include clowning, LeCoq figures, and neutral mask. *Prerequisite:* THEA 3207.

3303. Acting III. A synthesis of first- and second-year work to the end of an individual system by which actors approach the presentation of characters through their ability to present themselves effectively..

3304. Acting IV. Continuation and extension of THEA 3303, consisting of special projects in characterization studies. *Prerequisite:* THEA 3303.

3331. Playwriting I. Creative exploration in the development of performance scripts with emphasis on structural vocabularies of story, plot, character development and dramatic action.

3332. Playwriting II. Intermediate techniques of playwriting with emphasis on developing individual style and voice; writing one-act plays. *Prerequisite:* THEA 3331.

3341. Directing I: An introduction to the practices and methods of directing. Includes study in the work of major directorial innovators. Directing projects required.

3342. Directing II. An intermediate-level course extending the work of THEA 3341. Final projects include the staging of a one-act play. *Prerequisite:* THEA 3341.

3361, 3362. Stage Management I. Fuller explanation of the methods and techniques of theatrical stage management. *Prerequisite:* THEA 2361.

4011, 4012. Production. Rehearsal and performance in a Division of Theatre production. *Prerequisite:* Permission of instructor.

4105. Voice for the Stage V. A continuation of the voice curriculum to further enrich the actor's technique and address any outstanding issues in the work. The vocal workout keeps the actor in tune with his/her instrument while preparing to enter the profession. *Prerequisite:* Permission of instructor.

4106. Voice for the Stage VI. A continuation of the voice curriculum including the study of the International Phonetic Alphabet and dialect/accent work and the addition of specific skills for a variety of media. Cold reading skills, studio time and use of microphones, and commercial work for radio and television spots are addressed. *Prerequisite:* Permission of instructor.

4207. Movement V. An exploration of historical movement and dance including selected dances, movements and manners of the 16th through the 20th centuries, focusing on the embodiment of the style of those periods. Emphasis is placed on the dress, movement and manners of the Renaissance and Classic Baroque periods. *Prerequisite:* Permission of instructor.

4208. Movement VI. Physical self-study explored through mask work including Neutral Mask, the masks of the commedia dell'arte, Character Mask, and European Clown. The exploration begins with finding a physical neutral, moves through the playing of the stock masked commedia characters and their counterparts in plays by Shakespeare and Moliere, and culminates with finding one's own personal clown. *Prerequisite:* Permission of instructor.

4303, 4304. Acting V and VI. An actor's approach to classic texts through scene study, monologues and lecture/demonstration. Emphasis is on Shakespeare and his contemporaries.

4309. Business and Professional Aspects of the Theatre. A preparation for

graduating actors that includes compiling résumés, photographs, use of cold readings, monologues and scene work with a variety of scripts for repertory or summer theatre casting.

4331. Playwriting III. Advanced work in the development of performance scripts for the stage with emphasis on full-length works. *Prerequisite:* THEA 3332.

4332. Playwriting IV. Advanced techniques of writing for the stage, including rehearsal and performance or produced theatrical event. Focuses on professional aspects of playwriting. *Prerequisite:* THEA 4331.

4341. Directing III. Advanced project studies in stage direction with emphasis on the interplay between director and other artistic collaborators (playwrights and/or designers). *Prerequisite:* THEA 3342.

4342. Directing IV. Advanced techniques in the interpretation of established dramatic literature and/or creation of original work for the stage. Emphasis on collaboration between director and playwright. This course is for the student seriously considering directing as a career. Time will be spent on exploring professional career choices for the young director. *Prerequisite:* THEA 4341.

4351. Historical Cultures Within Theatrical Design. Using the elements of design, the course will focus on the exploration of political, social, economic and artistic influences of various artistic cultures in history, and how the designer uses this information to create a theatrical production, film or opera. Junior/senior-level course.

4361, 4362. Stage Management II. Fuller explanation of the methods and techniques of theatrical stage management. *Prerequisite:* THEA 3361, 3362.

5398, 5399. Production Research and Development. Script analysis, background research, and performance design for the actor, designer, director and dramaturg.

SCHOOL OF ENGINEERING GENERAL INFORMATION

The School of Engineering traces its roots to 1925, when the Technical Club of Dallas, a professional organization of practicing engineers, petitioned SMU to fulfill the need for an engineering school in the Southwest. In response to the club's request, the School of Engineering began one of the first cooperative education programs in the United States, a program that continues to put engineering students to work on real technical projects today.

Included in the School of Engineering curricula are programs in civil engineering, electrical engineering, environmental engineering, environmental science, computer engineering, computer science, management science, mechanical engineering and telecommunications systems. In 2000 the School of Engineering introduced Engineering and Beyond, a variety of programs within the School of Engineering designed to provide a generous mix of a traditional engineering curriculum and selected leadership coursework. This leadership coursework is designed to train engineering students for futures in management, entrepreneurship and beyond.

Corporate support for the engineering school has generated a remarkable array of equipment and laboratories. Recent additions include the AT&T Mixed Signals Lab, the Texas Instruments Digital Signal Processing Lab, the Procter and Gamble Biomedical Research Lab and the Nokia Wireless Communication

Lab. Other laboratories include the Laser Micromachining Lab, the Nanoscale Electro-thermal Science Lab and the Enterprise Systems Design Laboratory. In addition SMU Engineering is the home of the Research Center for Advanced Manufacturing (RCAM). RCAM provides the intellectual foundation for industry to collaborate with faculty and students to resolve generic, long-range challenges, thereby producing the knowledge base for steady advances in technology and their speedy transition to the marketplace. The Dallas area's national prominence in high technology and research has been beneficial to the School of Engineering and our students.

The School of Engineering is a founder and charter member of the Association for Media-based Continuing Education for Engineers (AMCEE), a nationwide consortium of engineering schools that offer videotape/DVD continuing education courses.

PROFESSIONAL ENGINEERING LICENSURE

All senior-year engineering students are encouraged to take the first part of the examination for professional engineering licensure in the state of Texas. This is known as the *Fundamentals of Engineering Examination* and is administered on campus once annually in early April. The School of Engineering provides a review course to prepare students for the exam. Application forms for the examination may be obtained from the Office of the Dean.

PROGRAM INFORMATION

All programs of education and research in engineering are conducted through the School of Engineering. The school is organized into the following departments:

- Computer Science and Engineering (CSE)
- Electrical Engineering (EE)
- Engineering Management, Information and Systems (EMIS)
- Environmental and Civil Engineering (ENCE)
- Mechanical Engineering (ME)

The School of Engineering offers curricula leading to the Bachelor of Science degree in the following programs (the department responsible for each program is indicated in parentheses):

- Civil Engineering (ENCE)
- Computer Engineering (CSE)
- Computer Science (CSE)
- Electrical Engineering (EE)
- Environmental Engineering (ENCE)
- Environmental Science (ENCE)
- Management Science (EMIS)
- Mechanical Engineering (ME)

Each curriculum is under the jurisdiction of the faculty of the department in which the program is offered.

The School of Engineering also offers graduate programs toward the degrees of Master of Science, Doctor of Engineering and Doctor of Philosophy.

The departments are the School of Engineering's basic operating and budgetary units. Each department is responsible for the development and operation of its laboratories at all levels of activity and for all purposes; for the content, teaching and scheduling of its academic courses; and for the conduct of research programs. The chief administrative officer of each department is the department chair, who reports directly to the dean.

Every effort has been made to include in this publication information that, at the time of preparation for printing, most accurately represents SMU within the context in which it was offered. The provisions of this publication are not, however, to be regarded as an irrevocable contract between the student and SMU. The University reserves the right to change or terminate, at any time and without prior notice, any provision or requirement including, but not limited to, policies, procedures, charges, academic programs and distance-education courses.

More information on the School of Engineering and its programs is available at www.engr.smu.edu.

UNDERGRADUATE ENGINEERING INTERNSHIP PROGRAM

This program is intended to allow students who enroll as full-time students to include a maximum of three terms of professional work experience during the course of their study. Students must have obtained junior level class status prior to participating in work experience. Students cannot simultaneously enroll in a full-time load of course work **and** participate in a full-time work experience. A "full-time" course of study is defined as 12 or more credit hours per term and a "full-time" work experience is defined as a minimum of 37.5 hours worked per week. In order to preserve satisfactory academic achievement, students enrolled in a full-time course load shall not work more than a maximum of 20 hours a week. Students who are actively participating in a full-time work experience shall not enroll in more than nine credit hours a term. Zero hours of credit will be awarded for each term of internship. Participation in this program will not jeopardize the full-time status of international students.

Students who wish to participate in this program will need to receive an internship job offer relating to their major.

- b Provide a job description to the Office of Undergraduate Professional Experience Programs.
- b Complete the "Undergraduate Engineering Internship Program Agreement" form.
- b Obtain the following approvals: faculty adviser, department chair, Director of Undergraduate Professional Experience Programs, International Student Office (for all international students).

Once the necessary approvals are obtained, the student must register for the Undergraduate Internship Program course that is designated by the student's department (CSE 5050, EE 5050, EMIS 5050, ENCE 5050, ME 5050).

Upon conclusion of the work assignment, the student must submit a report outlining the activities and duties of the internship within two weeks of the

end of the term or at the end of the internship, whichever comes first. The student will submit a copy of the report to the faculty adviser, the International Office (if applicable), and the Director of Undergraduate Professional Experience Programs of the School of Engineering. The Director of Undergraduate Professional Experience Programs, in consultation with the student's adviser, will assess the report and recommend a grade of Satisfactory "S" or Unsatisfactory "U" to the Associate Dean for Academic Affairs within two weeks of receiving the report. The student's work experience will be validated and recognized on the permanent transcript.

COOPERATIVE EDUCATION

The history of the School of Engineering at SMU demonstrates a commitment to the concept of cooperative education. When the School of Engineering was established in 1925, it already had a close relationship with the Technical Club of Dallas. Members of this group owned factories and engineering consulting firms and wanted to participate in the training and development of their incoming employees. The Technical Club asked SMU to include the Cooperative Education Program (Co-op) in the original design of the school.

SMU was one of the first universities in the Southwest to adopt this concept of practical education. From 1925 to 1965, all School of Engineering undergraduate students participated in Co-op. Since 1965, the program has been optional.

The SMU Co-op Program is designed so that each student can enhance his or her education and career by receiving professional training while alternating terms of classroom instruction. Participation in the Co-op Program allows students to:

- b Confirm that they like working in their major.
- b Discover the kind of work they like within their major.
- b Establish a professional reputation.
- b Earn the cumulative equivalent of one year of a new graduate's starting salary before graduation.
- b Gain invaluable work experience when competing for full-time jobs upon graduation.

HOW THE COOPERATIVE PROGRAM OPERATES

Entry into the Co-op Program typically is offered at either of two times during the student's academic progression. These are shown below:

	Plan A 5 Work Terms			Plan B 4 Work Terms			
	<i>Fall</i>	<i>Spring</i>	<i>Summer</i>	<i>Fall</i>	<i>Spring</i>	<i>Summer</i>	
First Year	SMU	SMU	Free	First Year	SMU	SMU	Free
Sophomore	SMU	SMU	Industry	Sophomore	SMU	SMU	Free
Junior	Industry	SMU	Industry	Junior	Industry	SMU	Industry
Senior 4th	SMU	Industry	Industry	Senior 4th	SMU	Industry	Industry

Students who want to participate in the Co-op Program should begin the application process two terms before their anticipated first work term. The application process includes attending a Co-op Orientation (preferably during the first year), receiving interview skills training, learning the job search process and completing a computerized application. The Co-op Director guides students through each step of the process.

Each applicant receives quality advising from the Co-op Director. A direct result of advising is that the student gains a better understanding of individual options and a strategy for pursuing those options. The application process requires one or two hours per week for almost two terms. The process normally results in an offer of Cooperative Education Training Employment beginning in the spring term during the sophomore year or the fall term of the junior year.

Who May Apply?

Any School of Engineering undergraduate student in good standing who has enough time remaining before graduation to alternate at least three times between terms of full-time work and terms of full-time school may apply for admission into the SMU Co-op Program. Transfer students must be admitted and

When to Apply

- b Many students choose to begin the application process during the first term of their first year. This head start is especially beneficial for students planning to participate in Greek Rush during the second term of their first year.
- b Two or more terms before the work term begins.
- b The first of these terms is for preparation.
- b The second is for applying/interviewing with companies.

POLICIES OF THE COOPERATIVE ENGINEERING EDUCATION PROGRAM

Since 1925, SMU's School of Engineering has created and maintained numerous strong corporate relationships. Many factors contribute to these relationships, including the quality of the academics and research, the advancement of alumni and SMU's close proximity to high-tech corporations. An SMU Co-op student directly benefits from these relationships.

However, the student bears an obligation to preserve these relationships for future students by following SMU's School of Engineering Co-op Program Undergraduate Student Agreement. The agreement balances the student's individual needs with the long-term goal of maintaining corporate relationships so that future SMU students will have as many opportunities as possible.

- b Students must maintain good standing with SMU and their employer at all times.
- b All Co-op Training Jobs must be approved in advance by the SMU Co-op Director.

- b Before each work term begins, each undergraduate Co-op student must enroll in the appropriate Co-op course for the term when they work.
- b SMU charges no fees or tuition for these courses. Each course is graded as pass/fail by the Co-op Director. The courses do not count toward graduation. The course numbers for each work term are, respectively, SS 1099, SS 2099, SS 3099, SS 4099, SS 5099 and SS 6099.
- b Students enroll at SMU each term, including summers, once they begin the Co-op rotation between work and school
- b Co-op students take full-time class loads at SMU during alternating school terms.
- b Co-op students do not work part-time for the Co-op employer during school terms.
- b Co-op students complete all work terms with the same company.
- b Once a student accepts a Co-op Training Job, the student may switch jobs within the sponsoring company with the approval of the company.
- b Each Co-op student completes his or her originally planned number and sequence of alternating work terms. The term of graduation must be a term of full-time study at SMU.
- b Each Co-op student accepts responsibility for knowing and following all Co-op regulations of SMU and the participating employer.

CO-OP CERTIFICATE

Co-op students who plan and complete all originally scheduled Co-op work terms in good standing with the University and the Co-op Office receive a Co-op Program Certificate to coincide with graduation.

For additional information, contact the Co-op Director at 214-768-3033 or by e-mail at coop@engr.smu.edu. The Co-op Office welcomes visitors and is in the School of Engineering Room 102 of the J. Lindsay Embrey Building

ADMISSION

For detailed information regarding Southern Methodist University's admission requirements, regulations and procedures, see the University Admission section of this catalog.

Prospective students interested in undergraduate degrees in engineering apply for undergraduate admission to SMU as first-year or transfer students through the Office of Admissions, Southern Methodist University, PO Box 750181, Dallas TX 75275-0181.

All first-year applicants admitted to SMU initially enter Dedman College. For students interested in majoring in engineering, a personal interview with the Office of Admission and the School of Engineering Undergraduate Enrollment Office is highly recommended. The School of Engineering Office of Undergraduate Student Experience and Enrollment Management can be reached at 214-768-3041.

HIGH SCHOOL PREPARATION

Because of the high standards of the School of Engineering and the rigorous character of its curricula, it is essential that the entering student be well prepared in basic academic subjects in high school.

The usual high-school preparation for entrance into SMU and study in engineering includes the following courses:

English	4 units
Mathematics	4-5 units
Physics, Chemistry, Biology	At least 3 units
Social Studies	2 units
Foreign Language	2 units
Computer Programming	1 unit

However, a minimum of 15 academic units is required for admission. The courses listed above, with the exception of foreign languages, are recommended but are not required.

Most recently, students admitted to SMU with the intention of majoring in engineering were the most competitive applicants. To be successful in SMU engineering programs, the student *should* have the following academic strengths:

1. Enrollment in an appropriate program of study in high school, as outlined above.
2. Rank in the upper third of his or her graduating high school class.
3. Have a minimum SAT composite of 1100 with at least a 600 math score. Equivalent ACT scores may also be submitted.

These guidelines should assist students interested in studying engineering at SMU.

ADMISSION TO ADVANCED STANDING

Admission from Dedman College and Other Schools Within SMU

After completion of the first year, admission to the School of Engineering is accomplished by an interschool transfer. These transfers are approved by the Associate Dean of the School of Engineering. For admission, a student must have completed 24 credit hours and must demonstrate the ability to achieve academic success in engineering or applied science by attaining a 2.00 or higher G.P.A. For admission into the civil engineering, computer engineering, electrical engineering, environmental engineering, or mechanical engineering program, a 2.00 or higher G.P.A. is required in the following five courses: ENGL 1301, ENGL 1302 or equivalent, MATH 1337, MATH 1338 and PHYS 1303. For admission into either the computer science or management science program, a 2.00 or higher G.P.A. is required in the following six courses: ENGL 1301, ENGL 1302 or equivalent, MATH 1337, MATH 1338, CSE 1341 and CSE 2341. If a course is repeated, both grades will be

used in computing the G.P.A.

Admission by Transfer from Another Institution

An undergraduate at a junior college, college, or university may apply for admission to the School of Engineering. Admission will be granted provided the prior academic records and reasons for transfer are acceptable to the School of Engineering. Transfer credit will be awarded in courses that have identifiable counterparts in curricula of the School of Engineering, provided they carry grades of *C* or better. Transfer students will be expected to meet requirements equivalent to students admitted from Dedman College and other schools within SMU.

Transfer credit is awarded only for work completed at institutions that are regionally accredited. Because of SMU's 60-term-hour residency requirement for a Bachelor's degree, there is a limit on the total amount of credit that may be transferred from four-year institutions.

ACADEMIC REGULATIONS

GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREES

Graduation from the School of Engineering with a Bachelor's degree requires that the following standards of academic performance be met:

1. A passing grade must be received in every course in the prescribed curriculum.
2. An overall G.P.A. of 2.00 or better must be attained in all college and university courses.
3. An overall G.P.A. of 2.00 or better must be attained in all course work attempted at SMU for the degree.
4. An overall G.P.A. of 2.00 or better must be attained in all course work attempted for the degree in the major field of study.
5. A minimum of 122 term hours of credit, including 35-41 hours in the General Education Curriculum and the requirements for a major in engineering or applied science.

Residence Requirements

For graduation from the School of Engineering, 60 term credit hours must be earned in residence, including 30 term credit hours in the major department or interdisciplinary program. Of the last 60 term credit hours earned toward a degree, 45 must be in residence. Exceptions to this requirement will be made only under unusual circumstances at the discretion of the School of Engineering faculty.

The Major

A candidate for a degree must complete the requirements for a major in one of the departments of the School of Engineering. The major requirements of each department and program are stated in the next section. The applicable requirements of the major are those in effect during the academic year of matricula-

tion, or those of a subsequent academic year. Course work counting toward a major may not be taken Pass/Fail. Majors must be officially declared (or changed) through the Office of the Assistant Dean of Undergraduate Studies.

GENERAL EDUCATION PROGRAM

All SMU undergraduate students have a common college requirement that is designed to assure them of a broad liberal education regardless of how specialized their majors might be. This requirement is so that each student learns to reason and think for oneself; becomes skilled in communicating meaning and in understanding it; understands something about both the social and the natural worlds and one's own place and responsibilities in them; and understands and appreciates human culture and history in their various forms, including religion, philosophy, and the arts.

The general education requirements for the School of Engineering program must follow the requirements of the University. See the General Education Curriculum section of this catalog for more information.

PROGRAMS OF STUDY

The School of Engineering offers the following degrees:

- Bachelor of Science in Civil Engineering
- Bachelor of Science in Computer Engineering
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Environmental Engineering
- Bachelor of Science in Mechanical Engineering
- Bachelor of Science (Computer Science)
- Bachelor of Science (Environmental Science)
- Bachelor of Science (Management Science)
- Bachelor of Arts (Computer Science)

Engineering work can be classified by function, regardless of the branch it is in, as follows: research, development, design, production, testing, planning, sales, service, construction, operation, teaching, consulting and management. The function fulfilled by an engineer results in large measure from personal characteristics and motivations, and only partially from his or her curriculum of study. Nonetheless, although engineering curricula may be relatively uniform, their modes of presentation tend to point a student toward a particular large class of functions. Engineering curricula at SMU aim generally at engineering functions that include research, development, design, management and teaching — functions ordinarily associated with additional education beyond the Bachelor's degree.

School of Engineering undergraduate programs in computer engineering, electrical engineering, environmental engineering and mechanical engineering are accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700. The undergraduate computer science program that awards the

degree Bachelor of Science (B.S.) is accredited by the Computing Accreditation Commission of ABET. The undergraduate computer science program that awards the degree Bachelor of Arts (B.A.) and the undergraduate program in civil engineering are not accredited by a Commission of ABET. ABET does not provide accreditation for the disciplines of environmental science and management science.

DESCRIPTION OF COURSES

Courses offered in the School of Engineering are identified by a two-, three- or four-letter prefix code designating the general subject area of the course, followed by a four-digit number. The first digit specifies the approximate level of the course as follows: 1 – first year, 2 – sophomore, 3 – junior, 4 – senior, and 5 – senior. The second digit denotes the term-hours associated with the course. The last two digits specify the course numbers. Thus, CSE 4322 denotes a course offered by the Department of Computer Science and Engineering at the senior (4) level, having three term hours, and with the course number 22. The prefix codes are as follows:

CSE — Department of Computer Science and Engineering

EE — Department of Electrical Engineering

EMIS — Department of Engineering Management, Information and Systems

ENCE — Department of Environmental and Civil Engineering

ME — Department of Mechanical Engineering

SS — Center for Special Studies

COMPUTER SCIENCE AND ENGINEERING

Professor Hesham El-Rewini, **Chair**

Professors: Margaret Dunham, Hesham El-Rewini, Abdelsalam (Sumi) Helal, David Matula, Sukumaran Nair, Stephen Szygenda, Mitchell Thornton; **Associate Professors:** Thomas Chen, James Dunham, Richard Helgason, Jeff Tian; **Assistant Professors:** Li Guo Huang, Fatih Kocan, Yuhang Wang; **Senior Lecturer:** Frank Coyle **Lecturers:** Donald Evans, Mark Fontenot, Judy Etchison; **Adjunct Faculty:** William Bralick, Ann Broihier, Hakki Çankaya, Dennis Frailey, G.N. Kartha, Kamran Khan, Marco Marchetti, Mohamed Khalil, Richmond G. Lewin, Babu Mani, Matt McBride; Lee McFearin, Freeman Moore, Robert Oshana, John Pfister, Mohamed Rayes, Stephen Stepoway, Yanjun Zhang.

The department of Computer Science and Engineering at SMU offers academic programs in computer engineering and computer science. Faculty specializations include computer architecture, knowledge engineering, software engineering, design and analysis of algorithms, parallel processing, database management, VLSI CAD methods, bioinformatics, computer networks, data and network security, mobile computing, theory of computation, and computer arithmetic. The educational objectives of the undergraduate programs in the department are to produce graduates who are productive professionals in an information technology discipline, are pursuing (or have pursued) graduate or professional degrees, are successful entrepreneurs and managers, have a broad knowledge and wide range of interests, are valuable members of their general community, and take a leadership role in their chosen field. As such, the pro-

grams are designed to ensure that graduates have:

- A. An ability to apply knowledge of mathematics, science, and engineering to the design of software and hardware.
- B. An ability to design and conduct experiments and to analyze and interpret data related to software and hardware solutions.
- C. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- D. An ability to function on multi-disciplinary teams using current software or computer engineering tools and technologies.
- E. An ability to identify, formulate, and solve engineering problems based on a fundamental understanding of concepts of computer science or computer engineering topics.
- F. An understanding of personal and professional ethical responsibility.
- G. An ability to communicate effectively both in an oral and written form.
- H. A broad liberal arts education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- I. Recognition of the need for, and an ability to engage in life-long learning.
- J. Knowledge of contemporary issues.
- K. The ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
- L. The ability to apply software engineering principles to the design and implementation of large software systems.

The CSE Department is engaged in an ongoing assessment process that evaluates the success in meeting these objectives and enhances the development of the program.

Degrees

Bachelor of Science — Major in Computer Science (122/124* Term Credit Hours)

Bachelor of Science — Major in Computer Science with a Premedical Specialization (129 Term Credit Hours)

(129 Term Credit Hours)

Bachelor of Science in Computer Engineering (123 Term Credit Hours)

Bachelor of Arts — Major in Computer Science (122 Term Credit Hours)

(*the B.S. CS degree in the gaming track requires two additional hours of coursework)

The undergraduate program in computer engineering is accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700. The undergraduate computer science program that awards the degree Bachelor of

Science (B.S.) is accredited by the Computing Accreditation Commission of ABET. The undergraduate computer science program that awards the degree Bachelor of Arts (B.A.) is not accredited by a Commission of ABET.

Dual Degree Program

The School of Engineering offers a dual degree with the Meadows School of the Arts that leads to the degrees of Bachelor of Arts in Music and Bachelor of Arts in Computer Science. Please contact the department for additional details.

4+1 Master's Degree Program

The 4+1 Program allows students to complete both B.S. and M.S. degrees in five years. In the CSE department, students may participate in a 4+1 program in either the Computer Science or Computer Engineering area. Up to nine TCHs of graduate courses may be applied toward fulfilling the student's undergraduate program requirements. For additional information, contact the Undergraduate Program Director.

Teaching Certification

The teacher certification program requires 24 hours of course work and six hours of student teaching. Thus a B.A. CS student is able to complete these requirements by taking all required education courses within the free electives area. In addition, the student would have to complete student teaching. For information on this, please contact the Undergraduate Program Director.

Game Development

The Guildhall at SMU provides an in-depth certificate/Master's level degree program tailored to individuals who wish to become actively involved in the Game Development industry as game designers or programmers. The CSE department is proud to be one of the first schools to offer a BS degree in Computer Science with a track in Game Development. Our program provides the breadth and rigor of an ABET accredited computer science degree while simultaneously providing an in-depth investigation of digital game development fundamentals. The student who participates in this program spends his/her last term at the Guildhall taking the first two terms of their seven-term program. The student is completely immersed in the Guildhall program during this period. In addition, the senior design project is a game development project performed as part of the Guildhall program. The student is able to participate in both an individual and group-oriented senior design project. A student who successfully completes the Game Development track will be able to obtain a Master's degree with one additional year on site at the Guildhall.

Computing Facilities

Students in the Department of Computer Science and Engineering have access to a wide range of facilities and equipment. The department's computing environment has evolved into an Ethernet-based network of personal computers and servers. General use Unix servers are available that run OSF1, SunOS and Linux. A wireless network is also available throughout the facilities of CSE. Windows-based PC labs are used during the first two years of coursework. Access to the network is also available via open-area labs containing X terminals and PCs.

Curriculum in Computer Science

Computers play an ever-increasing role in our society. Their use permeates all other academic disciplines and industrial arenas. Computer science is the study of the concepts and theory surrounding computer design and software construction. The SMU undergraduate program in Computer Science provides the student with a solid understanding of these concepts, which provides him or her with the technical knowledge needed to pursue either an advanced degree or a challenging career in the computer industry. The diversity of the School of Engineering computer environment exposes undergraduate computer science students to many different hardware and software systems.

To study and use computers we must communicate with them through a variety of software interfaces, including programming languages. At SMU, the student will study several high-level languages — such as C++ and Java — that simplify the use of computers. In addition, the student is exposed to a variety of Computer-Aided Software Engineering (CASE) tools and expert systems shells. Assembly languages and operating systems (such as UNIX) for micro-, mini-, and mainframe computers are studied to provide an understanding of the architecture and organization of a digital computer. Mathematical topics such as discrete mathematics and data structures, graph theory, and Boolean and linear algebra are taken by undergraduates so that they may better understand the internal structure of the computer and the effective utilization of its languages.

Knowledge of the computer's internal structure is important to understanding its capabilities. Thus, the Computer Science student will take courses in assembly language, computer logic and computer organization. Courses in systems programming and operating systems extend this structural study into the "software" of the computer. A required sequence of software engineering courses prepares our students for advanced systems and software applications.

The free electives in the Computer Science program can also be used to individually tailor a student's study plan. For example, a student desiring a program even more intensive than the Computer Science major could satisfy his or her free electives with more Computer Science courses. A student wishing to obtain a broader education could satisfy these electives with courses offered by any department in the University.

The B.S. degree allows the student to major in any of three concentration tracks or to take a general program where he/she can take nine hours of Computer Science electives as chosen by the student. The Research track allows a student to participate in an undergraduate research project of his/her choice. Just as a graduate student would be required to do, the undergraduate student majoring in Research is required to perform independent research in an area of his/her choice (being advised by a tenure track faculty member), write up the research results, and present the results of the research in a presentation open to the entire university community. The Security track facilitates a more in-depth study of software security issues. As described earlier, the Game Development track is provided in collaboration with the Guildhall.

Bachelor of Science with a Major in Computer Science

Curriculum Requirements		
Area	Required Courses	TCH
Liberal Studies:	ENGL 1301, 1302	6
	Perspectives	15
	Cultural Formations	6
Area	Required Courses	TCH
(One Perspectives course <i>or</i> one Cultural Formations course must satisfy the Human Diversity requirement.)		
Mathematics:	MATH 1337, 1338, 3353	9
	CSE 2353	3
	CSE 3365, 4340	6
Science:	PHYS 1105, 1106, 1303, 1304	8
	Six TCH from the following list of courses:	6
	ANTH 2315, 2363	
	BIOL 1401, 1402	
	CHEM 1113/1303, 1114/1304	
Computer Science:	GEOL 1301, 1305, 1307, 1308, 1313	
	PHYS 3305	
Computer Science:	CSE 1341, 2240, 2341, 3381, 3342, 3345, 3353, 3358, 4344, 4345, 4346*, 4381, 5343	38
	(* Students in the Game Development track must take HGAM 5391 and CSE 4051 instead of CSE 4346)	
Tracks and Electives:		14/16*
	Research: CSE 5350, CSE 4397 Any additional three-hour CSE course numbered 5000 or above and five hours of general electives as approved by adviser.	
	Game Development: HGAM 5201, HGAM 5202, HGAM 5311, HGAM 5312, HGAM 5221, HGAM 5222, HGAM 5270 (These courses must be taken at the Guildhall, and all students in this track must be admitted to the Guildhall certificate program.)	
	Security: CSE 5339, CSE 5349 Any additional three-hour CSE course numbered 5000 or above and five hours of general electives as approved by adviser.	
	General: Any 3 three-hour CSE courses numbered 5000 or above and five hours of general electives as approved by adviser	
Engineering Leadership:	CSE 4360, EMIS 3308, ENCE 3302	9
Wellness:		2

122/124

**Bachelor of Science with a Major in Computer Science
Bioinformatics Track**

Curriculum Requirements		
Area	Required Courses	TCH
Liberal Studies:	ENGL 1301, 1302	6

Perspectives	9-12
Cultural Formations	3-6

(*Students choosing the gaming track require two additional hours of coursework in their degree plan)

Area	Required Courses	TCH
Mathematics:	MATH 1337, 1338, 3353	9
	CSE 2353	3
	CSE 3365, 4340	6
Science:	PHYS 1105, 1106, 1303, 1304	8
	BIOL 1401, 3304	7
	CHEM 1303/1113	4
Computer Science:	CSE 1341, 2240, 2341, 3381, 3342, 3345, 3353, 3358, 4344, 4345, 4346, 4381, 5343,	38
	Bioinformatics track: CSE 5335, CSE 5331, BIOL 5305	15
Engineering Leadership	Any two additional three-hour CSE courses numbered 5000 or above as approved by advisor.	
Wellness:	CSE 4360, EMIS 3308, ENCE 3302	9
		2

122

**Bachelor of Science with a Major in Computer Science
with Premedical Specialization**

Curriculum Requirements:

Area	Required Courses	TCH
Liberal Studies:	ENGL 1301, 1302	6
	Perspectives	9-12
	Cultural Formations	3-6
(One Perspectives course <i>or</i> one Cultural Formations course must satisfy the Human Diversity requirement.)		
Mathematics:	MATH 1337, 1338, 3353	9
	CSE 2353	3
	CSE 3365, 4340	6
Science:	PHYS 1105, 1106, 1303, 1304	8
	BIOL 1401, 1402, 3304, 3350	14
	CHEM 1303, 1304; 1113; 1114; 3117; 3118; 3371, 3372	16
Computer Science:	CSE 1341, 2240, 2341, 3381, 3342, 3345, 3353, 3358, 4344, 4345, 4346, 4381, 5343	38
	3 TCH to be chosen from the following: 5344, 5345, 5348, 5349, 5350, 5359, 5376, 5380, 5381, 5382, 5385, 5387	3
	Engineering Leadership: CSE 4360, EMIS 3308, ENCE 3302	9

CSE

Wellness: 2

129

Bachelor of Arts with a Major in Computer Science

Curriculum Requirements

<i>Area</i>	<i>Required Courses</i>	<i>TCH</i>
Liberal Studies:	ENGL 1301, 1302	6
	Perspectives	15
	Cultural Formations	6
(One Perspectives course <i>or</i> one Cultural Formations course must satisfy the Human Diversity requirement.)		
<i>Area</i>	<i>Required Courses</i>	<i>TCH</i>
Mathematics:	MATH 1337, 1338	6
	CSE 2353	3
	STAT 2331	3
Science:	PHYS 1313	3
	Three TCH from the following list of courses:	3
	ANTH 2315, 2363 BIOL 1303, 1303, 1308, 1401, 1402 CHEM 1301, 1303, 1304, GEOL 1301, 1305, 1307, 1308, 1313 PHYS 1303, 1304, 1314, 3305	
Computer Science:	CSE 1341, 2240, 2341, 3381, 3342, 3345, 3358, 4344, 4345, 4346, 4381, 5343	35
	Six TCH to be chosen from the following: CSE 5314, 5320, 5330, 5339, 5341, 5342, 5344, 5345, 5348, 5349, 5350, 5359, 5376, 5380, 5381, 5382, 5385, 5387	6
Engineering Leadership:	CSE 4360, EMIS 3308, ENCE 3302	9
Free Electives:	The free electives must be approved by the adviser.	25
Wellness:		2

122

Minor in Computer Science

A student majoring in Computer Engineering may not minor in computer science.

Requirements:

- CSE 1341** Principles of Computer Science I
- CSE 2341** Principles of Computer Science II
- CSE 2353** Discrete Computational Structures
- CSE 3358** Data Structures

Elective Courses:

Any six hours of CSE courses numbered 3000 or above as approved by the CS Minor Adviser.

Curriculum in Computer Engineering

Computer engineering deals with computers and computing systems. The computer engineer must be capable of addressing problems in hardware, software and algorithms, especially those problems whose solutions depend upon

the interaction of these elements.

The career opportunities of the computer engineer will require a broad range of knowledge. The design and analysis of logical and arithmetic processes that are the basis of computer science provide basic knowledge. Computer engineering courses are concentrated on the interacting nature of hardware and software. Basic electrical engineering is a clear foundation for the computer engineer.

**Bachelor of Science with a Major in Computer Engineering
Curriculum Requirements**

Area	Required Courses	TCH
Liberal Studies:	ENGL 1301, 1302	6
	Perspectives	9-12
	Cultural Formations	3-6
(One Perspectives course <i>or</i> one Cultural Formations course must satisfy the Human Diversity requirement.)		
Area	Required Courses	TCH
Mathematics:	MATH 1337, 1338, 2343, 3353	12
	CSE 2353, 3365, 4340	9
Science:	PHYS 1106, 1303, 1304	7
	CHEM 1303	3
	Three TCH from CHEM 1304; BIOL 1401, 1402, GEOL 1301, PHYS 3305	3
Engineering Leadership:	CSE 4360, EMIS 3308, ENCE 3302	9
Computer Engineering:	CSE 1341, 2240, 2341, 3353, 3358, 3381, 4344, 4381, 5343, EE 2122, 2322, 2350	33
Tracks:		12
	Hardware: CSE 4386	
	Three of the following: CSE 5380, 5381, CSE 5385 or EE 5385, CSE 5387	
	Software Engineering: CSE 3345, 4345, 4346, 5314 or 5316 or 5319	
	Networking: CSE 4347	
	Three of the following: CSE 5344, 5348, 5349, EE 5376	
Wellness:		2
Electives:	SoE Advanced Electives	9
	Free Electives	3

123

Minor in Computer Engineering

A student majoring in Computer Science may not minor in Computer Engineering.

Requirements:

- CSE 1341** Principles of Computer Science I
- CSE 2240** Assembly Language Programming and Machine Organization
- CSE 2341** Principles of Computer Science II
- CSE 2353** Discrete Computational Structures

CSE 3381 Digital Logic Design

CSE 3358 Data Structures

The Courses (CSE)

1319. Introduction to Digital Imaging. Presents an overview of digital imaging in its many varied aspects from the simple to the complex. The hardware reviewed is photographic, video, and scanned conversion mechanisms, and software for editing and converting photographic and video images is introduced. The science behind the electronic image is discussed in detail. This course resolves the many mystifying technical issues involved in the creation, manipulation, processing and output of digital images through myriad examples, detailed technical information, and practical laboratory assignments. *Prerequisite:* Familiarity with computers. Some programming experience helpful but not required.

1331. Introduction to Web Programming. Examines technologies and techniques for building three-tier Web-based applications. Topics include technologies for developing client-tier graphical user interfaces, server-tier technologies for processing client requests and data-tier database technologies for managing and storing both relational and XML data. Issues related to Web security will be studied throughout the course. All students will participate in team-based collaborative projects.

1340. Introduction to Computing Concepts. Introduction to computer concepts, program structures, object-oriented programming and interactive application development. Extensive programming projects emphasizing logical control structures and the use of libraries.

1341. Principles Of Computer Science I. Intended as a continuation of CSE 1340. Introduction to the fundamental concepts of computer science and object-oriented design of reusable modules. The course covers basic object-oriented concepts of composition, inheritance, polymorphism and containers. First course for CS and CpE majors and minors. *Prerequisite:* A grade of C- or better in CSE 1340 or at least a 4 on the AP exam.

2240. Assembly Language Programming and Machine Organization. Computer-related number systems, machine arithmetic, computer instruction set, low-level programming, addressing modes and internal data representation. *Prerequisite:* A grade of C- or better in 1341.

2337 Introduction to Data Management. This course is designed to provide practical experience using a relational database system and spreadsheet system. The course emphasizes hands-on practical training in the creation and access of relational databases as well as basic and intermediate data analysis using spreadsheet software. Integrating data from a spreadsheet and relational database into other document types is also covered. No credit for CS or CpE majors or minors. *Prerequisite:* EMIS 1305 or ME 1305. *Prerequisite/Corequisite:* SOCI 2377.

2341. Principles of Computer Science II. Emphasizes the object-oriented implementation of data structures, including linked lists, stacks, queues, sets and binary trees. The course covers object-oriented software engineering strategies and approaches to programming in interdisciplinary teams. *Prerequisite:* A grade of C- or better in CSE 1341 or equivalent.

2353. Discrete Computational Structures. Logic, proofs, partially ordered sets and algebraic structures. Introduction to graph theory and combinatorics. Applications of these structures to various areas of computer science. *Prerequisite:* A grade of C- or better in CSE 1341.

3342. Programming Languages. Introduction to basic concepts of programming languages, including formal syntax, static and dynamic, scoping, equivalence and consistency of data types, control constructs, encapsulation and abstract data types, storage allocation, and run-time environment. Advanced programming techniques such as tail recursion, inheritance, polymorphism, static and dynamic binding, and exception handling. In-depth studies of representative languages of different programming paradigms — ob-

ject-oriented, logic, and functional programming. *Prerequisite:* A grade of C- or better in CSE 3358.

3345. Graphical User Interface Design and Implementation. Introduction to the concepts underlying the design and implementation of graphical user interfaces with emphasis on the psychological aspects of human-computer interaction. The course is structured around lectures, case studies and student projects. This course will introduce event-driven programming concepts including the Java API, applications, applets, interfaces, graphics, basic and advanced GUI components, HTML and multithreading. *Prerequisites:* A grade of C- or better in CSE 2341 or equivalent.

3353. Fundamentals of Algorithms. Introduction to algorithm analysis, big Oh notation, algorithm classification by efficiency. Basic algorithm strategies and basic approaches to problem solving. Algorithms in hard- and software. Sorting and searching algorithms. Algorithms for arithmetic operations. Introduction to graph theory and graph algorithms. *Prerequisites:* A grade of C- or better in CSE 2353.

3358. Data Structures. Representation and organization of data for fast access and computation. Consideration of efficient algorithms for storing and retrieving information using lists, trees, hash tables, etc. Dynamic storage allocation/collection techniques. Fast sorting techniques. Abstract data types (ADT). Implementation of data structures. *Prerequisites:* A grade of C- or better in CSE 2341. CSE 2353 is strongly recommended. CSE 3358 should be taken the term immediately following CSE 2341.

CSE 3365 (MATH 3315). Introduction to Scientific Computing. An elementary survey course that includes techniques for root-finding, interpolation, functional approximation, linear equations and numerical integration. Special attention is given to MATLAB programming, algorithm implementations and library codes. *Prerequisites:* A grade of C- or higher in MATH 1338. *Corequisite:* CSE 1340 or 1341; Students registering for this course must also register for an associated computer laboratory.

3381. Digital Logic Design. Boolean Functions. Logic gates. Memory elements. Synchronous and asynchronous circuits. Shift registers and computers. Logic and control. *Corequisite:* Weekly no-credit lab. *Prerequisite:* A grade of C- or better in CSE 2353 and CSE 2240.

4340 (STAT 4340). Statistical Methods for Engineers and Applied Scientists. Basic concepts of probability and statistics useful in the solution of engineering and applied science problems. Topics: probability, probability distributions, data analysis, sampling distributions, estimation and simple tests of hypothesis. *Prerequisites:* MATH 1337 and 1338.

4344. Computer Networks and Distributed Systems. Introduction to network protocols, layered communication architecture, wired and wireless data transmission, data link protocols, network routing, TCP/IP and UDP, e-mail and World Wide Web (www), introduction to distributed computing, mutual exclusion, linearizability, locks, multithreaded computing. *Prerequisites:* A grade of C- or better in both CSE 3358 and CSE 3381.

4345. Software Engineering Principles. Introduction to software system development. Overview of development models and their stages. System feasibility and requirements engineering, architecture and design, validation and verification, maintenance and evolution. Project management. Review of current software engineering literature. Student teams will design and implement small-scale software systems. Class presentations. The course contains a major design experience. *Prerequisites:* Senior standing and a grade of C- or better in CSE 3358.

4346. Software Engineering Design Project. Project course, with a major design component. Students participate in a multidisciplinary group project team. There will be topical discussions in relation to the project, which include software development life cycle, project team organization, project planning and scheduling, management, testing and validation methods, industrial standards and interfaces, and the importance of lifelong

learning. The group project will provide the major design experience for students in the Computer Science program and the Software Engineering track of the Computer Engineering program. *Prerequisites:* A grade of C- or better in CSE 4345

4347. Networks Design Project. Project course, with a major design component. Students participate in a multidisciplinary group project team. There will be topical discussions in relation to the project, which include network protocols, layered communication architecture, data communication, data link protocols, internetworking, routing, congestion control, industrial standards and interfaces, and the importance of lifelong learning. The group project will provide the major design experience for students in the Networks track of the Computer Engineering program. *Prerequisites:* A grade of C- or better in CSE 4344.

4360. Technical Entrepreneurship. Demonstrates the concepts involved in the management and evolution of rapidly growing technical endeavors. Students are expected to participate in active learning by doing, making mistakes and developing solutions, and observing mistakes and approaches made by the other teams. *Prerequisites:* Junior or Senior standing or graduate student.

4381. Digital Computer Design. Machine organization, instruction set architecture design, memory design, control design: hardwired control and microprogrammed control, algorithms for computer arithmetic, microprocessors and pipelining. *Prerequisite:* A grade of C- or better in CSE 3381.

4386. Hardware Design Project. Project course, with a major design component. Students participate in a multidisciplinary group project team. There will be topical discussions in relation to the project, which include the hardware design and manufacturing process, hardware description languages, modular design principles, quantitative analysis, industrial standards and interfaces, and the importance of lifelong learning. The group project will provide the major design experience for students in the Hardware track of the Computer Engineering program. *Prerequisite:* C- or better in CSE 4381.

4(1-4)9(0-4). Undergraduate Project. An opportunity for the advanced undergraduate student to undertake independent investigation, design or development. Variable credit from one to four term hours. Written permission of the supervising faculty member is required before registration.

4(1-3)97. Research Experience for Undergraduates. This course provides research experience for Junior/Senior undergraduate students. Variable Credit from one to three hours is given for this course. Permission from the advising CSE faculty member is required before registration. *Prerequisites:* Junior/Senior Standing Computer Science or Computer Engineering major with G.P.A. over 3.0.

5111. Intellectual Property and Information Technology. This course presents fundamentals in the nature, protection and fair use of intellectual property. Patent, copyright, trademark, trade secret and antitrust principles are presented with an emphasis on the Internet, software, databases and digital transmission technologies. The open source and creative commons alternatives for disseminating intellectual property are investigated. We examine the engineer's, scientist's, manager's, and creative artist's professional and ethical responsibilities and opportunities regarding intellectual property. We will also investigate the rapid change in types and uses of intellectual property spawned by computers, digital media, e-commerce and biotechnology.

5311. Fundamentals of Computer Science. A comprehensive foundation course covering the major aspects of computer science. The course will cover hardware and software fundamentals, operating systems concepts, data structures, discrete structures, algorithms and programming languages. The course will also address issues related to software engineering and object-oriented programming. This course is intended to prepare students without a computer science background for the Master's program in Software Engineering at SMU.

5314. Software Testing and Quality Assurance. The relationship of software testing to quality is examined with an emphasis on testing techniques and the role of testing

in the validation of system requirements. Topics include module and unit testing, integration, code inspection, peer reviews, verification and validation, statistical testing methods, preventing and detecting errors, selecting and implementing project metrics, and defining test plans and strategies that map to system requirements. Testing principles, formal models of testing, performance monitoring and measurement also are examined. *Prerequisite:* It is strongly recommended that students have software engineering experience in industry. C- or better in all previous CSE courses and Senior standing.

5316 Software Requirements. Focuses on defining and specifying software requirements that can be used as the basis for designing and testing software. Topics include use-cases for describing system behavior, formal methods, specifying functional vs. nonfunctional requirements and the relationship of requirements to software testing. *Prerequisite:* C- or better in all previous CSE courses and Senior standing.

5319 Software Architecture and Design. Software development requires both an understanding of software design principles and a broader understanding of software architectures that provide a framework for design. The course explores the role of design in the software lifecycle including different approaches to design, design tradeoffs and the use of design patterns in modeling object-oriented solutions. It also focuses on important aspects of a system's architecture including the division of functions among system modules, synchronization, asynchronous and synchronous messaging, interfaces, and the representation of shared information. *Prerequisite:* C- or better in all previous CSE courses and Senior standing.

5320. Artificial Intelligence. Introduction to basic principles and current research topics in artificial intelligence. Formal representation of real-world problems, search of problem spaces for solutions, and deduction of knowledge in terms of predicate logic, nonmonotonic reasoning, and fuzzy sets. Application of these methods to important areas of artificial intelligence, including expert systems, planning, language understanding, machine learning, neural networks, computer vision and robotics. *Prerequisites:* A grade of C- or better in both CSE 3342 and CSE 3358.

5330. File Organization and Database Management. A survey of current database approaches and systems, principles of design and use of these systems. Query language design, implementation constraints. Applications of large databases. Includes a survey of file structures and access techniques. Use of a relational DBMS to implement a database design project. *Prerequisite:* A grade of C- or better in CSE 3358.

5331. An Introduction to Data Mining and Related Topics. The purpose of this course is to introduce students to various data mining and related concepts. All material covered will be reinforced through hands-on implementation exercises. In this introductory course, a high level applied study of data mining techniques will be used. *Prerequisite:* A grade of C- or better in CSE 3358.

5335. Introduction to Bioinformatics. This course will give the students an up-to-date introduction to the field of bioinformatics. It will cover a wide variety of bioinformatics topics from a computer science perspective, including algorithms for DNA/protein sequence analysis, protein 3D structural alignment, gene expression microarray analysis, Single Nucleotide Polymorphism (SNP) microarray analysis, proteomics data analysis, protein-protein interaction data analysis, pathway data analysis, and gene ontology. This course only assumes biology knowledge at the high school level. Some related biological background beyond high school will be included in the lectures. *Prerequisites:* C- or better in both CSE 3353 and CSE 3358 or equivalent, or by permission of the instructor.

5339. Computer System Security. Investigates a broad selection of contemporary issues in computer security, including an assessment of state-of-the-art technology used to address security problems. Specific topics include: sources for computer security threats and appropriate reactions, basic encryption and decryption, secure encryption systems, program security, trusted operating systems, database security, network and distributed systems security, administering security, legal and ethical issues. *Prerequisite:* A grade of C- or better in CSE 5343.

5341. Compiler Construction. Review of programming language structures, loading, execution and storage allocation. Compilation of simple expressions and statements. Organization of a compiler including compile-time and run-time symbol tables, lexical analysis, syntax analysis, code generation, error diagnostics and simple code optimization techniques. Use of a recursive high-level language to implement a complete compiler. *Prerequisites:* A grade of C- or better in both CSE 3342 and CSE 3358.

5342. Concepts of Language Theory and Their Applications. Formal languages and their relation to automata. Introduction to finite state automata, context-free languages and Turing machines. Theoretical capabilities of each model, and applications in terms of grammars, parsing, and operational semantics. Decidable and undecidable problems about computation. *Prerequisite:* A grade of C- or better in CSE 3342 or permission of instructor.

5343. Operating Systems and System Software. Theoretical and practical aspects of operating systems: overview of system software, timesharing and multiprogramming operating systems, network operating systems and the Internet, virtual memory management, interprocess communication and synchronization, file organization and case studies. *Prerequisites:* A grade of C- or better in both CSE 2240 and CSE 3358.

5344. Computer Networks and Distributed Systems II. Introduction to network protocols, layered communication architecture, multimedia applications and protocols, Quality of Service (QoS), Congestion control, optical networks, DWDM, network survivability and provisioning, wireless networks. There will be an interdisciplinary project requiring the use of currently available network design and simulation tools. *Prerequisite:* A grade of C- or better in CSE 4344.

5345. Advanced Java Programming. Provides the student with a foundation for building advanced distributed and embedded systems applications in Java through the use of Java's support for networking and concurrency. Topics will include exception handling, object serialization, thread and thread-safe programming issues, component frameworks, remote method invocation, security, and concurrency issues. Discussion of the issues and techniques necessary to develop high-performance, object-oriented concurrent Java applications and apply advanced Java constructs to research projects in telecommunications, databases, networks and mobile computing. *Prerequisites:* CSE 3345 or consent of instructor.

5346. Java Distributed Enterprise Computing. Familiarizes students with issues and techniques surrounding the building of distributed enterprise Java applications. Initial focus will be on exceptions, threads, streams and sockets in support of building Java-based web servers. Building on these basic constructs, the course will explore details of enterprise technology including Java Servlets, Java Server pages (JSP), database connectivity (JDBC), Enterprise Java Beans and J2EE for building tightly-coupled server components. *Prerequisite:* CSE 5345 or equivalent.

5347. XML and the Enterprise. XML, the Extensible Markup Language, is widely used to define vocabularies for a wide range of applications including software configuration, data exchange and Web-based protocols. This course provides a detailed examination of XML as an enterprise technology. Focuses on APIs, interfaces and standards that are driving this technology including: DTDs and XML Schema to structure SML data; XSLT to transform XML; XML protocols for distributed computing and XML security initiatives. Students will come away with broad understanding of XML and the technical issues and tradeoffs among different alternatives for processing XML. *Prerequisite:* An understanding of object-oriented concepts; familiarity with Java and/or C++.

5348. Internetworking Protocols and Programming. Processing and Interprocess Communications (IPC), UNIX domain sockets, fundamentals of TCP/IP, Internet domain sockets, packet routing and filtering and firewall, SNMP and network management, client-server model and software design, Remote Procedure Call (XDR, RPC, DCE), design of servers and clients, networking protocols for the World Wide Web, internetworking over new networking technologies. *Prerequisites:* A grade of C- or better in both CSE 4344 and

CSE 5343 and C programming.

5349. Data and Network Security. Covers conventional as well as state-of-the-art methods in achieving data and network security. Private key and public key encryption approaches will be discussed in detail with coverage on popular algorithms such as DES, Blowfish and RSA. In the network security area, the course will cover authentication protocols, IP security, Web security and system level security. *Prerequisite:* C- or better in CSE 4344.

5350. Algorithm Engineering. Algorithm design techniques. Methods for evaluating algorithm efficiency. Data structure specification and implementation. Applications to fundamental computational problems in sorting and selection, graphs and networks, scheduling and combinatorial optimization, computational geometry, arithmetic and matrix computation. Introduction to parallel algorithms. Introduction to computational complexity and a survey of NP-complete problems. Emphasis on developing student facility to design efficient algorithms. *Prerequisite:* A grade of C- or better in both CSE 3358 and CSE 3353.

5359. Software Security. As software is delivered across networks and Web-based environments, security is critical to successful software deployment. This course focuses on software security issues that pertain to the network Application Layer in the classic OSI model. At the application network layer, issues related to encryption, validation and authentication are handled programmatically rather than at the network level. Students will work with APIs for cryptography, digital signatures and third party certificate authorities. The course will also explore issues related to XML and Web Services security by examining standards and technologies for securing data and programs across collaborative networks. *Prerequisite:* Programming experience in Java and/or C++.

5360. Introduction to 3D Animation. An introduction to computer graphics with an emphasis on the popular software package Maya. Includes focus on the user interface, creation of 3D geometry using polygonal techniques, materials and textures, kinematics, animation and camera and lighting techniques. This course explores the various aspects and fundamentals of computer graphics. Students should gain a core understanding of the workflow necessary to create 3D imagery. Assignments require students to combine a variety of techniques to become familiar with the computer animation production process. *Prerequisite:* Junior standing or higher. Course may not be used for credit in a graduate degree program in CSE without adviser's approval.

5376 (EE 5301). Introduction to Telecommunications. Overview of public and private telecommunications systems, traffic engineering, switching, transmission and signaling. Channel capacity, media characteristics, Fourier analysis and harmonics, modulation, electromagnetic wave propagation and antennae, modems and interfaces, and digital transmission systems. T1 carriers, digital microwave, satellites, fiber optics and SONET, and Integrated Services Digital Networks.

5380. VLSI Algorithms. Introduction to problems, algorithms and optimization techniques used in the design of high-performance VLSI design. Emphasis on algorithms for partitioning, placement, floor planning, wire routing and layout compaction. Additional focus on constraints for the design for field programmable gate arrays (FPGA's) throughout the course. *Prerequisites:* C- or better in CSE 3381 and C- or better in CSE 3358.

5381. Computer Architecture I. Introduces students to the state of the art in uniprocessor computer architecture. The focus is on the quantitative analysis and cost-performance trade-offs in instruction-set, pipeline and memory design. Topics covered: quantitative analysis of performance and hardware costs, formal specification, instruction set design, pipeline, delayed branch, memory organization and advanced instruction-level parallelism. *Prerequisite:* A grade of C- or better in CSE 4381.

5382. Computer Graphics. Hardware and software components of computer graphics systems: display files, two-dimensional and three-dimensional transformations, clipping and windowing, perspective, hidden-line elimination and shaping, interactive graphics and applications. *Prerequisite:* A grade of C- or better in CSE 3358.

5385. Microprocessor Architecture and Interfacing. Emphasizes the design and interfacing of microprocessor computer systems. Topics covered: processor architecture and interfacing, memory structure and interfacing, bus systems, support chips, tools for hardware design, analysis, simulation, implementation and debugging. The theoretical part of the course is complemented by a laboratory in which students get practical experience in designing and analyzing interfaces to processors, memories and peripherals. *Prerequisites:* A grade of C- or better in CSE 3381 or a grade of C- or better in EE 3381.

5387. Digital Systems Design. Modern topics in digital systems design including the use of HDLs for circuit specification and automated synthesis tools for realization. Programmable logic devices are emphasized and used throughout the course. This course has heavy laboratory assignment content and a design project. *Prerequisite:* C- or better in CSE 3381.

5(1-4)9(0-4). Special Topics. Individual or group study of selected topics in computer science. Variable credit from one to four term hours. Written permission of the supervising faculty member is required before registration.

ELECTRICAL ENGINEERING

Associate Professor Marc P. Christensen, **Chair**

Professors: Jerome K. Butler, Gary A. Evans, W. Milton Gosney, Alireza Khotanzad, Geoffrey Orsak, Panos E. Papamichalis, Behrouz Peikari, Mandyam D. Srinath; **Associate Professors:** Thomas Chen, Marc P. Christensen, Carlos E. Davila, Scott C. Douglas, James G. Dunham, Choon S. Lee, Sukumaran Nair, Mitchell A. Thornton; **Assistant Professors:** Ping Gui, Dinesh Rajan; **Adjunct Professors:** Richard Levine; **Adjunct Associate Professors:** Hossam H'mimy, Clark Kinnaird, John D. Provence; **Adjunct Assistant Professors:** Eric Bird, Amitabh Dixit, Madhukar Budagavi, Rahmi Hezar, Ahmed H'mimy, David Pearson, Gordon Sohl; **Emeritus Professors:** Kenneth L. Ashley, Robert R. Fossum, Someshwar C. Gupta, Lorn L. Howard, John A. Savage; **Senior Lecturer:** H. Charles Baker.

The discipline of electrical engineering is at the core of today's technology-driven society. Personal computers, computer-communications networks, integrated circuits, optical technologies, digital signal processors and wireless communications systems have revolutionized the way we live and work, and extraordinary advances in these fields are announced every day. Because today's society truly is a technological one, a degree in electrical engineering offers exceptional opportunities for financial security, personal satisfaction and an expansion of the frontiers of technology.

The Department of Electrical Engineering at SMU offers a full complement of courses at the Bachelor's degree level in communications, information technology, networks, digital signal processing, optoelectronics, electromagnetics, microelectronics and systems and control.

The mission of the department is to offer a value-added educational experience through quality instruction and scholarly research with an entrepreneurial spirit that prepares graduates for the full range of career opportunities in today's high technology marketplace.

The goals of the department are:

1. To become a leading electrical engineering department in the nation by building peaks of excellence in the fields of communications/signal processing and micro/optoelectronics and by being a leader in innovative educational programs.

2. To design undergraduate curricula that will allow graduates to choose careers in engineering or engineering management, or to pursue graduate degrees in engineering, business, medicine or law.
3. To offer world-class Ph.D. programs that prepare graduates for academic careers, for research careers in the high technology industry or for technical entrepreneurship.
4. To be a leader in graduate lifelong learning, developing and offering innovative courses and programs for the working professional and the practicing engineer.

The educational objectives of the department are:

1. Graduates will be successful in understanding, formulating, analyzing and solving a variety of electrical engineering problems.
2. Graduates will be successful in designing a variety of engineering systems, products or experiments.
3. Graduates will be successful in careers in engineering or management, or in achieving graduate degrees in engineering, business, medicine or law.
4. Graduates will assume leadership and entrepreneurial positions.
5. Graduates will successfully function and communicate effectively, both individually and in multidisciplinary teams, in culturally diverse and dynamic technical environments.
6. Graduates will continue to develop a broad education with exposure to contemporary issues and professional ethics, laying a foundation for lifelong learning.

The Electrical Engineering Department is engaged in an ongoing assessment process that evaluates the success in meeting these objectives and enhances the development of the program.

The SMU Electrical Engineering Department emphasizes the following major areas of interest:

1. **Biomedical Engineering** – Overview of biomedical engineering, biomedical devices and instrumentation, biomedical signal capture, processing and modeling.
2. **Communications and Information Technology** – Detection and estimation theory, digital communications, computer networks, spread spectrum, cellular communications, coding, encryption, compression, and wireless and optical communications.
3. **Control Systems** – Linear and nonlinear systems control, robotics and computer and robot vision.
4. **Digital Signal Processing** – Digital filter design, system identification, spectral estimation, adaptive filters, neural networks and DSP im-

plementations.

5. **Image Processing and Computer Vision** – Digital image processing, computer vision and pattern recognition.
6. **Lasers, Optoelectronics, Electromagnetic Theory and Microwave Electronics** – Classical optics, fiber optics, laser recording, integrated optics, dielectric wave guides, antennas, transmission lines, laser diodes and signal processors, and superconductive microwave and optoelectronic devices.
7. **Solid State Circuits, Computer Aided Circuit Design and VLSI Design** – Electronic circuits, computer-aided design, VLSI design and memory interfaces.
8. **Electronic Materials and Solid State Devices** – Fabrication and characterization of devices and materials, device physics, noise in solid state devices, infrared detectors, AlGaAs and GaAs devices and materials, thin films, superconductivity, superconductive devices and electronics, hybrid superconductor-semiconductor devices, ultrafast electronics and applications of Scanning Tunneling microscope.
9. **Telecommunications** – Overview of modern telecommunications components and systems, data communications, digital telephony and digital switching.

Department Facilities

The department has access to the School of Engineering academic computing resources, consisting of shared-use computer servers and desktop client systems connected to a network backbone. All of the servers in the School of Engineering are running some variant of UNIX or Microsoft Windows. There is one primary file server that holds 356 GB of data and exports files using NFS or CIFS protocols. Each user, whether faculty, staff or student, has a “home” directory on the central file server. This directory is exported to other servers or desktop computers, regardless of operating systems, as needed. There are over 40 servers whose purposes include the following: file service, UNIX mail, Exchange mail, firewall, UNIX authentication, NT authentication, printer management, lab image download, classroom-specific software, X windows service, news, domain name service, computational resources and general use. This allows the files to be used as a resource in both the UNIX and Microsoft PC environments. Almost all computing equipment within the School of Engineering is connected to the Engineering network at 100 megabits and higher. The network backbone is running at a gigabit per second over fiber. Most servers and all engineering buildings are connected to this gigabit backbone network. The backbone within Engineering is connected to both the Internet 2 and the campus network that is then connected to the Internet at large. In addition to servers and shared computational resources, the School of Engineering maintains a number of individual computing laboratories associated with the departments.

Specific department laboratory facilities for instruction and research include:

Antenna Laboratory. This laboratory consists of two facilities for fabrication and testing. Most of the antennas fabricated at the SMU antenna lab are microstrip antennas. Small and less complex antennas are made with a T-Tech milling machine and a photolithic/chemical etching method is used to make more complex and large antennas. Fabricated antennas are characterized with an HP 5810B network analyzer. Workstations are available for antenna design and theoretical computation. Radiation characteristics are measured at the UTD (University of Texas at Dallas) - SMU Antenna Characterization Lab near the UTD campus.

Biomedical Engineering Laboratory. This laboratory contains instrumentation for carrying out research in electrophysiology, psychophysics and medical ultrasound. Four Grass physiographs permit the measurement of electroencephalograms as well as visual and auditory evoked brain potentials. The lab also contains a state-of-the-art dual Purkinje eye tracker and image stabilizer made by Fourward Technologies, Inc., a Vision Research Graphics 21" Digital Multisync Monitor for displaying visual stimuli, and a Cambridge Research Systems visual stimulus generator capable of generating a variety of stimuli for use in psychophysical and electrophysiological experiments. Ultrasound data can also be measured with a Physical Acoustics apparatus consisting of a water tank, RF pulser/receiver and RF data acquisition system. Several PC's are also available for instrumentation control and data acquisition.

Digital Signal Processing Laboratory. Digital signal processors (DSPs) are programmable semiconductor devices that are used extensively in cellular telephones, high-density disk drives and high-speed modems. Courses in this laboratory focus on programming the Texas Instruments TMS320C55, a fixed-point processor, with emphasis on assembly language programming. Topics include implementation of FIR and IIR filters, the FFT and a real-time spectrum analyzer.

Networks Laboratory. This laboratory provides the opportunity to simulate and evaluate different network configurations from local area networks to the Internet. High-end PCs are configured with OPNET and mathematics software to model telecommunications networks and study their performance. The Networks Laboratory is used for instruction in conjunction with several networking courses offered in the department.

Multimedia Systems Laboratory. This facility includes an acoustic chamber with adjoining recording studio to allow high-quality sound recordings to be made. The chamber is sound-isolating with double- or triple-wall sheet rock on all four sides as well as an isolating ceiling barrier above the drop ceiling. The walls of the chamber have been constructed to be nonparallel to avoid flutter echo and dominant frequency modes. Acoustic paneling on the walls of the chamber are removable and allow the acoustic reverberation time to be adjusted to simulate different room acoustics. The control room next to the acoustic chamber includes a large 4-foot-by-8-foot acoustic window and inert acoustic door facing the acoustic chamber. Up to 16 channels of audio can be carried in or out of the chamber to the control room. Experiments to be conducted in the Multimedia Systems Laboratory include blind source separation,

deconvolution and dereverberation. Several of the undergraduate courses in Electrical Engineering use sound and music to motivate system-level design and signal processing applications. The Multimedia Systems Laboratory will be used in these activities to develop data sets for use in classroom experiments and laboratory projects for students to complete.

High-speed Wireless Communications Laboratory. The laboratory provides a multitier network testbed for research purposes and also serves as a facility for conducting lab courses on wireless communications and networking. The infrastructure in the lab includes: a) GSM-based cellular network that provides wide range connectivity at medium data rates, b) 802.11-based WLAN offering high data rates in an office environment, and c) Bluetooth networks that offers low cost, short range and low data rate connections. One of the research focus areas is on investigating total power efficiency of these heterogeneous networks.

Semiconductor Processing Clean Room. The 2,800 square-foot, class 10,000 clean room, consisting of a 2,400 square-foot, class 10,000 room and a class 1,000 lithography area of 400 square feet, is located in the Jerry R. Junkins Engineering Building. A partial list of equipment in this laboratory includes acid and solvent hoods, photoresist spinners, a scanning electron microscope, two contact mask aligners, a thermal evaporator, a plasma asher, a plasma etcher, a turbo-pumped methane hydrogen reactive ion etcher, a four-target sputtering system, a plasma-enhanced chemical vapor deposition reactor, a diffusion-pumped four pocket e-beam evaporator, an ellipsometer, and a profilometer. Other equipment includes a boron-trichloride reactive ion etcher, a chemical-assisted ion-beam etcher, and an e-beam evaporator for dielectric deposition. The clean room is capable of processing silicon and compound semiconductors for microelectronic, photonic, nanotechnology devices.

Submicron Grating Laboratory. This laboratory is dedicated to holographic grating fabrication and has the capability of sub tenth-micron lines and spaces. Equipment includes a floating air table, an argon ion laser (ultraviolet lines) and an Atomic Force Microscope. This laboratory is used to make photonic devices with periodic features such as distributed feedback, distributed Bragg reflector, grating-outcoupled and photonic crystal semiconductor lasers.

Photonic Devices Laboratory. This laboratory is dedicated to characterizing the optical and electrical properties of photonic devices. Equipment includes optical spectrum analyzer, an optical multimeter, visible and infrared cameras, an automated laser characterization system for edge-emitting lasers, a manual probe test system for surface-emitting lasers, a manual probe test system for edge-emitting laser die and bars, and a near- and far-field measurement system.

Photonics Simulation Laboratory. This laboratory has specific computer programs that have been developed and continue to be developed for modeling and designing semiconductor lasers and optical waveguides, couplers and switches. These programs include WAVEGUIDE (calculates near-field, far-field, and effective indices of dielectric waveguides and semiconductor lasers

with up to 500 layers. Each layer can contain gain or loss), GAIN (calculates the gain as a function of energy, carrier density and current density for strained and unstrained quantum wells for a variety of material systems), GRATING (uses the Floquet Bloch approach and the boundary element method to calculate reflection, transmission and outcoupling of dielectric waveguides and laser structures with any number of layers), and FIBER (calculates the fields, effective index, group velocity and dispersion for fibers with a circularly symmetric index of refraction profiles). Additional software is under development to model the modulation characteristics of photonic devices.

Photonic Architectures Laboratory. This laboratory is a fully equipped opto-mechanical and electrical prototyping facility, supporting the activities of faculty and graduate students in experimental and analytical tasks. The lab is ideally suited for the packaging, integration and testing of devices, modules and prototypes of optical systems. It has three large vibration isolated tables, a variety of visible and infrared lasers, single element 1-D and 2-D detector arrays and a large compliment of optical and opto-mechanical components and mounting devices. In addition, the laboratory has extensive data acquisition and analysis equipment, including a 1394 (Firewire) capable image capture and processing workstation, specifically designed to evaluate the electrical and optical characteristics of smart pixel devices and FSOI modules. Support electronics hardware includes various test instrumentation, such as arbitrary waveform generators and a variety of CAD tools for optical and electronic design including optical ray trace and finite difference time domain software.

CURRICULUM IN ELECTRICAL ENGINEERING

The undergraduate curriculum in electrical engineering provides the student with basic principles through required courses, and specialization through a guided choice of elective courses.

Areas of Specialization

Due to the extensive latitude in course selection and to the wide variety of courses available within the Department of Electrical Engineering and within the University as a whole, it is possible for the electrical engineering student to concentrate his or her studies in a specific professional area. The areas available include the following:

Control Systems	Electronic Circuits
Biomedical Engineering	Electronic Devices and Materials
Communications	Networks
Computer Engineering	Systems
Digital Signal Processing	Telecommunications Engineering
Electromagnetics and Optics	

In most cases, the concentration is satisfied by systematically taking a specified group of electrical engineering courses at the advanced level. However, the telecommunications engineering, computer engineering and biomedical options are more specialized. Their requirements are described later.

Bachelor of Science in Electrical Engineering

The electrical engineering curriculum is administered by the Department of Electrical Engineering.

The undergraduate program in electrical engineering is accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and a three-hour elective course at the 3000 or above level	15
Science: CHEM 1303; PHYS 1303, 1304 and 1105; and a three-hour elective in physics or chemistry	13
Computer Science: CSE 1341 and one of CSE 2341, or 2353	6
Engineering Leadership: Two of EMIS 3308, ENCE 3302, EMIS 3309 or CSE 4360	6
Engineering Elective: One of ME 2310, 2320, 2331, 2342, CSE 2341, 2353, EMIS 2360, EE 3311, 3330 or 3372	3
Core Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381 and 3360	21
Junior Electrical Engineering Electives: EE 3122, 3181, 3322, 3381, 3311, 3330 and 3372	20
Advanced Electrical Engineering Electives	12
Electrical Engineering Senior Design Sequence: EE 4311 and 4312	6

Minimum total hours required 125

Three hours of advanced electrical engineering electives must be selected in each of the three areas listed below:

- EE 5360, 5362, 5370, 5371, 5372, 5373, 5374, 5375; and 5376
- EE 5356, 5357, 5380, 5381 and 5385;
- EE 5310, 5312, 5314, 5321, 5330, 5332 and 5333.

The remaining three hours of advanced electrical engineering electives may be chosen from any of the above three areas or advanced (5000-level) CSE courses offered by the CSE Department. Please note that EE 8000-level courses are primarily for graduate students but may be taken by highly qualified undergraduates with the approval of the adviser and the instructor. Special topics courses also are available.

Each student is expected to complete and file a plan of study with his or her academic adviser. The plan should state specific choices to meet the foregoing requirements and develop an area of specialization when this is desired. This should be done as soon as possible; however, for many students, it is a process that continues from term to term as the individual becomes better acquainted with the discipline of electrical engineering and with the choices

available.

Specializations are offered in four important areas: premedical or biomedical engineering, computer engineering, a dual degree in physics, and telecommunications engineering. Each student may select one of these specializations or may personalize his or her degree by a particular choice of advanced major electives.

Bachelor of Science in Electrical Engineering

(Biomedical Engineering Specialization)

The Department of Electrical Engineering offers a B.S.E.E. degree with a specialization in biomedical engineering. This program enables students to satisfy requirements for admission to medical school, and it is carried out in cooperation with the Baylor University Medical Center in Dallas. Students may also work on projects under faculty supervision at the University of Texas Southwestern Medical School.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and a three-hour elective course at the 3000 level or above	15
Science: BIOL 1401, 1402, 3304 and 3350; CHEM 1303, 1304, 1113, 1114, 3117, 3118, 3371 and 3372; and PHYS 1105, 1106, 1303 and 1304	36
Computer Science: CSE 1341	3
Core Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381, 3181, 3360 and 3381	25
Engineering Leadership: One of EMIS 3308, EMIS 3309, ENCE 3302 or CSE 4360	3
Junior Electrical Engineering: EE 3372 and two of 3311, 3322, 3330	9
Advanced Electrical Engineering Elective	3
	<i>TCH</i>
Biomedical Engineering: EE 5340 and 5345	6
Electrical Engineering Senior Design Sequence: EE 4311, 4312	6
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Minimum total hours required	131

Bachelor of Science in Electrical Engineering

(Computer Engineering Specialization)

The Department of Electrical Engineering offers a B.S.E.E. degree with a computer engineering specialization, which brings together aspects of electrical engineering and computer science with the aim of developing state-of-the-art digital computer systems. Students in the Computer Engineering specialization receive training in a variety of areas ranging from C programming,

assembly language and data structures, to logic design, microprocessor interfacing and computer architecture.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and one of MATH 3315/CSE 3365, MATH 3337 or 3353	15
Science: CHEM 1303, PHYS 1303, 1304, 1105 and a three-hour elective in physics or chemistry	13
Computer Science: CSE 1341, 2341, 2353 and 3358	12
Engineering Leadership: Two of EMIS 3308, ENCE 3302, EMIS 3309, or CSE 4360	6
Core Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381 and 3360	21
Junior Electrical Engineering Electives: EE 3122, 3181, 3322, 3381 and three of 3311, 3330 or 3372	17
Advanced Electrical Engineering Electives: EE 5381, 5385 and two of 5357, 5380	12
Senior Design Sequence: EE 4311 and 4312	6
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Minimum total hours required	125

**Bachelor of Science in Electrical Engineering
and Bachelor of Science with a Major in Physics**

The Electrical Engineering Department and the Physics Department offer an integrated curriculum that enables a student to obtain both a Bachelor of Science in Electrical Engineering (B.S.E.E.) degree and a Bachelor of Science (B.S.) degree with a major in Physics.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and a three-hour elective course at the 3000 level or above	15
Science: CHEM 1303; PHYS 1105, 1303, 1304, 3305, 3344, 3345, 4211, 5337, 5382 and 5383; and PHYS 3374 or ME 3341	33
Computer Science: CSE 1341	<i>TCH</i> 3
Engineering Leadership: Two of EMIS 3308, ENCE 3302, EMIS 3309 or CSE 4360	6
Core Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381 and 3360	21
Junior Electrical Engineering Electives: EE 3122, 3181, 3322, 3381, either 3330 or PHYS 4392; and two of EE 3311, or 3372	17
Advanced Electrical Engineering Electives	12

Minimum total hours required

136

Bachelor of Science in Electrical Engineering***(Communication and Signal Processing Specialization)***

Signal processing, in particular digital signal processing (DSP), has come to play a significant role in our daily lives. Literally, DSP involves the processing of various signals such as speech, music, video and others in digital form. Such processing is usually done with a digital signal processor, a programmable semiconductor device designed to rapidly process digital data. The DSP is an integral component of any system in which information is processed or transmitted, whether over a conventional telephone network, a cellular phone or the Internet.

The explosive growth of the telecommunications industry and the Internet has generated a tremendous demand for electrical engineers who are versed in the language of DSP. The Communication and Signal Processing specialization is designed to meet this need. Students learn the fundamental principles of DSP during the first year. Concepts and techniques in signal processing and communications are covered in greater depth in each successive year, culminating in a senior-year capstone course in which students design and develop signal processing algorithms and software for a communications system application.

The term credit hours within this curriculum are distributed as follows:

College Requirements:	ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	TCH 23
Mathematics:	MATH 1337, 1338, 2339, 2343 and a three-hour elective course at the 3000 level or above	15
Science:	CHEM 1303; PHYS 1303, 1304 and 1105 and a three-hour elective course at the 3000 level	13
Computer Science:	CSE 1341, 2341 and 2353 and one of 3358	12
Engineering Leadership:	Two of EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360	6
Core Electrical Engineering:	EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381, 3330, 3360 and 3372	27
Junior Electives	Two of EE 3311, 3322 or 3381/3181	6/7
Advanced Communication and Signal Processing Courses:	EE 5176, 5370, 5372, 5373, 5376 and one of EE 5371, 5374, 5375 or 5377	17
Electrical Engineering		TCH
Senior Design Sequence:	EE 4311, 4312	6

Minimum total hours required

125/126

Bachelor of Science in Electrical Engineering

(Telecommunications Specialization)

Telecommunications includes any type of communication of information at a distance by electronic means. This communication may be between humans, machines, businesses, government entities, computers or any combination thereof. Example information formats include speech and audio, computer data, facsimile, imaging and video, wire and cable, radio, satellite, Internet, microwave, optical fiber and others.

Today's intelligent networks, created by embedding computers in telecommunications systems, have given rise to an information society. Corporations, institutions and government agencies cannot operate effectively in a competitive world without using telecommunications systems efficiently to communicate that information.

All areas of the telecommunications profession need telecommunications engineers. In manufacturing, they work as creators and designers of products. In the service category, they create efficient and cost-effective systems for telephone service providers, Internet and online computer services, and cellular service providers. At the corporate-user end of the profession, they ensure that their companies have the very best telecommunications systems to give their businesses a competitive edge.

Telecommunications engineers face challenges requiring specialized training in electrical engineering, plus breadth that includes regulatory law, economics, management science and computer science. To ensure their success, SMU candidates for the degree of Bachelor of Science in Electrical Engineering with a telecommunications engineering specialization are grounded in all of these areas. To accomplish this within the context of a four-year program, students take a uniquely formulated curriculum of electrical engineering and telecommunications courses, plus specially selected courses relating to the multiple disciplines mentioned above. In this way, graduates are prepared to face information-age challenges and opportunities, whether in a corporate, institutional or government environment.

SMU's long historic relationship with local industry provides a wealth of educational opportunities for students in terms of design projects, laboratories, field trips, and, at the student's option, cooperative education. SMU's Bachelor of Science in Electrical Engineering program with a telecommunications engineering specialization prepares students for careers with a large variety of producers, service providers and users of telecommunications systems. Graduates of the program should have little difficulty finding employment in the immediate Dallas area or elsewhere.

This 124-term-credit-hour program has several distinctive features:

1. Early development of research skills using computers and the Internet, allowing students to use these important tools throughout their college experience.
2. Participation in student teams that work on a variety of industry-sponsored, real-world laboratory projects under the joint guidance of faculty and industry representatives.

3. Option of entering the Cooperative Education Program as explained in the Cooperative Education section to get more than a year of industry experience and income before graduation.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and 3308	15
Science: CHEM 1303; PHYS 1303, 1304 and 1105 and a three-hour elective in physics or chemistry	13
Computer Science: CSE 1341, 2341	6
Engineering Leadership: Two of EMIS 3308, EMIS 3309, ENCE 3302 or CSE 4360	6
Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381, 3122, 3181, 3322, 3330, 3360, 3372 and 3381	35
Junior Elective EE 3311	3
Advanced Electrical Engineering: EE 5370 and one of EE 5332, 5373 or 5381	6
Telecommunications: EETS 5301 and 5302	6
Advanced Electives: Six hours of advanced electrical engineering or telecommunications engineering electives approved by adviser	6
Senior Design Sequence: EE 4311 and 4312	6
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Minimum total hours required	125

Bachelor of Science in Electrical Engineering
(Microelectronics and Photonics Specialization)

Microelectronics and photonics represent the foundation of electrical engineering upon which modern society, with its vast spectrum of electronic systems and instrumentation, has been built. The microelectronics and photonics specialization develops a fundamental understanding of the principles of electronic and photonic devices and systems. Almost all modern machinery has a significant part of its functionality based in electronic and optical components. The microelectronics revolution of the '60s saw transistors combined into integrated circuits through the vision of Nobel Laureate Jack Kilby of Texas Instruments, invented here in Dallas. The evolution in integrated circuits has resulted in millions of transistors being put to work in a space about the size of a fingernail, producing powerful and affordable computers and other conveniences that have fueled the economy and revolutionized human life. The evolution in microelectronics promises to continue at a rapid pace to produce faster, more functional, and cheaper electronics. Mechanical machines are being fabricated with electronic devices in integrated circuits referred to as microelectromechanical systems. Photonics involves the processing and movement of information with light. Fiber optic communications is dominating high volume communications. At

ing high volume communications. At present, individual photonic devices, such as lasers, are starting to be combined into “integrated” optical devices and circuits much like Jack Kilby combined transistors to form integrated microelectronic and photonic devices and systems upon which students can build their careers. With this knowledge, an imaginative mind could also change the world.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
	<i>TCH</i>
Mathematics: MATH 1337, 1338, 2339, 2343 and one of MATH 3308 MATH 3315/CSE 3365, MATH 3337 and MATH 3353	15
Science: CHEM 1303, PHYS 1303, 1304, 1105 or 1106 and one of CHEM 1304, PHYS 3305, 4392, 5337, 5380 and 5382	13
Engineering Leadership: Two of EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360	6
Engineering Electives: CSE 1341, and one of CSE 2341, or 2353; ME 2310 2320, 2331, 2342; EMIS 2360	9
Core Electrical Engineering: EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381 and 3360	21
Junior Electrical Engineering: EE 3122, 3181, 3311, 3322, 3330, 3372 and 3381	20
Advanced Electrical Engineering: EE 5310, 5312 and two of EE 5314, 5321, 5330, 5332, 5333 or PHYS 5382	12
Senior Design Sequence: EE 4311 and 4312	6
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Minimum total hours required	125

Bachelor of Science in Electrical Engineering
(Engineering Leadership Specialization)

This specialization prepares graduates to be highly educated engineers with the appropriate interdisciplinary knowledge to assume important management and leadership positions and to become technical entrepreneurs in a globally competitive world.

The term credit hours within this curriculum are distributed as follows:

	<i>TCH</i>
College Requirements: ENGL 1301, 1302, Perspectives including ECO 1311, Cultural Formations, and Wellness	23
Mathematics: MATH 1337, 1338, 2339, 2343 and a three-hour elective course at the 3000 or above level	15
Science: CHEM 1303; PHYS 1303, 1304 and 1105; and a three-hour elective in physics or chemistry	13

Computer Science:	CSE 1341 and one of CSE 2341, or 2353	6
Engineering Leadership:	EMIS 3308, ENCE 3302, EMIS 3309 and CSE 4360	12
Engineering Elective:	One of ME 2310, 2320, 2331, 2342, CSE 2341, EMIS 2360, EE 3311, 3315, 3330 or 3372	3
Core Electrical		
Engineering:	EE 1382, 2122, 2170, 2181, 2322, 2350, 2370, 2381 and 3360	21
Junior Electrical		
Engineering Electives:	EE 3122, 3181, 3322, 3381 and two of 3311, 3330 or 3372	14
Advanced Electrical		
Engineering Electives		12
TCH		
Electrical Engineering		
Senior Design Sequence:	EE 4311 and 4312	6
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Minimum total hours required		125

Three hours of advanced electrical engineering electives must be selected in each of the three areas listed below:

EE 5360, 5362, 5370, 5371, 5372, 5373, 5374, 5375; and 5376

EE 5356, 5357, 5380, 5381 and 5385;

EE 5310, 5312, 5314, 5321, 5330, 5332 and 5333.

The remaining three hours of advanced electrical engineering electives may be chosen from any of the above three areas or advanced (5000-level) CSE courses offered by the CSE Department.

Minor in Electrical Engineering

For information on a minor in electrical engineering, the student should consult the department. A total of 18 TCH in electrical engineering courses is necessary to meet the following requirements:

Requirements

EE 2322 Electronic Circuits I

EE 3322 Electronic Circuits II

EE 2350 Circuit Analysis I

EE 2370 Design and Analysis of Signals and Systems

Elective Courses

Six TCH of electrical engineering courses at the 3000 level or above

The Courses (EE)

The third digit in a course number designator is representative of the subject area represented by the course. The following designators are used:

XX1X Electronic Materials

XX2X Electronic Devices

XX3X Quantum Electronics and Electromagnetic Theory

XX4X Biomedical Science

XX5X Network Theory and Circuits

XX6X Systems

XX7X Information Science and Communication Theory

XX8X Computers and Digital Systems

XX9X Individual Instruction, Research, Seminar and Special Project

EETS XX0X Telecommunications

1301. Modern Electronic Technology. A lecture and laboratory course examining a number of topics of general interest including the fundamentals of electricity, household electricity and electrical safety, an overview of microelectronics, concepts of frequency and spectrum, the phonograph and the compact disc, bar codes and communication by radio and television. Meets the Science/Technology laboratory course requirement of the General Education Curriculum. The course is designed for non-technical students who want to be more knowledgeable. (Not open to EE majors.)

1382. Fundamentals of Electrical Engineering. Introduces engineering students to the fundamentals of modern electrical engineering. The material covers the basics of the creation, manipulation, storage and transmission of information in electronic form. Topics will include time and frequency domain signal analysis, mathematics and physics of basic building blocks of electrical systems, sampling, filtering, data coding for compression and reliability, communications, digital imaging and storage technologies. Weekly laboratory assignments will be an integral part of the course.

2122. EE Laboratory: Electronic Circuits I. Experimental study of basic MOS and bipolar transistors in analog and digital applications. Logic gates and linear and nonlinear applications of operational amplifiers. *Prerequisite:* EE 2350 (Grade of C- or better), concurrent registration in EE 2322.

2170. EE Laboratory: Design and Analysis of Signals and Systems. This course introduces students to various techniques for analyzing real signals and designing various linear time-invariant, continuous-time systems. The labs incorporate both software-based simulations and actual circuit implementations. Web authoring tools are used for the production of multimedia lab reports. *Prerequisite:* CSE 1341, concurrent registration in EE 2370.

2181. EE Laboratory: Digital Computer Logic. Analysis and synthesis of combinational and sequential digital circuits. Basic digital computer logic circuits are designed, simulated using Verilog HDL and implemented using a Digi-Designer kit and integrated circuits. *Corequisite:* Concurrent registration in EE 2381.

2305. Creating Interactive Internet Web Sites. Covers programming languages and techniques for two-way communications via the World Wide Web. Goes beyond HTML (Hypertext Markup Language), which is one-way distribution of information for the Web. The techniques covered in this course allow information gathering, such as responses to surveys and conference or seminar registration data, and credit card information needed to create Web sites for electronic commerce. Students are required to attend lectures and labs and will create an e-commerce Web site for a term project. Topics include architecture of the Internet, database software, intermediate and advanced HTML programming techniques, style sheets, frames, pixel mapping, Java Script and Java applets, and other topics as appropriate for the Internet generation. *Prerequisite:* Any approved SMU Information Technology course.

2322. Electronic Circuits I. An introduction to nonlinear devices used in electronic circuits. The course will cover the DC analysis of circuits employing diodes, bipolar junction transistors, MOSFETs and JFET. Introduction to AC analysis will be covered. Topics include device I-V characteristics, biasing, transfer characteristics, power dissipation,

aspects of transient analysis, SPICE, and the mid-band analysis and design of amplifier circuits and logic circuits. *Prerequisite:* EE 2350 (Grade of C- or better), concurrent registration in EE 2122.

2350. Circuit Analysis I. Analysis of resistive electrical circuits, basic theorems governing electrical circuits, power consideration, analysis of circuits with energy storage elements. Transient and sinusoidal steady-state analysis of circuits with inductors and capacitors. *Corequisite:* PHYS 1304 and MATH 2343.

2370. Design and Analysis of Signals and Systems. This course introduces students to standard mathematical tools for analyzing and designing various continuous-time signals and systems. Frequency domain design and analysis techniques are studied as well as the Fourier and Laplace Transforms. Applications to be studied include modulation and demodulation in communications and processing audio signals. *Prerequisites:* EE 2350 (Grade of C- or better) and MATH 2343. Concurrent registration in EE 2170.

2381. Digital Computer Logic. Digital computers and information; combinational logic circuits; combinational logic design; sequential circuits including finite-state machines; registers and counters; memory and programmed logic design. Design and simulation of digital computer logic circuits are studied. *Corequisite:* Concurrent registration in EE 2181.

3(1-3)90. Junior Project.

3122. EE Laboratory: Electronic Circuits II. Experiments in analog electronic circuit design. *Prerequisite:* EE 2122 (Grade of C- or better), EE 2322 (Grade of C- or better) and concurrent registration in EE 3322.

3181. EE Laboratory: Microprocessors. Fundamentals of microprocessor design and assembly-language programming. An introduction to the 6811 Motorola Evaluation Board, 6811 Assembler, microprocessor-based system design, assembly programming, and hardware interfacing. *Prerequisite:* EE 2181 (Grade of C- or better), EE 2381 (Grade of C- or better) and concurrent registration in EE 3381.

3311. Solid-State Devices. This laboratory-oriented elective course introduces undergraduates to the working principles of semiconductor devices by fabricating and testing silicon MOSFET transistors and III-V based semiconductor lasers in the SMU clean room. Lectures will explain the basic operation of diodes, bipolar transistors, field effect transistors, light-emitting diodes, semiconductor lasers and other photonic devices. Additional lectures will discuss the basics of device processing which include photolithography, oxidation, diffusion, ion-implantation, metalization and etching. Laboratory reports describing the fabrication and testing of devices will account for a major portion of the course grade. *Prerequisites:* EE 2322 and CHEM 1303 or permission of the instructor.

3322. Electronic Circuits II. Introduction to MOSFET analog electronic circuits. The course is designed to provide the student with a background for understanding modern electronic circuits such as digital-to-analog and analog-to-digital converters, active filters, switched-capacitor circuits and phase-locked loops. Topics include MOSFET SPICE models, basic MOSFET, single-stage amplifiers, current-mirrors, differential amplifier stages, source-follower buffer stages, high-gain common-source stages, operational amplifiers and comparators. *Prerequisites:* EE 2322 (Grade of C- or better), EE 2122 (Grade of C- or better), EE 2350 (Grade of C- or better) and concurrent registration in EE 3122.

3330. Electromagnetic Fields and Waves. Vector analysis applied to static electric and magnetic fields, development of Maxwell's equations, elementary boundary-value problems, and determination of capacity and inductance. Introduction to time-varying fields, plane waves and transmission lines. *Prerequisites:* EE 2350 (Grade of C- or better) and MATH 2339.

3360. Statistical Methods in Electrical Engineering. This course is an introduction to probability, elementary statistics and random processes. Topics include fundamental concepts of probability, random variables, probability distributions, sampling, estimation, elementary hypothesis testing, basic random processes, stationarity, correlation functions,

power-spectral-density functions, and the effect of linear systems on such processes. *Prerequisite:* EE 2370 (Grade of C- or better), EE 2170 (Grade of C- or better).

3372. Introduction to Digital Signal Processing. This course is designed to give juniors a thorough understanding of techniques needed for the analysis of discrete-time signals. Topics include Fourier methods and Z-Transform techniques, discrete Fourier transform, fast Fourier transform and applications, and digital filters. *Prerequisite:* EE 2370 (Grade of C- or better) and EE 2170 (Grade of C- or better).

3381. Microprocessors. An introduction to microprocessors and microcomputers. The Motorola 68HC11 processors are used to introduce architecture, software and interfacing concepts. Topics include number systems and arithmetic operations for computers, assembly language programming, microprocessor organization and operation, memory and I/O port interfacing, and microprocessor-based controller design. Students will write, assemble and execute microprocessor programs. *Prerequisite:* EE 2381 (Grade of C- or better), and concurrent registration in EE 3181.

4(1-3)90. Senior Project.

4311. Senior Design I. Areas covered in this course will be tailored to the student's area of specialization. The design project segment of this course involves choosing a specific senior design project in electrical engineering from the available projects proposed by the faculty. Depending upon the specifics of the project, each student will design, construct, and test a solution and submit a formal report to the faculty in charge of the project. *Prerequisite:* EE Senior standing.

4312. Senior Design II. Areas covered in this course will be tailored to the student's area of specialization. The design project selected in this course may be a continuation of the project undertaken in EE 4311, a new project selected from the list of available projects offered by the faculty, or a project proposed by the student and approved by the faculty. Depending upon the specifics of the project, a team will design, construct and test a solution and submit a formal report to the faculty in charge of the project. *Prerequisite:* EE 4311.

5(1-3)9(0-9). Special Topics. This special-topics course must have a section number associated with a faculty member. The second digit corresponds to the number of TCH, which ranges from one to three. The last digit ranges from zero to nine and represents courses with different topics.

5176. Network Simulation Lab. Introductory hands-on course in simulations of computer networks, intended to be taken simultaneously with EE 5376 or other networks courses. Lab exercises use OPNET and other simulation software to visualize network protocols and performance. Students run a number of simulation exercises to set up various network models, specify protocols and collect statistics on network performance. These exercises will be designed to complement classroom instruction. General familiarity with PCs is recommended. Concurrent registration in EE 5376 and senior standing.

5310. Introduction to Semiconductors. A study of the basic principles in physics and chemistry of semiconductors that have direct applications on device operation and fabrication. Topics include basic semiconductor properties, elements of quantum mechanics, energy band theory, equilibrium carrier statistics, carrier transport and generation-recombination processes. These physical principles are applied to semiconductor devices. Devices studied include metal-semiconductor junctions, p-n junctions, LEDs, semiconductor lasers, bipolar junction transistors, field-effect transistors and integrated circuits. The emphasis will be on obtaining the governing equations of device operation based on physical principles. *Prerequisites:* EE 3311 or equivalent, graduate standing or permission of the instructor.

5312. Semiconductor Processing Laboratory. This is a laboratory-oriented elective course for upper-level undergraduates and graduate students providing in depth coverage of processing of InP and GaAs compounds in addition to silicon integrated circuit processing. Students without fabrication experience will fabricate and characterize

MOSFETS and semiconductor lasers. Students with some previous fabrication experience (such as EE 3311) will fabricate and test an advanced device mutually agreed upon by the student(s) and the instructor. Examples of such devices include High Electron Mobility Transistors (HEMTs), Heterojunction Bipolar Transistors (HBTs), phase shifters, distributed Bragg reflector (DBR) lasers, grating assisted directional couplers and semiconductor lasers from developing materials such as GaInNAs. The governing equations of photolithography, oxidation, diffusion, ion-implantation, metalization and etching will be derived from fundamental concepts. Silicon process modeling will use the CAD tool SUPREM. Optical components will be modeled using the SMU-developed software WAVEGUIDE, GAIN and GRATING. A laboratory report describing the projects will be peer-reviewed before final submission. *Prerequisites:* EE3311 or equivalent, graduate standing or permission of the instructor. EE 5310 is recommended but not required.

5314. Introduction to Micromechanical Systems (MEMS) and Devices. Develops the basics for microelectromechanical devices and systems, including microactuators, microsensors, and micromotors; principles of operation; micromachining techniques (surface and bulk micromachining); IC-derived microfabrication techniques; and thin film technologies as they apply to MEMS. *Prerequisite:* EE 3311.

5321. Semiconductor Devices and Circuits. A study of the basics of analog electronic circuits. Topics include relevant characteristics of BJT and FET transistor characteristics, DC biasing, small-signal models, single- and multistage electronic amplifiers, amplifiers with feedback, and frequency response of electronic amplifiers. Both single- and two-power-supply amplifiers are considered, with emphasis on amplifiers based on the differential amplifier stage. *Prerequisites:* EE 3122 and EE 3322.

5330. Electromagnetics: Guided Waves. Application of Maxwell's equations to guided waves. Transmission lines, and plane wave propagation and reflection. Hollow waveguides and dielectric waveguides. Fiber optics. Cavity and dielectric resonators. *Prerequisite:* EE 3330.

5332. Electromagnetics: Radiation and Antennas. Polarization, reflection, refraction, and diffraction of EM waves. Dipole, loop, and slot/reflector antennas. Array analysis and synthesis. Self and mutual impedance. Radiation resistance. *Prerequisite:* EE 3330.

5333. Antennas and Radiowave Propagation for Personal Communications. Concerned with three important aspects of telecommunications: fixed site antennas, radiowave propagation and small antennas proximate to the body. The topics include electromagnetics fundamentals; general definitions of antenna characteristics; electromagnetic theorems for antenna applications; various antennas for cellular communications including loop, dipole, and patch antennas; wave propagation characteristics as in earth-satellite communications, radio test sites, urban and suburban paths, and multipath propagation; and radio communication systems. *Prerequisite:* EE 3330.

5336/7336. Introduction to Integrated Photonics. This course is directed at the issues of integrated photonics. Four major areas are covered: 1) fundamental principles of electromagnetic theory; 2) waveguides; 3) simulation of waveguide modes, and 4) photonic structures. The emphasis is slightly heavier into optical waveguides and numerical simulation techniques because advances in optical communications will be based on nanostructure waveguides coupled with new materials. Topics include: Maxwell's equations; slab, step index, rectangular and graded index wave guides; dispersion; attenuations; non-linear effects; numerical methods; and coupled mode theory. Mathematica will be used extensively in this class. *Prerequisites:* C- or better in EE 3311 and EE 3330, or permission of instructor.

5340. Biomedical Instrumentation. Application of engineering principles to solving problems encountered in medicine and biomedical research. Topics include transducer principles, electrophysiology, and cardiopulmonary measurement systems. *Prerequisite:* EE 2122 (Grade of C- or better) and EE 2322 (Grade of C- or better).

5345. Medical Signal Analysis. A look at the analysis of discrete-time medical signals

and images. Topics include the design of discrete-time filters, medical imaging and tomography, signal and image compression, and spectrum estimation. The course project explores the application of these techniques to actual medical data. *Prerequisite:* EE 3372.

5356. VLSI Design and Lab. Laboratory-oriented course for senior and Master's-level graduate students will cover an overview of IC circuit design and fabrication process, basic design rule, and layout techniques. Emphasis will be on digital design. CMOS and NMOS technology will be covered. Each student must complete one or more design projects by the end of the first term. *Prerequisites:* EE 2181 (Grade of C- or better), EE 2381 (Grade of C- or better) and EE 3311.

5357. CAE Tools for Structured Digital Design. Concentrates on the use of CAE tools for the design and simulation of complex digital systems. Verilog, a registered trademark of Cadence Design Systems Inc., hardware description language will be discussed and used for behavioral and structural hardware modeling. Structured modeling and design will be emphasized. Design case studies include a pipelined processor, cache memory, UART, and a floppy disk controller. *Prerequisites:* EE 2181 (Grade of C- or better) and EE 2381 (Grade of C- or better).

5360. Analog and Digital Control Systems. Feedback control of linear continuous and digital systems in the time and frequency domain. Topics include plant representation, frequency response, stability, root locus, linear state variable feedback, and design of compensators. *Prerequisite:* EE 3372.

5362 (ME 5302). Linear Systems Analysis. State-space representation of continuous and discrete-time systems, controllability, observability, and minimal representations; linear-state variable feedback, observers, and quadratic regulator theory. *Prerequisite:* EE 3372.

5370. Communication and Information Systems. An introduction to communication in modulation systems in discrete and continuous time, information content of signals, and the transition of signals in the presence of noise. Amplitude, frequency, phase and pulse modulation. Time and frequency division multiplexing. *Prerequisite:* EE 3360 or equivalent.

5371. Analog and Digital Filter Design. Approximation and analog design of Butterworth, Chebyshev, and Bessel filters. Basic frequency transformations for designing low-pass, band-pass, band-reject, and high-pass filters. Concept of IIR digital filters using impulse-invariant and bilinear transformations. Design of FIR digital filters using frequency sampling and window methods. Canonical realization of IIR and FIR digital filters. Wave digital filters. Introduction to two-dimensional filters. *Prerequisite:* EE 3372.

5372. Topics in Digital Signal Processing. This course is intended to provide extended coverage of processing of discrete-time signals. Discrete-time signals and the analysis of systems in both the time and frequency domains are reviewed. Other topics covered will include multi-rate signal processing, digital filter structures, filter design and power spectral estimation. *Prerequisite:* EE 3372.

5373. DSP Programming Laboratory. Digital signal processors (DSPs) are programmable semiconductor devices used extensively in digital cellular phones, high-density disk drives, and high-speed modems. This laboratory course focuses on programming the Texas Instruments TMS320C55, a fixed-point processor. The emphasis is on assembly language programming, and the laboratories utilize a hands-on approach that will focus on the essentials of DSP programming while minimizing signal processing theory. Laboratory topics include implementation of FIR and IIR filters, the FFT, and a real-time spectrum analyzer. *Suggested:* Some basic knowledge of discrete-time signals and digital logic systems. *Prerequisite:* EE 3372.

5374. Digital Image Processing. Provides an introduction to the basic concepts and techniques of digital image processing. Topics covered will include characterization and representation of images, image enhancement, image restoration, image analysis, image coding, and reconstruction. *Prerequisite:* EE 3372.

5375. Random Processes in Engineering. An introduction to probability and stochastic processes as used in communication and control. Topics include probability theory, random variables, expected values and moments, multivariate Gaussian distributions, stochastic processes, autocorrelation and power spectral densities, and an introduction to estimation and queuing theory. *Prerequisite:* EE 3360.

5376. Introduction to Communication Networks. An introductory course that surveys basic topics in communication networks with an emphasis on layered protocols and their design. Topics include OSI protocol reference model, data link protocols, local area networks, routing, congestion control, network management, security, and transport layer protocols. Network technologies include telephony, cellular, Ethernet, Internet protocol (IP), TCP, and ATM. Assignments may include lab exercises involving computer simulations. *Prerequisite:* Senior standing and concurrent registration in EE 5176.

5377. Wireless Communications and Lab. This course exposes students to a wide variety of real-world experiences in wireless communications. Basic concepts of channel coding, modulation and power control will be studied using specific examples from cellular and wireless LAN systems. Diversity and multiple access aspects of these systems will also be covered. Lab experiments include: i) Study of signaling modes and transmission schemes in GSM and characterizing the performance, ii) Understanding the basic anatomy of a voice call in GSM, iii) Data throughput student in IEEE 802.11 based wireless LANs and iv) Device discovery, topology management and data transfer in Bluetooth networks. *Prerequisite:* EE 3360 or equivalent.

5380. Logic Design and Implementation. Covers the use of programmable logic devices (PLDs) for design and implementation of digital systems. Design and implementation using programmable read-only memories, programmable gate arrays, programmable logic sequencers, programmable array logic, and programmable generic array logic are discussed. The Altera MAX+plusII CAE tools will be used to model, simulate, and implement a design using modern PLD devices. *Prerequisites:* EE 2181 (Grade of C- or better), EE 2381 (Grade of C- or better), EE 3381 and EE 3181.

5381. Digital Computer Design. Emphasizes design of digital systems and register transfer. Design conventions, addressing modes, interrupts, input-output, channel organization, high-speed arithmetic, hardwired and microprogrammed control. Central processor organization design and memory organization. *Prerequisite:* EE 2181 (Grade of C- or better) and EE 2381 (Grade of C- or better). Junior standing.

5385. Microprocessors in Digital Design. Intended to help prepare the digital design engineer for utilization of microprocessors as programmable logic components in digital systems design. Topics include: fundamentals of both hardware and software engineering and their interrelationship with the microprocessor; capabilities and limitations of the Motorola 68000 microprocessor family; use of hardware/software development systems; assembly language programming for the 68000; input-output interfacing; and concepts involved in real-time applications. Also, features of the 68332 will be covered. *Prerequisites:* EE 3181 and EE 3381.

Telecommunication Courses (EETS)

5301 (CSE 5376). Introduction to Telecommunications. Overview of public and private telecommunications systems, traffic engineering, switching, transmission and signaling. Channel capacity, media characteristics, Fourier analysis and harmonics, modulation, electromagnetic wave propagation and antennas, modems and interfaces, and digital transmission systems. T1 carriers, digital microwave, satellites, fiber optics and SONET, and Integrated Services Digital Networks. *Prerequisite:* Junior standing.

5302. Telecommunications Management and Regulation. The managerial sequel to EETS 5301 (Introduction to Telecommunications.) Provides a historical review of the most significant regulation and management issues affecting the telecommunications industry over the past 100 years. Also explores the regulatory environment it operates in today through the study of current events, articles and recent state and federal legislation. *Prerequisite:* EETS 5301 (formerly EE 5301).

5303. Fiber Optic Telecommunications. Introductory course designed to familiarize students with practical concepts involved in optical fiber communications systems. Basic optical principles are reviewed. Dielectric slab-waveguides, fiber waveguides, and integrated optics devices are discussed. The major components of a fiber communications link, including optical sources, detectors, and fibers, are covered. *Prerequisite:* Junior standing.

5304. Internet Protocols. This course is an introductory course on the protocol architecture of the Internet, following a bottom-up approach to the protocol layers. The objective of this core course is to provide an understanding of the internetworking concepts in preparation for advance networking courses. The first part of the course covers networking technologies such as Local Area Networks, packet switching and ATM. The second part of this course examines the Internet protocol (IP) and TCP/UDP in depth. The last part of the course is an overview of important application protocols such as HTTP, client/server computing, SMTP, FTP and SNMP. *Prerequisite:* EETS 5301 (formerly EE 5301) or equivalent.

ENGINEERING MANAGEMENT, INFORMATION AND SYSTEMS

Associate Professor Richard S. Barr, **Chair**

Professors: Jeffery L. Kennington, Stephen Szygenda, Margaret H. Duhnam (**Computer Science**); U. Narayan Bhat (**Statistics**), Marion Sobol (**Business**); **Associate Professors:** Richard V. Helgason, Eli V. Olinick, Jeff Tian (**Computer Science**); **Scholar in Residence in EMIS:** Jerrell R. Stracener; **Senior Lecturer:** Thomas Siems; **Lecturers:** Mary Alys Lillard, Gretchen Miller; **Adjunct Faculty:** Karl Arunski, Leslie-Ann Asmus, John Baschab, Robert Bell, William David Bell, Wassim Chaar, Jean Chastain, George Chollar, James Hinderer, Gerard Ibarra, John Lipp, Jan Lyons, Robert Oshana, David Peters, Oscar K. Pickels, Jon Piot, Mark Sampson, Steven P. Sanazaro, Gheorghe Spiride, Wendy Spring, William Swanson, John Via, John Yarrow, Hossam Zaki.

The Department of Engineering Management, Information and Systems (EMIS) brings together the school's technical management and operations areas to offer a Bachelor of Science with a Major in Management Science. This academic program in *management science* focuses on computer models for decision-making and the application of engineering principles and techniques to enhance organizational performance. Faculty specializations include optimization, telecommunications network design and management, supply-chain systems, systems engineering, logistics, quality control, reliability engineering, information engineering, benchmarking, operations planning and management, network optimization and mathematical programming.

The same systems-oriented, mathematical-model-based approach that is the cornerstone of engineering also has powerful application within organizations and their operations. This is the field of management science, the discipline of applying advanced analytical methods to help make better decisions.

Curriculum in Management Science

Management science—also termed *the Science of Better*—is the discipline of applying advanced analytical methods to help make better decisions. Management science deals with the development of mathematically-based models for planning, managing operating and decision-making. In our curriculum, these methods are also applied to the design and management of efficient systems for producing goods and delivering services.

A management scientist at a major airline would be concerned with building

mathematical models to decide the best scheduling of flights, routing of planes, assignment of pilots and crews to specific flights, and flight gate assignments as well as deciding the best number of planes to own and operate, which cities to fly to, which cities to use as major hubs, how to lay out an airport terminal, which overbooking policy should be used, where to refuel aircraft and other related issues. Optimal and usable solutions for such issues can be uncovered through analysis with computer-based mathematical models. The management scientist develops an understanding of a practical decision problem, then designs and constructs a model that processes data from the MIS department and produces a best solution.

Because of its generality, management science has broad applications in all engineering disciplines and in the fields of computer science, economics, finance, marketing, medicine, logistics, production, information engineering, and statistics. Management science methods are used extensively in both industry and government, and SMU's Management Science program prepares the technically-oriented student to excel in today's competitive business environment.

ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700, does not provide accreditation for the discipline of management science.

Bachelor of Science with a Major in Management Science
(122 Term Credit Hours)

Curriculum Requirements

	TCH
Liberal Studies: ENGL 1301, 1302	6
Perspectives	15
Cultural Formations	6
(One Perspectives course or one Cultural Formations course must satisfy the Human Diversity requirement.)	
Mathematics: MATH 1337, 1338, 3353	9
Science: 3 TCH Natural Science from BIOL 1401, 1402, CHEM 1113/1303, 1114/1304, GEOL 1301, 1305, 1308, PHYS 1105/1303, 1106/1304	3
3 TCH Natural Science or Technology from ANTH 2315, 2363; BIOL 1303, 1304, 1305, 1401, 1402; CHEM 1113/1303, 1114/1304; GEOL 1301, 1305, 1307, 1308, 1315; PHYS 1403, 1404; EE 1301; ME 1301, 1303	3
9 TCH Natural Science, Technology and/or Social Science including ANTH, ECO, PSYC, or SOCI	9
	TCH
Major Concentration: EMIS 1360, 2360, 3360, 4340 (or 5370), 4395, 5362; CSE 1341, 2341, 3365	27
3 TCH from EMIS courses at the 5000 level or above	3

Engineering Leadership		
courses:	EMIS 3308, 3309; CSE 4360, ENCE 3302	12
Business:	ACCT 2311, MKTG 3340, MNO 3370	9
Electives:	Adviser must approve electives	18
Wellness:		2

122

Note: All Management Science majors must receive a grade of at least C- in all EMIS courses taken in fulfillment of the requirements for the major.

Minor in Management Science

For information on a minor in management science, the student should consult the department. A total of 18 TCH in management and computer science courses is necessary to meet the following requirements:

EMIS 1360 Introduction to Management Science

EMIS 2360 Engineering Economy

EMIS 3360 Operations Research

EMIS 5362 Production Systems Engineering

CSE 1341 Principles of Computer Science I

Plus one (1) of the following:

EMIS 4340 Statistical Methods for Engineers and Applied Scientists

EMIS 5370 Probability and Statistics for Scientists and Engineers

EMIS 4395 Senior Design

Dual Degree Programs and the 4+1 Program

Because of the flexibility of the curriculum, a majority of management science majors choose to receive a second major or one or more minors from a wide range of other disciplines. Examples include a Bachelor of Science, Major in Management Science, plus a second Bachelor's degree in Economics, Mathematics, Business, Computer Science, History, Psychology, Spanish, or French.

Other Management Science majors continue their studies to obtain a Masters of Science in Engineering Management, Systems Engineering, Information Engineering, or Operations Research. The 4+1 Program permits management science majors to obtain both undergraduate and graduate degrees in a shorter time and with fewer courses than if taken separately or from different universities.

More information on these and other options available to management science majors can be found on the EMIS Department web site: engr.smu.edu/emis. EMIS faculty and advisers are also available to answer questions about the program.

Computing Facilities

Students in the EMIS Department have access to a wide range of computing facilities and networking equipment. The department manages three PC-based computing labs, including the Enterprise Systems Design Laboratory created for students in the senior design course. General-use Unix and Linux machines (including 64-bit Alpha workstations and Sun UltraSparc systems) provide advanced computing, analytical software and Web-hosting to all engineering

students. Windows-based PCs are the primary desktop equipment and X-terminals are also available. All computing facilities are networked via high-speed Ethernet, with Gigabit Ethernet connections to Internet 1, Internet 2 and the National Lambda Rail research network. Open computing labs and wireless services provide additional facilities access points for students.

The Courses (EMIS)

1305. Computers and Information Technology. A survey course in computers and information technology that introduces the college student to the architecture of the personal computer, software, hardware, telecommunications and artificial intelligence, as well as the social and ethical implications of information technology. The two-hour laboratory sessions reinforce the concepts learned in lecture, including a survey of word processing, spreadsheet, database management, presentation and network software. Credit is not allowed for a computer science, computer engineering or management science major or minor. Credit is not allowed for both EMIS 1305 and EMIS 1307.

1307. Information Technology in Business. Today, computer literacy is essential to a career in any field, but nowhere is it more crucial than in the business field. This course focuses on the use of information technology in business. This course will explain the computer system, and the relationship of its parts to each other. It will define the terms used by technologists, and instill an appreciation for the effect of information technology on our lives and livelihood. The lab component of the course introduces the student to major productivity software packages, provides the fundamental knowledge that is a requirement for a business major, and allows the student to explore the benefits that technology can bring. No credit for EMIS major or minor. Credit is not allowed for both EMIS 1305 and 1307.

1360. Introduction to Management Science. Management science is the application of mathematical modeling and scientific principles to solve problems and improve life in society. This introductory class shows how to develop plans, manage operations and solve problems encountered in business and government today. *Prerequisite:* Knowledge of college-level algebra.

2360. Engineering Economy. Evaluation of engineering alternatives by equivalent uniform annual cost, present worth and rate-of-return analysis. Use of a computerized financial planning system. 0.5 TCH Design. *Prerequisite:* C- or better in MATH 1337. (M u s t e n r o l l i n l a b .)

3150. Ethics in Computing. Computer professionals have a special responsibility to ensure ethical behavior in the design, development and use of computers and computer networks. This course focuses on the education of the undergraduate through the study of ethical concepts and the social, legal and ethical implications involved in computing. Issues to be studied include computer crimes, software theft, hacking and viruses, intellectual property, unreliable computers, technology issues in the workplace and professional codes of ethics. *Prerequisite:* Junior standing.

3308. Engineering Management. Examines planning, financial analysis, organizational structures, management of the corporation (including its products, services and people), transfer of ideas to the marketplace, ethics and leadership skills. *Prerequisite:* Junior standing.

3309. Information Engineering and Global Perspectives. Examines global and information aspects of technology- and information-based companies. *Prerequisite:* Junior standing.

3360. Operations Research. A survey of models and methods of operations research. Deterministic and stochastic models in a variety of areas will be covered. Credit is not allowed for both EMIS 3360 and EMIS 8360. *Prerequisite:* EMIS 1360. (Must enroll in lab.)

4340 (STAT 4340). Statistical Methods for Engineers and Applied Scientists.

Basic concepts of probability and statistics useful in the solution of engineering and applied science problems. Topics: probability, probability distributions, data analysis, sampling distributions, estimations and simple tests of hypothesis. *Prerequisite:* C- or better in MATH 1338.

4(1-4)9(0-4). Undergraduate Project. An opportunity for the advanced undergraduate student to undertake independent investigation, design or development. Variable credit from one to four term hours. Written permission of the supervising faculty member is required before registration. At least 0.5 of (1-4) TCH Design.

4395. Senior Design. A large project involving the design of a management system. Will include model building, data collection and analysis, and evaluation of alternatives. 3 TCH Design. *Prerequisites:* C- or better in EMIS 5362 and senior standing.

5050. Undergraduate Internship Program.

5300. Systems Analysis Methods. Introduction to modeling and analysis concepts, methods and techniques used in systems engineering, design of products and associated production and logistics systems and analysis of operational system performance. Specific topics include: probabilistic and statistical methods, Monte Carlo Simulation, optimization techniques, applications of utility and game theory, and decision analysis.

5301. Systems Engineering Process. The discipline, theory, economics and methodology of systems engineering is examined. The historical evolution of the practice of systems engineering is reviewed, as are the principles that underpin modern systems methods. The economic benefits of investment in systems engineering and the risks of failure to adhere to sound principles are emphasized. An overview perspective distinct from the traditional design- and analytical-specific disciplines is developed.

5303. Integrated Risk Management. An introduction to risk management based upon integrated trade studies of program performance, cost, and schedule requirements. Topics include risk planning, risk identification and assessment, risk handling and abatement techniques, risk impact analysis, management of risk handling and abatement, and subcontractor risk management. Integrated risk management methods, procedures and tools will be examined.

5305 Systems Reliability, Supportability and Availability Analysis. This course is an introduction to systems reliability, maintainability, supportability and availability (RMS/A) modeling and analysis with an application to systems requirements definition and systems design and development. Both deterministic and stochastic models are covered. Emphasis is placed on RMS/A analyses to establish a baseline for systems performance and to provide a quantitative basis for systems trade-offs. *Prerequisite* EMIS 5300 or equivalent.

5307. Systems Integration and Test. The process of successively synthesizing and validating larger and larger segments of a partitioned system within a controlled and instrumented framework is examined. System integration and test is the structured process of building a complete system from its individual elements and is the final step in the development of a fully functional system. The significance of structuring and controlling integration and test activities is stressed. Formal methodologies for describing and measuring test coverage, as well as sufficiency and logical closure for test completeness, are presented. Interactions with system modeling techniques and risk management techniques are discussed. The subject material is based upon principles of specific engineering disciplines and best practices, which form a comprehensive basis for organizing, analyzing and conducting integration and test activities.

5310. Systems Engineering Design. An introduction to system design of complex hardware and software systems. Specific topics include design concept, design characterization, design elements, reviews, verification and validation, threads and incremental design, unknowns, performance, management of design, design metrics and teams. The class will center on the development of real-world examples.

5315. Systems Architecture Development. A design-based methodological ap-

proach to system architecture development using emerging and current enterprise architecture frameworks. Topics: structured analysis and object-oriented analysis and design approaches; enterprise architecture frameworks, including the Zachman framework, FEAF, DoDAF, and ANSI/IEEE-1471; executable architecture model approaches as tools for system-level performance evaluation and trade-off analyses; case studies in enterprise architecture development; and the integration of architecture design processes into the larger engineering-of-systems environment. *Prerequisite:* EMIS 5301.

5318. Systems Engineering Planning and Management. This course provides a practical coverage of tasks, processes, methods and techniques to establish the process of systems engineering and its role in the planning and management of programs. The tasks and roles of program manager and systems engineer are unveiled for establishing program operations and communications framework. Techniques are presented for developing an integrated program/project plan by defining the role of the systems integrator and identifying useful tools for planning and managing systems integration of various sized projects. The student learns to prepare for and successfully complete key program milestone reviews by identifying essential material content and proving the design basis. The course leads the student through the systems development process by showing how to plan for and manage change by implementing methods for configuration, change and risk management. The program life cycle is concluded by planning the transition of systems engineering processes from development to production and field support. *Prerequisite:* EMIS 5301.

5320. Systems Engineering Leadership. This course augments the management principles embedded in the systems engineering process with process design and leadership principles and practices. Emphasis is placed on leadership principles by introducing the underlying behavioral science components, theories and models. The course demonstrates how the elements of systems engineering, project management, process design and leadership integrate into an effective leadership system. *Prerequisite:* EMIS 5301.

5330. Systems Reliability Engineering. An in-depth coverage of tasks, processes, methods and techniques for achieving and maintaining the required level of system reliability considering operational performance, customer satisfaction and affordability. Specific topics include: Establishing system reliability requirements, reliability program planning, system reliability modeling and analysis, system reliability design guidelines and analysis, system reliability test and evaluation, and maintaining inherent system reliability during production and operation.

5335. Human-Systems Integration (HSI). This course advances the understanding and application of cognitive-science principles, analysis-of-alternatives methods and engineering-best practices for addressing the role of humans within the design of high-technology systems. In addition, HSI-specific processes (e.g., task-centered design; human-factors engineering; manpower, personnel and training; process analysis; usability testing and assessment) are presented and discussed. *Prerequisite:* EMIS 5301.

5340. Logistics Systems Engineering. An introduction to concepts, methods and techniques for engineering and development of logistics systems associated with product production/manufacturing, product order and service fulfillment, and product/service/customer support, utilizing system engineering principles and analyses. Specific topics include: logistics systems requirements, logistics systems design and engineering concurrently with product and service development, transportation and distribution, supply/material support, supply web design, and management and product/service/customer support.

5347. Critical Infrastructure Protection/Security Systems Engineering. The purpose of the course is to present systems engineering (SE) concepts as applied to the protection of the United States' critical infrastructure (CI). A top-level systems viewpoint provides a greater understanding of this system-of-systems (SOS). Topics include: the definition and advantages of SE practices and fundamentals; system objectives that include the viewpoint of the customer, user and other stakeholders; the elements of the CI and their interdependencies; the impact transportation system disruptions; and systems risk

analysis. *Prerequisites:* EMIS 5301 and EMIS 5303

5351. Enterprise Fundamentals. An overview of business fundamentals, spanning the range of all functional areas: management, marketing, operations, accounting, information systems, finance and legal studies. (Credit not allowed for both EMIS 3308 and EMIS 5351)

5352. Information System Architecture. The architecture of an information system (IS) defines that system in terms of components and interactions among those components. This course addresses IS hardware and communications elements for information engineers, including computer networking and distributed computing. It addresses the principles, foundation technologies, standards, trends and current practices in developing an appropriate architecture for Web-based and non-Internet information systems.

5353. Information System Design Strategies. Surveys the fundamentals of software engineering and database management systems (DBMS) for information engineers. Covers the principles, foundation technologies, standards, trends and current practices in data-centric software engineering and systems design, including object-oriented approaches and relational DBMS. The focus is on system design, development and implementation aspects, and not the implementation in code.

5357. Decision-Support Systems. Covers the development and implementation of a data-centric, decision-support system (DSS), the underlying technologies, and current applications and trends. Topics include: decision-making, DSS components, optimization models, expert systems, data mining and visualization, knowledge discovery and management, and executive information systems.

5359. Information Engineering Seminar. Topics in management of information in specific industries or application areas. May be repeated for credit when the topics vary. *Prerequisite:* EMIS 5360.

5360. Management of Information Technologies. Defines the management activities of the overall computer resources within an organization or government entity. Consists of current topics in strategic planning of computer resources, budgeting and fiscal controls, design and development of information systems, personnel management, project management, rapid prototyping and system life cycles.

5361. Computer Simulation Techniques. An introduction to the design and analysis of discrete probabilistic systems using simulation. Emphasizes model construction and use of a simulation language. 1.5 TCH Design. *Prerequisites:* Programming ability, introduction to probability or statistics.

5362. Production Systems Engineering. This course applies the principles of engineering, or "design under constraint," to modern production systems. Topics include: production systems analysis and design considerations, systems design and optimization models and methods, pull- and push-based production systems, quality engineering, process improvement, plus techniques for engineering and managing systems with specific architectures: batch-oriented, continuous-flow, projects and just-in-time. *Prerequisite:* C- or better in EMIS 3360.

5364 (STAT 5344). Statistical Quality Control. An introduction to statistical quality-control methods that can be applied to meet the demand for ever-increasing levels of product and service quality. Basic methods and tools for analyzing, controlling and improving product and service quality are covered. Probabilistic and statistical techniques are applied to modeling and analysis of variability associated with product production and service processes. Topics include analysis of product design tolerances, six-sigma techniques, statistical analysis of process capability, statistical process control using control charts, quality improvement and acceptance sampling. *Prerequisite:* EMIS 4340 or 5370.

5365. Program and Project Management. Development of principles and practical strategies for managing projects and programs of related projects for achieving broad goals. Topics include: planning, organizing, scheduling, resource allocation, strategies, risk management, quality, communications, tools and leadership for projects and programs.

5369. Reliability Engineering. An introduction to reliability engineering concepts, principles, techniques and methods required for design and development of affordable products and services that meet customer expectations. Topics include reliability concepts and definitions, figures-of-merit, mathematical models, design analysis and trade studies, reliability testing including types of tests, test planning and analysis of test results, and statistical analysis of reliability data. 1 TCH Design. *Prerequisite:* C- or better in EMIS 4340 or 5370.

5370 (STAT 5340). Probability and Statistics for Scientists and Engineers. An introduction to fundamentals of probability and distribution theory, statistical techniques used by engineers and physical scientists. Examples of tests of significance, operating characteristic curves, tests of hypothesis for one or two parameters, estimation, analysis of variance, and the choice of a particular experimental procedure and sample size. *Prerequisite:* C- or better in MATH 2339 or equivalent. (Credit not allowed for both EMIS 5370 and STAT 4340)

5377 (STAT 5377). Statistical Design and Analysis of Experiments. An introduction to statistical principles in the design and analysis of industrial experiments. Completely randomized, randomized complete and incomplete block, Latin square, and Plackett-Burman screening designs. Complete and fractional factorial experiments. Descriptive and inferential statistics. Analysis of variance models. Mean comparisons. *Prerequisites and corequisites:* C- or better in EMIS 4340 and senior standing with a science or engineering major, or permission of instructor.

5(1-3)9(0-4). Special Topics. Individual or group study of selected topics in management science. *Prerequisite:* Permission of instructor.

ENVIRONMENTAL AND CIVIL ENGINEERING

Professor Laura Steinberg, **Chair**

Professors: Bijan Mohraz, Laura Steinberg; **Assistant Professors:** Khaled Abdelghany, Alfredo Armendariz, Paul Krueger, David A. Willis; **Senior Lecturer:** Roger O. Dickey; **Lecturer:** Regina Gaiotti; **Adjunct Faculty:** Arthur Beck, Mark K. Boyd, Gerald R. Carney, Robert R. Casagrande, Weiping Dai, James Duke, Ted Dumas, Carl Edlund, Fawzi Elghadamsi, Andrew Felder, Edward Forest (Retired Chair), Anwar Hirany, Louis Hosek, Ron Jackson, James E. Langford, Donald L. Legg, Paul Martin, Jon D. Rauscher, Cecil Smith (Professor Emeritus), D. Blair Spitzberg, John Stanley, Bennett Stokes, Ken Thomas, Gregory Wilson, Dan Wittliff, Scott Woodrow.

Undergraduate programs within the Department of Environmental and Civil Engineering educate and train leaders in the fields of environmental protection, resource management, construction and engineering design. Programs are tailored to the individual needs and interests of our students, so that students with interests in studying global climate change, protecting the quality of our drinking water, or designing the next generation of high-rise buildings or smart highways receive the training they need to excel in their careers. As part of their education, our students are paired with CEOs, business leaders, professional engineers, EPA directors or corporate attorneys in a mentoring program designed to propel students into promising careers.

Environmental and civil engineering are inextricably linked. While civil engineering focuses on the infrastructure of modern society, environmental engineering is concerned with the well-being and health of the population and the environment. Environmental and civil engineering entered the early 1900s as a single integrated discipline, when it was critical to address sanitary problems to protect public health, and to develop regional water supplies and the civil infrastructure to support rapid urbanization and early industrializa-

tion. Separate disciplines gradually emerged, evolving and broadening to address the overall quality and function of modern society—preserving the environment while enabling the realization of an enriched life through technology.

Environmental Engineering and Environmental Science Programs. Today, the environmental field is dynamic and wide-ranging, comprising many different disciplines and professional roles. Environmental engineering and science involve not only traditional water and wastewater management, but also the management of hazardous and radioactive materials, pollution prevention and waste minimization, innovative hazardous waste treatment and site remediation processes, environmental and occupational health, resource conservation and recovery, sustainable development of natural resources, and air quality management and pollution control. In addition, modern manufacturing, both domestic and worldwide, is focusing on products fabricated from recycled and natural materials that are both competitive and harmlessly degraded in the environment. The trend toward global manufacturing will grow stronger in the years ahead. Environmental challenges presented by this movement must be overcome if the economic and lifestyle benefits of globalization are to be extended to all peoples of the world.

The educational objectives of the environmental engineering program are consistent with the missions of the Environmental and Civil Engineering Department, the School of Engineering, and the overall institutional mission of SMU. These educational objectives, determined based on the needs of the program's various constituencies, are:

1. Graduate highly educated engineers with the appropriate interdisciplinary skills to assume important management and leadership positions in a globally competitive world.
2. Ensure that graduates have a deep understanding of the scientific principles and the analytical and problem-solving skills to fully participate either as environmental managers or as process/design engineers in this increasingly essential field.
3. Prepare graduates with sufficiently broad knowledge to pursue advanced academic or professional degrees in engineering, medicine, law, business or public policy.
4. Prepare and strongly encourage graduates to pursue licensure as professional engineers.
5. Instill in graduates the personal qualities of leadership, ethical behavior, the facility for effective written and verbal communication, and an abiding commitment to lifelong learning.

The environmental engineering program prepares graduates for professional practice and advanced study through a focus in the following areas: (1) water supply and resources, (2) environmental systems and process modeling, (3) environmental chemistry, (4) wastewater management, (5) solid waste management, (6) hazardous waste management, (7) atmospheric systems and air pollution control and (8) environmental and occupational health.

Civil Engineering Program. Civil engineers are engaged in planning,

design, construction, maintenance and management of the infrastructure of modern society. They are responsible for the design of water supply and wastewater treatment systems; transportation systems such as highways, railways, waterways, mass transit, airports, ports and harbors; dams, reservoirs and hydroelectric power plants; thermoelectric power plants; transmission and communication towers; high-rise buildings; and even aircraft and aerospace structures, shuttles and space stations. Every major structure critical to this country, and global society, depends on the work of civil engineers.

The mission of the civil engineering program is to prepare graduates for professional practice and advanced studies by focusing in the following areas: structural engineering, geotechnical engineering, transportation planning, environmental engineering, and water resources. Graduates will be equipped with the skills and knowledge necessary to be fully participatory members of civil engineering teams, and to contribute to civil engineering efforts conducted within the evolving global economy.

The mission and educational objectives of the civil engineering program are consistent with the missions of the Environmental and Civil Engineering Department, the School of Engineering, and the overall institutional mission of SMU. Educational objectives, determined based on the needs of the program's various constituencies, are:

1. Graduate engineering students who possess technical and interdisciplinary knowledge to enter the practice of civil engineering and pursue management and leadership positions in a global economy.
2. Ensure that graduates have a strong understanding of the scientific and technological principles to participate in design, construction, and maintenance of the built environment.
3. Prepare students with a broad knowledge to pursue advanced academic or professional degrees in engineering, law, business, and public policy.
4. Prepare graduates for registration and licensure.
5. Develop a base of fundamental knowledge in mathematics, science, and engineering that will serve as a foundation for lifelong learning, and develop the information-gathering and information-synthesis skills necessary for independent learning throughout the graduate's professional career.
6. Ensure graduates have the written and verbal communication skills necessary for successful integration and advancement in the professional world.
7. Prepare students with an understanding of ethics and professionalism to address the social, economic and political issues inherent in the practice of civil engineering.

Degrees Offered. The Environmental and Civil Engineering Department offers undergraduate degrees as follows:

Bachelor of Science in Environmental Engineering
Bachelor of Science in Environmental Engineering with a Premedical
Specialization

Bachelor of Science in Environmental Science
Bachelor of Science in Environmental Science with a Premedical
S p e c i a l i z a t i o n
Bachelor of Science in Civil Engineering

The undergraduate program in environmental engineering is accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; telephone (410) 347-7700. The undergraduate program in civil engineering is not accredited by a commission of ABET. ABET does not provide accreditation for the discipline of environmental science.

Both the environmental and civil engineering programs are designed to prepare students for the Fundamentals of Engineering (FE) Examination, the first step toward licensure as a Professional Engineer (P.E.). Engineering design is integrated throughout the environmental and civil engineering curricula, each culminating in a major design experience based on the knowledge and skills acquired in earlier course work. In their senior year, the department's engineering students are required to take two terms of design where teams of two to four students work closely on practical projects sponsored by industry and government. Senior design projects incorporate engineering standards and realistic constraints including most of the following considerations: economic, environmental, sustainability, manufacturability, ethical, health and safety, social and political. The department's engineering curricula ensure that students develop an understanding of the concepts of professional engineering practice including ethical responsibilities, effective oral and written communication, engineering management and entrepreneurship, functioning on multidisciplinary teams, procurement, bidding, interaction of design and construction professionals, professional licensing and the need for lifelong learning.

The B.S. degree in Environmental Science and the B.S. degree in Environmental Science with a Premedical Specialization are designed to meet the professional goals of students whose environmental interests are broader. These programs offer the student greater depth with respect to the sciences, and greater course flexibility with respect to electives.

Departmental Facilities

Departmental offices and instructional and research laboratories are located in the new, state-of-the-art J. Lindsay Embrey Engineering Building. Environmental teaching and research laboratories include dedicated space for air quality and meteorology, industrial hygiene, environmental microbiology and water quality. The air quality/meteorology and water quality laboratories are capable of conducting sophisticated chemical analyses of air samples, and assessing the quality of water supplies and wastes and the effectiveness of water and waste treatment procedures. Major equipment includes several spectrophotometers including atomic absorption (AA), inductively coupled plasma (ICP) emission for low-level heavy metals analysis, and two Hewlett-Packard

gas chromatographs (GC). Other equipment includes continuous ambient air monitoring equipment, a UV/visible spectrophotometer, pH and other specific ion meters, incubating ovens, microscopes, furnaces, centrifuges, dissolved oxygen meters, a Mettler titrator for chemical and acid/base surface experiments, several temperature control baths, and a tumbler for constant temperature studies. The air quality and meteorology laboratory includes state-of-the-art airflow, pressure, and volume measurement instrumentation. The industrial hygiene laboratory includes an inventory of the latest state-of-the-art personal monitoring equipment for assessing occupational exposure to a variety of industrial process stressors including: asbestos, noise, total and respirable dust, metals, radiation, and heat stress.

Civil engineering teaching and research laboratories include dedicated space for mechanics of materials/and structural engineering, hydraulics and hydrology, soil mechanics and geotechnical engineering, transportation materials, and intelligent transportation systems. Civil engineering students also utilize the Mechanical Engineering department's thermal and fluids laboratory.

The Embrey Building also houses a dedicated computer-aided design (CAD) laboratory with AutoCAD software, and a general-use computer laboratory for the department's students including personal computers, high-resolution color monitors and laser printers. Computers in both the CAD and general-use laboratories are connected, through a high-speed network, to the computer systems of the School of Engineering and SMU, as well as off-campus systems via the Internet. The computer network provides access to general applications software and specialized software for engineering problems including air dispersion modeling, AutoCAD, hydrologic and hydraulic modeling for water resource systems, statistical analysis and stochastic modeling, structural analysis and design, transportation systems planning and analysis, and water quality modeling.

Bachelor of Science in Environmental Engineering

<i>Curriculum Requirements</i>		<i>TCH</i>
College Requirements:	Humanities, Social Sciences and SMU required courses	23
Mathematics and Statistics:	MATH 1337, 1338, 2339, 2343; STAT 4340 or 5340	15
Sciences:	Biology: BIOL 1401 Chemistry: CHEM 1113, 1114, 1303, 1304, 3371 Earth Science: ENCE 1331 Meteorology Physics: PHYS 1105, 1106, 1303, 1304	26
Engineering Science and Design	Computer Science and Engineering: CSE 1340 or 1341 Civil/Mechanical Engineering: ENCE 2310, 2331, 2342	12
Environmental Engineering and Design:	ENCE 1301 or 1302, 2304, 2421, 3323, 3341, 3431, 3451, 4380, 4381, 5354	33
Environmental Technical Electives:	Selected with adviser approval	6

Engineering Leadership:	Computer Science and Engineering: CSE 4360	
	Engineering Management, Information and Systems:	
	EMIS 3308, 3309	
	Environmental and Civil Engineering: ENCE 3302	12

Minimum total hours required 127

**Bachelor of Science in Environmental Engineering
(Premedical Specialization)**

Curriculum Requirements		TCH
College Requirements:	Humanities, Social Sciences and SMU required courses	23
Mathematics and Statistics:	MATH 1337, 1338, 2339, 2343; STAT 4340 or 5340	15
Sciences:	Biology: BIOL 1401, 1402, 3304, 3350 Chemistry: CHEM 1113, 1114, 1303, 1304, 3117, 3118, 3371, 3372 Earth Science: ENCE 1331 Meteorology Physics: PHYS 1105, 1106, 1303, 1304	41
Engineering Science and Design:	Computer Science and Engineering: CSE 1340 or 1341 Civil/Mechanical Engineering: ENCE 2310, 2331, 2342	12
Environmental Engineering and Design:	ENCE 1301 or 1302, 2304, 2421, 3323, 3341, 3431, 3451, 4380, 4381, 5354	33
Environmental Technical Electives:	Selected with adviser approval	6

Minimum total hours required 130

**Bachelor of Science in Environmental Engineering
and Bachelor of Science in Mathematics**

Curriculum Requirements		TCH
College Requirements:	Humanities, Social Sciences and SMU required courses	23
Mathematics and Statistics:	MATH 1337, 1338, 2339, 2343, 3315, 3337 and two advanced MATH electives selected with math adviser approval; STAT 4340 or 5340	27
Sciences:	Biology: BIOL 1401 Chemistry: CHEM 1113, 1114, 1303, 1304, 3371 Earth Science: ENCE 1331 Meteorology Physics: PHYS 1105, 1106, 1303, 1304	26
Engineering Science and Design:	Computer Science and Engineering: CSE 1340 or 1341 Civil/Mechanical Engineering: ENCE 2310, 2331, 2342	12
Environmental Engineering and Design:	ENCE 1301 or 1302, 2304, 2421, 3323, 3341, 3431, 3451, 4380, 4381, 5354	33
Advanced Environmental/Mathematics Electives:	Choose two from: ENCE 5331, 5332, 5334; ME 5336	6

Minimum total hours required 127

Bachelor of Science in Environmental Science

Curriculum Requirements TCH

College Requirements:	Humanities, Social Sciences and SMU required courses	29
Mathematics and Statistics:	MATH 1337, 1338; STAT 4340 or 5340	9
Sciences:	Biology: BIOL 1401, 1402 Chemistry: CHEM 1113, 1114, 1303, 1304, 3371 Earth Science: ENCE 1331, GEOL 1301 Physics: PHYS 1105, 1106, 1303, 1304	33
Engineering Science:	Computer Science and Engineering: CSE 1340 or 1341, or EMIS 1307	3

Curriculum Requirements TCH

Environmental Engineering:	Core: ENCE 1301, 2304, 2421 3302 Advanced: ENCE 3341, 3431, 3451 Management (Choose any 4 of the following 7): ENCE 5311, 5314, 5315, 5323, 5350, 5352, 5353	36
Environmental Technical Electives:	Selected with adviser approval	6
Technical and Engineering Leadership Electives:	Free electives	6

Minimum total hours required 122

Bachelor of Science in Environmental Science

(Premedical Specialization)

Curriculum Requirements TCH

College Requirements:	Humanities, Social Sciences and SMU required courses	29
Mathematics and Statistics:	MATH 1337, 1338; STAT 4340 or 5340	9
Sciences:	Biology: BIOL 1401, 1402, 3304, 3350 Chemistry: CHEM 1113, 1114, 1303, 1304, 3117, 3118, 3371, 3372 Earth Science: ENCE 1331, GEOL 1301 Physics: PHYS 1105, 1106, 1303, 1304	44
Engineering Science:	Computer Science and Engineering: CSE 1340 or 1341 or EMIS 1307	3
Environmental Engineering:	Core: ENCE 1301, 2304, 2421, 3302 Advanced: ENCE 3341, 3431, 3451 Management (Choose any 4 of the following 7): 5311, 5314, 5315, 5323, 5350, 5352, 5353	36
Environmental Technical Electives:	Selected with adviser approval	3
Technical or Engineering Leadership Elective:	Free elective	3

Minimum total hours required 127

Bachelor of Science in Civil Engineering

<i>Curriculum Requirements</i>		<i>TCH</i>
College Requirements:	Humanities, Social Sciences and SMU required courses	23
Mathematics and Statistics:	MATH 1337, 1338, 2339, 2343; STAT 4340 or 5340	15
Sciences:	Chemistry: CHEM 1113, 1114, 1303, 1304 Earth Science: GEOL 1301 or 1315 Physics: PHYS 1105, 1106, 1303, 1304	19
Engineering Science and Design:	Computer Science and Engineering: CSE 1340 or 1341 Civil/Mechanical Engineering: ENCE 2320, 2331, 2342/2142	13
Civil Engineering and Design:	ENCE 1301 or 1302, 2304, 2310, 2340/2140, 3323, 3350, 4350, 4380, 4381, 4385, 5354, 5372, 5378	40
Civil Engineering Technical Electives:	Selected with adviser approval	6
Engineering Leadership:	Computer Science and Engineering: CSE 4360 Engineering Management, Information and Systems: select either EMIS 3308 or 3309	6
<i>Curriculum Requirements</i>		<i>TCH</i>
	Environmental and Civil Engineering: ENCE 3302	9
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Minimum total hours required		125

Bachelor of Science in Civil Engineering and Bachelor of Science in Mathematics

<i>Curriculum Requirements</i>		<i>TCH</i>
College Requirements:	Humanities, Social Sciences and SMU required courses	23
Mathematics and Statistics:	MATH 1337, 1338, 2339, 2343, 3315, 3337 and two advanced MATH electives selected with math adviser approval; STAT 4340 or 5340	27
Sciences:	Chemistry: CHEM 1113, 1114, 1303, 1304 Earth Science: GEOL 1301 or 1315 Physics: PHYS 1105, 1106, 1303, 1304	19
Engineering Science and Design:	Computer Science and Engineering: CSE 1340 or 1341 Civil/Mechanical Engineering: ENCE 2320, 2331, 2342/2142	13
Civil Engineering and Design:	ENCE 1301 or 1302, 2304, 2310, 2340/2140, 3323, 3350, 4350, 4380, 4381, 4385, 5354, 5372, 5378	40
Advanced Civil Engineering/Mathematics:	ENCE 5361, ME 5322	6
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Minimum total hours required		128

Minor in Environmental Engineering

For approval of a minor in environmental engineering, the student should consult the Environmental and Civil Engineering Department. A minimum of 15 term credit hours in environmental engineering courses is required. One example of an approved set of courses that provides a broad introduction to environmental engineering is:

ENCE 2304 Introduction to Environmental Engineering and Science

ENCE 2421 Aquatic Chemistry

ENCE 3431 Fundamentals of Air Quality I

ENCE 4329 Design of Water and Wastewater Systems

ENCE 5354 Environmental Engineering Principles and Processes

Based on the student's interests and background, other sets of environmental engineering courses may be substituted with the approval of the Environmental and Civil Engineering Department.

Minor in Civil Engineering

For approval of a minor in civil engineering, the student should consult the Environmental and Civil Engineering Department. A minimum of 15 term credit hours in civil engineering courses is required. One example of an approved set of courses, totaling 16 term credit hours, that provides an emphasis on structural analysis and design is:

ENCE 2310 Statics

ENCE 2340/2140 Mechanics of Deformable Bodies/Mechanics of Materials Laboratory

ENCE 3350 Structural Analysis

ENCE 4350 Structural Design

ENCE 4385 Soil Mechanics and Foundations

Based on the student's interests and background, other sets of civil engineering courses may be substituted with the approval of the Environmental and Civil Engineering Department.

The Courses (ENCE)

1301. Environment and Technology: Ecology and Ethics. Students are introduced to the economic, engineering, ethical, political, scientific and social considerations of environmental decision-making and management. Local, regional and global topics will be examined. Students will take off-campus field trips.

1302. Introduction to Environmental and Civil Engineering. Students are introduced to the disciplines of environmental and civil engineering. Many of the hallmarks of modern society, including high-rise office buildings, increased lifespan, the virtual elimination of numerous diseases and reliable long-distance and public transportation systems are the result of work by environmental and civil engineers. Likewise, many problems presently confronting developing nations, including housing supply, food production, air and water pollution, spread of disease, traffic congestion and flood control will be solved by environmental and civil engineers. The course emphasizes fundamental science, engineering and ecological principles and encourages the development of analytical and critical thinking skills with real-world problem solving.

1331. Meteorology. Meteorology is the science and study of the earth's atmosphere and its interaction with the earth and all forms of life. Meteorology seeks to understand and predict the properties of the atmosphere, weather and climate from the surface of the planet to the edge of space. Appropriate for all interested undergraduates.

1378. Transportation Infrastructure. An overview and definitions of infrastructure

elements with concentration on transportation. Principles of infrastructure planning and management. Congestion and performance measures. Relationship with economy, environment, safety, homeland security and technology.

2140. Mechanics of Materials Laboratory. Experiments in mechanics of deformable bodies, to complement ENCE 2340. Simple tension tests on structural materials, simple shear tests on riveted joints, stress and strain measurements, engineering and true stress, engineering and true strain, torsion testing of cylinders, bending of simple supported beams, deflection of simply supported beams, buckling of columns, strain measurements of pressure vessels, Charpy Impact tests, effect of stress concentrators. *Corequisite or Prerequisite:* ENCE 2340.

2142. Fluid Mechanics Laboratory. One three-hour laboratory session per week. Experiments in fluid friction, pumps, boundary layers, and other flow devices to complement lecture material of ENCE 2342. One credit hour. *Corequisite or Prerequisite:* ENCE 2342.

2304. Introduction to Environmental Engineering and Science. Introduction to a scientific and engineering basis for identifying, formulating, analyzing, and understanding various environmental problems. Material and energy balances are emphasized for modeling environmental systems and processes. Although traditional materials in air and water pollution are examined, emphasis is placed on contemporary topics such as hazardous waste, risk assessment, groundwater contamination, global climate change, stratospheric ozone depletion and acid deposition. Where appropriate, pertinent environmental legislation is described, engineering models are derived and applied, and treatment technologies introduced. *Prerequisites:* CHEM 1303 and MATH 1338.

2310. Statics. Equilibrium of force systems; computations of reactions and internal forces; determinations of centroids and moments of inertia; introduction to vector mechanics. *Prerequisite:* MATH 1337 or equivalent.

2320. Dynamics. Introduction to kinematics and dynamics of particles and rigid bodies; Newton's laws, kinetic and potential energy, linear and angular momentum, work, impulse, and inertia properties. *Prerequisite:* ENCE 2310 or equivalent.

2331. Thermodynamics. The first and second laws of thermodynamics and thermodynamic properties of ideal gases, pure substances, and gaseous mixtures are applied to power production and refrigeration cycles. *Prerequisite:* CHEM 1303, ENCE 2310, and MATH 2339.

2340. Mechanics of Deformable Bodies. Introduction to analysis of deformable bodies including stress, strain, stress-strain relations, torsion, beam bending and shearing stresses, stress transformations, beam deflections, statically indeterminate problems, energy methods and column buckling. *Prerequisite:* ENCE 2310.

2342 Fluid Mechanics. Fluid statics, fluid motion, systems and control volumes, basic laws, irrotational flow, similitude and dimensional analysis, incompressible viscous flow, boundary layer theory, and an introduction to compressible flow. *Prerequisites:* ENCE 2310, MATH 2339 and PHYS 1303. *Corequisite or Prerequisite:* MATH 2343.

2421. Aquatic Chemistry. Aspects of chemistry that are particularly valuable to the practice of environmental engineering are examined. A basic groundwork is provided for the quantitative analysis of water and wastewater systems. Fundamental methods of instrumental analysis are examined. Elements of thermodynamics, acid-base, redox, and colloidal chemistry are presented as appropriate. Laboratory sessions emphasize design, hands-on conduct of experimental procedures, and interpretation and statistical analysis of derived data. *Prerequisite:* CHEM 1303 and CHEM 1304.

3302. Engineering Communications. Both oral and written communications skills for engineers: engineering documents, writing standards and presentations; audience analysis; graphics; collaborative skills; and ethical issues. Students prepare several documents and presentations common in engineering practice. *Prerequisite:* Junior or Senior standing in engineering.

3323. Water Resources Engineering. The hydrologic cycle and associated atmospheric processes are introduced through derivation and practical application of the hydrologic budget equation encompassing precipitation, evaporation, transpiration, ground water flow and surface water runoff. Unit hydrographs and flood hydrograph routing are examined through application of hydrologic simulation models. Students are exposed to probabilistic analysis and extreme value theory for determination of flood and drought hazard. Interpretation and statistical analysis of climatologic, hydrologic, and other environmental data are emphasized. Concepts of professional engineering practice are introduced with emphasis on the need for professional licensing and on project management through all phases of a typical project including conception, planning, preparation of design drawings and specifications for bidding and procurement purposes, the interaction of design and construction professionals, and water resource systems operation. *Prerequisites:* ENCE 2304 and ENCE 2342.

3325. Ground Water Hydrology. The hydrologic cycle and the subjects of porosity and permeability are introduced. Flow theory and its applications, storage properties, the Darcy equation, flow nets, mass conservation, the aquifer flow equation, heterogeneity and anisotropy, regional vertical circulation, unsaturated flow, and recharge are examined. Well hydraulics, stream-aquifer interaction, and distributed- and lumped-parameter numerical models are considered, as are groundwater quality, mixing cell models, contaminant transport processes, dispersion, decay and adsorption, and pollution sources. *Prerequisites:* ENCE 2342 and MATH 2343.

3327. Principles of Surface Water Hydrology and Water Quality Modeling. The theory and applications of the physical processes of the hydrologic cycle are examined. Different types of water bodies – streams, rivers, estuaries, bays, harbors and lakes – are reviewed. The principal quality problems associated with bacteria, pathogens, viruses, dissolved oxygen and eutrophication, toxic substances, and temperature are examined in detail. Theoretical model approaches are emphasized. *Prerequisites:* ENCE 2421 and MATH 2343.

3341. Introduction to Solid and Hazardous Waste Management. Solid and hazardous waste are defined. Technology, health and policy issues associated with solid waste and hazardous materials are examined. Methods of managing solid and hazardous waste are introduced and regulations presented where appropriate. The characteristics of hazardous and solid waste materials, health frameworks, and the distribution of contaminants in the environment are reviewed. *Prerequisites:* ENCE 2304 and ENCE 2421.

3350. Structural Analysis. Emphasis on the classical methods of analysis of statically determinate and indeterminate structural systems. Computation of reactions, shears, moments, and deflections of beams, trusses and frames. Use of computers as an analytical tool. *Prerequisites:* ENCE 2340/ENCE 2140.

3353. Introduction to Environmental Toxicology. The physiological and biochemical effects of physical, chemical and biological processes are linked to factors present in the environment. Natural phenomena are described in terms of the carbon, oxygen, sulfur, phosphorus and heavy metal cycles. The processes by which anthropogenic chemicals enter the environment and their complex effects on living organisms are examined in detail. *Prerequisite:* BIOL 1401. *Corequisite or Prerequisite:* CHEM 3371.

3355. Environmental Impact Evaluation, Policy and Regulation. Methods for evaluating engineering projects on environmental quality are reviewed, as are environmental legislation and environmental quality indices. The strengths and weaknesses of government methodologies to protect the environment are reviewed. Pollution standards, marketable rights, taxes and citizen empowerment are considered. Economic analysis and other policy perspectives are considered. *Prerequisite:* ENCE 2304.

3431. Fundamentals of Air Quality I. The science, engineering, public health and economic aspects of air quality are covered. Topics include the sources of air pollutants, transport of pollutants in the environment, and atmospheric chemistry. The important properties and behavior of airborne particles and gases are reviewed. Also discussed are the

science and national and international policies relating to greenhouse gas emissions, global climate change, and stratospheric ozone depletion. *Prerequisites:* CHEM 1303, MATH 1337 or equivalent, and PHYS 1303 or equivalent.

3451. Principles of Industrial Hygiene, Occupational Health and Environmental Control. The recognition, evaluation and control of health hazards in the working environment are presented. Principles of industrial toxicology, occupational diseases and occupational health standards are examined. The application of industrial hygiene principles and practice as well as the measurement and control of atmospheric contaminants are presented. The design and evaluation of industrial ventilation systems are introduced. Lecture and three hours of laboratory. *Prerequisite:* BIOL 1401.

4329. Design of Water and Wastewater Systems. Physical, chemical and biological concepts and processes that are specific to public water supplies and municipal wastewater management are covered. Fluid mechanics is reviewed followed by an introduction to hydraulic modeling for design of water distribution networks and wastewater collection networks. Design and operation of treatment systems for both drinking water and municipal wastewater pollution control are covered. Process modeling is employed for completion of two design projects, one for a public water supply treatment plant and the other for municipal wastewater treatment plant. Field trips are conducted to a public water supply treatment plant and to a municipal wastewater treatment plant. *Prerequisites:* CHEM 1303, and ENCE 2304 and ENCE 2342.

4333. Fundamentals of Air Quality II. Fundamental and advanced topics in air quality are covered, building upon ENCE 3431. Atmospheric dispersion of pollutants is examined and modern computer models are used to predict transport. A thorough review of energy technology and energy policy is presented, focusing on the economics and environmental impacts of conventional and alternative methods of energy generation. The importance of indoor air quality is discussed, including the risks from radon and biological aerosols. Additional topics of current interest are presented. Each student prepares a term paper related to energy policy and the environment. *Prerequisites:* ENCE 2331 or equivalent, and ENCE 3431.

4350. Structural Design. Study of strength, behavior and design of steel structures and reinforced concrete structures; members subjected to flexure, shear and axial loads. *Prerequisite:* ENCE 3350.

4380. Environmental and Civil Engineering Design I. Students are responsible for completing a term-long environmental or civil engineering project for an industrial or regulatory client. The nature of design problems, constraints and analytical tools are examined in an applied setting. An integrated design process is employed including problem identification and formulation, project planning, evaluation of alternatives, internal peer review and design iterations, preparation of design drawings and specifications for bidding and procurement purposes, the interaction of design and construction professionals, and implementation of the completed project. *Prerequisites:* Senior standing and ENCE 3302.

4381. Environmental and Civil Engineering Design II. Students are responsible for completing a term-long environmental or civil engineering project for an industrial or regulatory client. Students function on multidisciplinary design teams that stress the need for personal and written communication skills, leadership, effective group participation, and creative problem solving. Concepts of professional engineering practice are reinforced by student participation in applied design problems including the need for professional licensing, the ethical responsibilities of licensed engineers, and the need for lifelong learning to stay abreast of changing technology and public policy through active participation in professional societies, self-study, and continuing education. Periodic progress reports and reviews and a final report are prepared and presented. Both the client and faculty assess the completed design project. *Prerequisite:* ENCE 4380.

4385. Soil Mechanics and Foundations. Introduction to the basic principles that govern the behavior of soils, foundations and other geotechnical engineering works. The central concepts covered include the index properties and classification of soils, soil per-

meability and pore water movement, stress distribution in soil and the effective stress concept, bearing capacity, compressibility, consolidation, settlement, shear strength, and soil engineering properties and their measurement. Geotechnical facilities introduced include foundations, retaining walls, tunnels, excavations, earth fill dams, pavements, stable earth slopes, sanitary landfills and environmental remediation projects. *Prerequisite:* ENCE 2340.

5390. ENCE Seminar. Lectures by invited speakers from industry and academia, including SMU faculty and students, dealing with engineering practice and research topics of current interest in environmental and civil engineering. All students, staff and faculty are invited.

5311. Environmental and Hazardous Waste Law. Federal environmental laws, with emphasis on laws dealing with hazardous substances, such as CERCLA and RCRA; regulations and the regulatory framework; definitions and substantive requirements; roles of the States and the Federal EPA; compliance and enforcement; case studies.

5312. Risk Assessment and Health Effects. Introduction to toxicology as it relates to environmental and health effects of hazardous materials; toxicological methodology; risk management factors including legal aspects; human health and ecological risk assessment and risk communication; emergency response; computer databases.

5313. Environmental Chemistry and Biology. Chemical and biochemical processes; controlling fate and transport of hazardous materials with emphasis on chemical equilibria; chemical thermodynamics; acid-base equilibria; precipitation and dissolution; oxidation-reduction processes; environmental transformations of organic materials; introductory taxonomy; microbial growth and kinetics; energy transfer; microbial ecosystems.

5314. Environmental Regulations and Compliance. Practical knowledge of federal and state environmental permitting processes and procedures is provided. Regulatory requirements are reviewed with emphasis on the 40 CFR regulations for water, air and solid and hazardous waste. Air, water, storm water and waste permits are reviewed, as well as permits-by-rule. Also explored are the consequences of noncompliance with regulations by presenting enforcement options available to government agencies.

5315. Integrated Waste Management. Comprehensive introduction to the fundamentals of the complex interdisciplinary field of hazardous waste management; current management practices; treatment and disposal methods; and site remediation. Topics include detailed case studies and design examples to evaluate the effectiveness of different treatment and containment technologies in addressing today's hazardous waste situations.

5322. Biological Waste Treatment. Biological treatment topics include an overview of microbiology and microbial metabolism; kinetics of biological growth; aerobic suspended growth processes including the various modifications of the activated sludge process, aerated lagoons, and sequencing batch reactors; aerobic attached growth processes including trickling filters, biofilter towers, and rotating biological contactors; anaerobic processes including sludge digestion and liquid waste treatment with the anaerobic contact process and anaerobic filters; biosolids handling and disposal; composting; land treatment; *in situ* biotreatment and biotreatment of contaminated soils.

5323. Project Management. Role of project officer; systems and techniques for planning, scheduling, monitoring, reporting, and completing environmental projects; total quality management; project team management, development of winning proposals; contract management and logistics; case study application of project management to all environmental media and programs; community relations, risk communication, crisis management, consensus building, media, and public policy.

5325. Disaster Management. This course introduces the student to basic concepts in disaster management. Drawing on a range of sources from the textbook to the U.S. Disaster Response Plan to research papers, the course covers the fundamentals of preparedness, mitigation, response and recovery. An all-hazards approach is taken, providing analysis of natural, technological and man-made disasters. In addition to discussing basic

theories of disaster management, the course introduces the student to key methods in the field, including simulation modeling, consequence analysis tools, design criteria, statistical and case study methods (“lessons learned”) and risk analysis.

5331. Air Pollution Management and Engineering. This course is geared towards graduate students interested in the science, engineering, public health and economic aspects of air quality. Students will develop deep understanding and broad knowledge of the sources and properties of air pollutants, transport of pollutants in the environment, and government regulation of air quality. In addition, the operation and design of air pollution control systems are reviewed. Also discussed are the science and national and international policies relating to greenhouse gas emissions, global climate change and stratospheric ozone depletion. A series of design projects reinforce the material presented in lecture. *Prerequisites:* CHEM 1304, MATH 1337 or equivalent, and PHYS 1303 or equivalent.

5332. Ground Water Hydrology and Contamination. Ground water hydrology; aquifer and well hydraulics; flow equations and models; implications for landfill design; sources and nature of ground water contaminants; monitoring and analysis; contaminant fate and transport; transport model for hazardous substances; ground water pollution control measures; containment and treatment; ground water quality management. *Prerequisite:* MATH 2343.

5333. Laboratory Methods in Environmental Engineering. This course provides students with hands-on, state-of-the-art experience with important experimental methods in environmental systems, evaluating the reliability and significance of parameter determinations. Covers instrumental and statistical methods used for characterization of water, air and soil quality. Introduction to treatability studies including reactor dynamics. The course format provides two hours of lecture and three hours of laboratory component. *Prerequisite:* ENCE 5313, or two terms of undergraduate chemistry.

5334. Fate and Transport of Contaminants. Development and application of fate and transport models for water-borne contaminants with focus on material balance principle; mass transport and transformation processes; modeling of lakes and reservoirs; stream modeling; general flow case; ground water models; water-sediment, water-soil, and water-air interfaces; multiphase and integrated modeling approaches; case studies.

5335. Aerosol Science, Engineering and Control Systems Design. This course is for graduate and upper-level undergraduate engineering students interested in the fundamental and advanced principles of aerosol science and engineering. The properties, behavior, and measurement of airborne particles are specifically reviewed. The origin and properties of atmospheric aerosols and the production of industrial and pharmaceutical aerosols are discussed. Students will study and develop designs for air pollution control equipment for stationary sources like power plants and mobile sources like diesel engines. Advanced filtration techniques for semiconductor clean rooms and other applications are reviewed. *Prerequisites:* ENCE 3431, or ENCE 2342 or equivalent.

5340. Introduction to Solid Mechanics. Three-dimensional stress and strain, failure theories, introduction to two-dimensional elasticity, torsion of prismatic members, beams on elastic foundations, introduction to plates and shells, and energy methods. *Prerequisites:* ENCE 2340 and MATH 2343.

5350. Introduction to Environmental Management Systems. An in-depth introduction to environmental management systems (EMSs). Includes systems such as EMAS, Responsible Care, OSHAS 18000, ISO 14000, and the Texas EMS program. Takes a step-by-step look at the ISO 14001 standard from the policy statement to the management review, and allows students to fully understand the Plan-Do-Check-Act approach of the system. Also introduces students to management system auditing, the requirements of a system auditor, and the certification process.

5351. Introduction to Environmental Toxicology. Toxicology is presented as it relates to environmental and health effects of hazardous materials. Toxicological methodologies, pharmacokinetics, mechanisms of action to toxicants, origin response to toxic

substances, and relevant aspects of the occupational and regulatory environment will be examined. Specific topics include toxicology of metals, radiation, industrial solvents and vapors, pesticides, teratogens, mutagens and carcinogens. Risk communication and risk assessment are examined as they relate to toxic substance exposure.

5352. Management of Radioactive Hazards. Principles of radioactive material production, uses and hazards are presented with emphasis on their safe control and management. Topics in health physics and radiation protection related to the commercial nuclear industry are examined including uranium fuel production, light water reactor technologies, and industrial and medical uses of radioactive byproduct materials. Risk assessment methods and hazard management connected to the fuel cycles will be developed. The regulation of radioactive materials will be studied with emphasis on licensing of regulated industries, radioactive material transportation, radioactive waste management and disposal, radiological emergency preparedness and decommissioning. *Prerequisite:* ENCE 5313.

5353. Environmental Epidemiology. Introduction to the science of epidemiology. Design and conduct of studies examining health effects of environmental exposures. Strengths and limitations of research strategies and interpretation of study results. Areas of interest include air and water pollution, lead, and biological marker outcomes.

5354. Environmental Engineering Principles and Processes. Waste minimization and pollution prevention techniques and objectives are introduced. A comprehensive study is made of biological, chemical and physical principles and treatment strategies for controlling pollutant emissions. Equal emphasis is placed on underlying theory and practical engineering application of both common and innovative water and wastewater treatment processes. Design equations, procedures, and process models are rigorously derived for chemical/biological reactors and physical unit operations. Emphasis is placed on engineering analysis and application of process modeling techniques for design of unit processes to achieve specific treatment objectives. *Prerequisites:* CHEM 1303, ENCE 2304 and ENCE 2342, and MATH 2343.

5361. Matrix Structural Analysis and Introduction to Finite Element Methods. A systematic approach to formulation of force and displacement method of analysis; representation of structures as assemblages of elements; computer solution of structural systems. *Prerequisite:* ENCE 3350.

5362. Engineering Analysis with Numerical Methods. Applications of numerical and approximate methods in solving a variety of engineering problems. Examples include equilibrium, buckling, vibration, fluid mechanics, thermal science and other engineering applications. *Prerequisite:* Permission of instructor.

5363. Architectural and Structural Engineering. The basic principles of structural analysis and mechanics of deformable bodies are introduced. Structural systems and principles are presented with an emphasis on architectural design. Students will be provided with a conceptual introduction to structures emphasizing the integration of structural and architectural design. Case studies of buildings are presented and discussed. *Prerequisites:* ENCE 2310 and ENCE 2320.

5364. Introduction to Structural Dynamics. Dynamic responses of structures and behavior of structural components to dynamic loads and foundation excitations; single- and multi-degree-of-freedom systems response and its applications to analysis of framed structures; introduction to systems with distributed mass and flexibility. *Prerequisite:* MATH 2343.

5365. Introduction to Construction Management. Construction practice techniques and current technological tools are examined. Included are cost estimating, bidding, contracts and contract bonds, risk and umbrella excess insurance, labor law and labor relations. Building codes and regulations are examined. Business methods with respect to managing project time and cost, including typical forms used in construction, are addressed.

5366. Introduction to Facilities Engineering Systems. The inter-relationships of fire protection, HVAC, electrical, plumbing, lighting, telecommunications, energy management systems for buildings are examined. A life-cycle approach examines each of these systems with respect to cost, durability, maintainability, operability and safety. Facility operations, facility maintenance and testing, and assessments are discussed.

5367. Telecommunications in Facility Planning. A thorough description of telecommunications technology is presented. Provides the student with a working knowledge of the fundamental concepts of telecommunications technology for both voice and data. Topics presented include digital communications, standards and protocols, ethernet, local area networks, fiber optics and voice technologies.

5368. Facilities Contract Management. A critical foundation and understanding is provided of the terminology, arts and skills of contracts and contract negotiation, review and preparation, as well as insurance and risk management. Attention is also given to lease analysis, licensing and permits, when and how bidding contracts are warranted, how to prepare specifications and their role in contract creation, and supplier and vendor management in the post-contractual process.

5369. Electrical, Mechanical and Piping Systems for Buildings. Mechanical and electrical systems for buildings are examined with emphasis on practical aspects of the subjects. Space planning and architectural considerations, including cost and environmental impact of the mechanical and electrical systems are presented. *Prerequisites:* Undergraduate introduction to electrical circuits, classical mechanics and fluid dynamics, or instructor's approval.

5370. Facility Planning. The overall planning process for construction projects is presented. The three divisions of planning: program planning, project planning and activity planning are presented in an integrated manner. Included are different modeling approaches for the planning process.

5371. Facility Financial and Asset Management. Financial analysis and reporting, concepts and methods of accounting, budgeting and evaluation of projects are examined. The role of facility managers in affecting corporate earnings and valuations is presented. The management of the facility over its entire life-cycle extending from planning and budgeting to the management of its assets and construction projects is included.

5372. Introduction to CAD. Provides students with hands-on, state-of-the-art experience with computer-aided drafting using AutoCAD to produce drawings used for engineering presentations and construction. Students will learn how to draw lines, curvilinear lines, use blocks and external references, write text, create plot files, and many other commands necessary to produce engineering drawings as used to construct environmental, civil and structural engineering projects.

5373. Prestressed Concrete. Theory and application of prestressed concrete members, time-dependent deflections and continuous prestressed beams. *Prerequisites:* ENCE 4350.

5375. Advanced Concrete Design. Behavior, analysis and design of concrete slender columns, two-way slab systems and deep beams. Yield line analysis for slabs. Design and behavior of shear walls, retaining walls and foundations systems. *Prerequisite:* ENCE 4350.

5377. Advanced Steel Design. Behavior and design of steel structures including general methods of plastic analysis, plastic moment distribution, steel frames, unbraced and braced frames, and composite construction. *Prerequisites:* ENCE 4350.

5378. Transportation Planning and Traffic Engineering. This course is concerned mainly with the analysis and modeling of urban transportation systems. The course consists of three main parts. The first part provides an overview of main definitions and terminologies involved in the planning and modeling of urban transportation systems. The second part introduces the concept of urban transportation planning systems along with an overview of various models used in travel demand forecasting. The third part describes

principles of traffic operations, analysis and control. *Prerequisite:* Basic principles of probability and statistics.

5383. Heating, Ventilating and Air Conditioning. Examines the science and practice of controlling environmental conditions through the use of thermal processes and systems. Specific applications include refrigeration, psychometrics, solar radiation, heating and cooling loads in buildings, and design of duct and piping systems. Theory and analysis are emphasized. *Prerequisites:* ENCE 2331, ENCE 2342 and ME 3332.

5384. Energy Management for Buildings. Procedures to select energy saving options for buildings are examined with emphasis on the practical aspects of the subject. Space planning, architectural considerations, cost and environmental impact of the mechanical and electrical systems are considered along with optimizing the life cycle cost of the proposed alternative. Software for life cycle cost and energy analysis are used to calculate energy consumption and compare energy features of proposed, audit-determined feasible changes to a building.

5385. Advanced Soil Mechanics. Physicochemical properties of soil and soil stabilization. Advanced theories of soil deformation and failure as applied to slope stability and lateral loads. Soil-water interaction in earthen dams. *Prerequisite:* ENCE 4385.

5386. Foundation Engineering. Application of soil mechanics principles to the design and construction of shallow and deep foundations. Topics include: subsurface investigation procedures to obtain soil parameters for design and construction of structure foundations, bearing capacity and settlement analyses, construction procedures, and soil improvement techniques. *Prerequisite:* ENCE 4385.

5(1-4)9(1-2). Special Projects. Intensive study of a particular subject or design project, not available in regular course offerings, under the supervision of a faculty member approved by the department chair.

MECHANICAL ENGINEERING

Professor Yildirim Hürmüzlü, Chair

Professor Radovan Kovacevic, Director,

Research Center for Advanced Manufacturing

Professors: Yildirim Hürmüzlü, Radovan Kovacevic, José Lage, Bijan Mohraz, Peter E. Raad, Wei Tong; **Associate Professor:** Charles M. Lovas; **Assistant Professors:** Gemunu S. Happawana, Paul Krueger, David Willis; **Lecturers:** Elena Borzova, Dona T. Mularkey, Donald C. Price; **Adjunct Faculty:** Bogdan Antohe, Eric Cluff, Santos Garza, Ramon Goforth, David Nowacki, Edmond Richer, Allen Tilley; **Emeritus Professors:** Charles E. Balleisen, Jack P. Holman, David B. Johnson, Paul F. Packman, Cecil H. Smith, Hal Watson Jr., Edmund Weynand.

Mechanical engineering is a very diverse, dynamic and exciting field. Because of the wide-ranging technical background attained, mechanical engineers have the highest potential for employment after graduation with exceptional mobility necessary for professional growth even during bear-market conditions. Mechanical engineers apply their creative knowledge to solve critical problems in several different areas, such as bio-engineering (e.g., drug-delivery; artificial organs), construction, design and manufacturing, electronics, energy (e.g., production, distribution and conservation), maintenance (individual machinery and complex installations), materials processing, medicine (diagnosis and therapy), national security and defense, packaging, pollution mitigation and control, robotics and automation, sensors, small scale devices, and all aspects of transportation including space travel and exploration.

The Mechanical Engineering Department at SMU has a long tradition of

offering a superb engineering education within an environment fostering creativity and innovation. Small classes, a trademark of the program, not only provide for strong mentoring but also foment academic excellence through cooperation and teamwork. The exceptionally qualified faculty transmits knowledge using the most effective pedagogical skills, assisted in large by the SMU Center for Teaching Excellence and by the Norwick Center for Media and Instructional Technology. Leading by example, through encouragement and dedication, the faculty is committed to the success of every student. In addition to offering the introductory and advanced courses in their areas of specialization, faculty members teach courses that address the critical issues of technology and society, such as Machines and Society and Information Technology and Society.

The program genuinely prepares students to be creative by providing a solid background in fundamentals of science and engineering without compromising the practical aspects of mechanical engineering. Essential entrepreneurial know-how, interpersonal skills and the importance of lifelong learning complement the educational experience of students. The department stimulates professional and social leadership by providing, among others, opportunities for students to participate in the SMU Student Section of the American Society of Mechanical Engineers and on the SMU Tau-Sigma Chapter of Pi-Tau-Sigma, the National Honorary Mechanical Engineering Fraternity.

The curriculum consists of two major stems, namely, Solid Mechanics and Thermal and Fluids, interlaced via practical mechanical engineering design throughout the curriculum. In the senior year, teams of students are guided through a complete design project, all the way from concept to construction to testing, with support from industries, foundations and volunteer professionals. State-of-the-art software, computers and laboratory equipment support the high-quality education provided to students. Moreover, undergraduate students are encouraged to participate in research projects conducted by faculty and to consider extending their studies toward a graduate degree in mechanical engineering at SMU or elsewhere.

In conjunction with a solid liberal arts component, the program prepares students for graduate studies not only in engineering but also in other professional fields such as business, medicine and law. SMU mechanical engineering graduates have consistently and successfully attained higher degrees in engineering, medicine, business and law, besides gaining employment as engineers or consulting engineers for major engineering, pharmaceutical, environmental, financial, banking and real estate companies.

The undergraduate program in mechanical engineering is accredited by the Engineering Accreditation Commission of ABET, Inc., 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.

Specific educational objectives of the mechanical engineering undergraduate program are to produce graduates who:

1. Can apply the principles of mathematics, science and engineering;
2. Are knowledgeable in thermal systems and mechanical systems as well as

in the relationships among processes, process equipment, integrated design and performance;

3. Can define problems involving design in both thermal systems and mechanical systems and are capable of developing and evaluating alternate designs as well as implementing design solutions;
4. Can communicate effectively and who demonstrate an ability to function on multidisciplinary teams;
5. Can use modern engineering tools for conducting analyses, accomplishing designs and communicating effectively;
6. Understand their responsibility to their profession and society in a global context and who are prepared for and realize the importance of life-long learning; and
7. Have the necessary education in the arts, humanities and ethics.

The Mechanical Engineering Undergraduate Program Outcomes and Activities and their relationships to the discipline-specific criteria, approved by the Mechanical Engineering Faculty and MEAB (4/1/02) are as follows:

1. The ability to apply knowledge of mathematics, science, and engineering to the analysis of Mechanical Engineering problems.
2. The ability to design and conduct scientific and engineering experiments, as well as analyze and interpret data.
3. The ability to design a component, process, or system to meet a given set of operational criteria.
4. The ability to function on and contribute to multi-disciplinary teams.
5. The ability to recognize, quantify, formulate, and solve thermal system and mechanical system problems that arise in the field of Mechanical Engineering.
6. An understanding of professional and ethical responsibility.
7. The ability to convey technical material through formal written work projects and drawings that meet acceptable standards for writing style and engineering drawings respectively.
8. The ability to convey technical material through oral presentations and interactions with an audience.
9. The broad knowledge of contemporary issues necessary to understand the global and societal impact of solutions to Mechanical Engineering problems.
10. Recognition of the need for the ability to engage in life-long learning.
11. The ability to use modern engineering techniques, skills, and tools in analysis and design.
12. The ability to work in both the thermal systems and mechanical systems areas of Mechanical Engineering.

An outstanding cooperative education program (Co-op) is also available for our students. For further information on the Co-op Program, see "Cooperative Education" at the beginning of this School of Engineering section.

The Mechanical Engineering Department offers the following degrees:

Bachelor of Science in Mechanical Engineering
Bachelor of Science in Mechanical Engineering
with a Minor in Business Administration
Bachelor of Science in Mechanical Engineering
with an Engineering Management and Entrepreneurship Specialization
Bachelor of Science in Mechanical Engineering
with a Manufacturing Specialization
Bachelor of Science in Mechanical Engineering
with a Premedical/Biomedical Specialization
Master of Science in Mechanical Engineering
Master of Science in Manufacturing Systems Management
Master of Science in Packaging of Electronic and Optical Devices
Doctor of Philosophy in Mechanical Engineering

In addition, a minor in Mechanical Engineering is available to interested students. Moreover, the department cooperates with the Mathematics Department to offer dual Bachelor of Science degrees in Mechanical Engineering and Mathematics, and with the Physics Department to offer dual Bachelor of Science degrees in Mechanical Engineering and Physics.

Departmental Facilities

In support of the teaching and research endeavors of our department, several instructional and research laboratories are available, including:

Applied Machine Vision Laboratory. Latest technologies in image sensing, image acquisition and image processing are integrated into systems to provide direct solutions for manufacturing industry problems. The laboratory is equipped with an ultra-high-shutter-speed camera assisted with pulsating nitrogen lasers, a high-frame-rate CCD camera, a three-dimensional machine vision system based on the structured-light SyncroVision camera, and three high-speed, high-power image acquisition and processing systems.

Computational/Design Laboratory. Dedicated computational facilities that include personal computers and high-resolution color X-Terminals, all connected through a high-speed network that allows communication with the school's and University's computers as well as with off-campus systems via NSFNet. Available School of Engineering computational facilities include several high-speed, multiprocessor workstations and servers. Educational software includes Parametric Technologies Pro-Engineer CAD system, Matlab, ANSYS structural analysis package, MacroFlow and Fluent CFD packages.

Graphics Laboratory. Used primarily for first-year graphics, the facility is available for students working on design projects. A special design projects library is located adjacent to the drafting room.

High-Power Laser Processing Laboratory. This laboratory provides first-hand experience in the application of high-energy light (focused laser) to process different types of materials, including forming, cutting, drilling, joining, coating and material property modification. The laboratory is equipped

with a high-power MultiWave Nd:YAG laser with a power of 1000 watts in CW mode and 2500 watts in pulsating mode, a three-axis CNC positioning system, and a powerful data acquisition system for control and diagnostics.

Laboratory for Porous Materials Applications. This laboratory is devoted to the design, analysis and testing of porous media-based systems and devices, including next-generation cooling devices, filters, chemical reactors and mixers. The laboratory is equipped with instrumentation necessary for measuring effective thermo-hydraulic properties, including effective conductivity, permeability and inertia coefficient.

Mechanics of Materials Laboratory. This laboratory is equipped for instruction and research on the behavior of materials under various loading conditions such as fatigue, impact, hardness, creep, tension, compression and flexure.

MicroMachining Laboratory. This laboratory is equipped with lasers and Photonics equipment specifically for the fabrication of devices at the microscale.

Solid Freeform Fabrication Laboratory. The field of rapid prototyping by Solid Freeform Fabrication is a relatively recent by-product of the computer-integrated manufacturing revolution. SFF processes are additive in nature, in that three-dimensional CAD geometry is fabricated by successively layering or adding two-dimensional slices of the solid. In this laboratory, high-power laser and welding processes are used to make structurally sound metallic functional parts, molds and dies.

Systems, Measurement and Control Laboratory. Equipped for instruction in the design and analysis of analog and digital instrumentation and control systems. Modern measurement and instrumentation equipment is used for experimental control engineering, system identification, harmonic analysis, simulation, and real-time control applications. Equipment also exists for microprocessor interfacing for control and instrumentation.

Submicron Electro-Thermal Sciences Laboratory. This laboratory is dedicated to the experimental research and computational modeling of submicron integrated circuits. The laboratory features a laser-based thermo-reflectance measurement system, a microwave integrated circuit scalar performance electrical measurement system and an adaptive thermal numerical solution package.

Systems Laboratory. Equipped for computational and experimental research in biomechanics, dynamics and control.

Thermal and Fluids Laboratory. Equipment in this laboratory is used for instruction in experimental heat transfer, thermodynamics and fluid mechanics. Modern equipment is available for conducting experiments on energy conservation, aerodynamics, internal combustion engine, HVAC systems, convective cooling of electronics, heat exchangers and interferometric visualization. State-of-the-art systems support automatic control and data acquisition.

Welding Laboratory. The laboratory is equipped with three fully computerized welding cells (for gas tungsten arc welding, gas metal arc welding and

plasma arc welding) to promote high-quality research and technological innovations in arc and plasma welding.

Curriculum in Mechanical Engineering

Mechanical Engineering offers the broadest curriculum in engineering, as evidenced by the wide range of job opportunities in government and industry. The mechanical engineer is concerned with creation, research, design, analysis, production and marketing of devices for providing and using energy and materials. The major concentration areas of the program are:

Solid and Structural Mechanics. Concerned with the behavior of solid bodies under the action of applied forces. The solid body may be a simple mechanical linkage, an aerodynamic control surface, an airplane or space vehicle or a component of a nuclear reactor. The applied forces may have a variety of origins, such as mechanical, aerodynamic, gravitational, electromotive and magnetic. Solid mechanics provides one element of the complete design process and interacts with all other subjects in the synthesis of a design.

Fluid Mechanics. Deals with the behavior of fluid under the action of forces applied to it. The subject proceeds from a study of basic fundamentals to a variety of applications, such as flow-through compressors, turbines and pumps, around an airplane or missile. Fluid mechanics interacts with solid mechanics in the practice of mechanical engineering because the fluid flow is generally bounded by solid surfaces. Fluid mechanics is also an element in the synthesis of a design.

Thermal Sciences. Concerned with the thermal behavior of all materials — solid, liquid and gaseous. The subject is divided into three important branches, namely, thermodynamics, energy conversion and heat transfer. Thermodynamics is the study of the interaction between a material and its environment when heat and/or work are involved. Energy conversion is a study of the transformation of one form of energy to another, such as the conversion of solar energy to electrical energy in a solar cell. Heat transfer is a study of the processes by which thermal energy is transferred from one body of material to another. Because it takes energy to drive any apparatus and some of the energy always shows up as thermal energy, the thermal sciences interact with all other areas of study and can never be ignored in the design synthesis process.

Materials Science and Engineering. Pertains to the properties of all materials — solid, liquid and gaseous. It deals with mechanical, fluid, thermal, electrical and other properties. Properties of interest include modulus of elasticity, compressibility, viscosity, thermal conductivity, electrical conductivity and many others. The study of materials proceeds from the characteristics of individual atoms of a material, through the cooperative behavior of small groups of atoms, up to the behavior and properties of the bulk material. Because all mechanical equipment is composed of materials, works in a material environment, and is controlled by other material devices, it is clear that the materials sciences lie at the heart of the design synthesis process.

Control Systems. Provides necessary background for engineers in the

dynamics of systems. In the study of controls, both the transient and steady-state behavior of the system are of interest. The transient behavior is particularly important in the starting and stopping of propulsion systems and in maneuvering flight, whereas the steady-state behavior describes the normal operating state. Some familiar examples of control systems include the flight controls of an airplane or space vehicle and the thermostat on a heating or cooling system.

Design Synthesis. The process by which practical engineering solutions are created to satisfy a need of society in an efficient, economical and practical way. This synthesis process is the culmination of the study of mechanical engineering and deals with all elements of science, mathematics and engineering.

Bachelor of Science in Mechanical Engineering

Curriculum Notes

The minimum requirements for a Bachelor of Science in Mechanical Engineering degree are as follows:

<i>Curriculum Requirements</i>		<i>TCH</i>
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations courses.	21
Mathematics and Sciences:	MATH 1337, 1338, 2339, 2343 and STAT 4340 or equivalent. PHYS 1304, 1403; CHEM 1303; two additional 3000 level or higher Math or Science courses with the approval of the student's adviser.	31
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381 and 5322.	53
Advanced Major Electives:	Must be selected from 3000 level or higher ME courses with the approval of the student's adviser.	12
Leadership Electives:	Select two from EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360.	6
Wellness I and II:		2
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Minimum total hours required		125

Any deviation from the ME curriculum requires approval of a petition submitted by the student to the ME faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Bachelor of Science in Mechanical Engineering (with a Minor in Business Administration)

The minimum requirements for a Bachelor of Science in Mechanical Engineering with a minor in Business Administration are as follows:

<i>Curriculum Requirements</i>		<i>TCH</i>
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations courses. Wellness	23
Mathematics/Statistics	MATH 1337, 1338, 2339, 2343, STAT 4340 or equivalent	15

Sciences:	CHEM 1303, PHYS 1303, 1304, 1105	10
Mathematics or Science Electives		6
Curriculum Requirements		TCH
Business	ECO 1312, ACCT 2311, ACCT 2312, FINA 3320, ITOM 3306, MKTG 3340, MNO 3370	21
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381, 5322 Advanced Major Elective (3000 level or higher) 3	56

Minimum total hours required 131

Any deviation from the ME curriculum requires approval of a petition submitted by the student to the ME faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Admission requirements of the Cox School of Business for the Minor in Business Administration must be satisfied.

Bachelor of Science in Mechanical Engineering and Bachelor of Science in Mathematics

The Mechanical Engineering Department and the Mathematics Department offer a curriculum that enables a student to obtain both a Bachelor of Science in Mechanical Engineering and Bachelor of Science in Mathematics.

Curriculum Notes

The minimum requirements for the dual degree of Bachelor of Science in Mechanical Engineering and Bachelor of Science in Mathematics are as follows:

Curriculum Requirements		TCH
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations courses.	21
Mathematics:	MATH 1337, 1338, 2339, 2343, 3315, 3337, STAT 4340 or equivalent CSE 1340 or 1341 plus two advanced electives as defined in the description of the Mathematics major.	30
Sciences:	PHYS 1304 and 1403; CHEM 1303.	10
Mechanical Engineering:	ME 1202, 1102, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381 and 5322.	50
Advanced Major Electives:	Must be selected from 3000 level or higher ME courses with the approval of the student's adviser.	9
Leadership Electives:	Select two from EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360	6
Wellness I and II:		2
Minimum total hours required		128

Bachelor of Science in Mechanical Engineering and Bachelor of Science in Physics

The Mechanical Engineering Department and the Physics Department offer a curriculum that enables a student to obtain both a Bachelor of Science in Mechanical Engineering and a Bachelor of Science in Physics.

Curriculum Notes

The minimum requirements for the dual degrees of Bachelor of Science in Mechanical Engineering and Bachelor of Science in Physics are as follows:

Curriculum Requirements		TCH
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formation courses.	21
Curriculum Requirements		TCH
Mathematics:	MATH 1337, 1338, 2339, 2343, STAT 4340.	15
Sciences:	PHYS 1303, 1304, 3305, 3344, 3374, 4211, 4321, 4392, 5382, 5383 and two advanced physics electives; CHEM 1303.	38
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381 and 5322.	50
Leadership Elective:	Select one from EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360.	3
Wellness I and II:		2

Minimum total hours required 129

Any deviation from the ME and/or PHYS curricula requires approval of a petition submitted by the student to the appropriate faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Areas of Specialization

Mechanical engineering is a diverse field, and advanced major electives may be selected from a variety of advanced courses in mechanical engineering. In addition, specializations are offered in three important areas, namely Management and Entrepreneurship, Manufacturing and Premedical/Biomedical. Therefore, each student may select one of these three specializations or may personalize his or her degree by particular choices of advanced major electives.

**Bachelor of Science in Mechanical Engineering
(Engineering Management and Entrepreneurship Specialization)**

The Mechanical Engineering Department offers a B.S.M.E. degree with an Engineering Management and Entrepreneurship Specialization. This program includes required courses in Engineering Management, Information Engineering and Global Perspectives, Technical Entrepreneurship and Technical Communications, while at the same time satisfying the requirements for an accredited degree in mechanical engineering.

Curriculum Notes

The minimum requirements for a Bachelor of Science in Mechanical Engineering degree with a Management and Entrepreneurship specialization are as

follows:

Curriculum Requirements		TCH
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations Courses.	21
Mathematics and Sciences:	MATH 1337, 1338, 2339, 2343 and STAT 4340 or equivalent. PHYS 1304, 1403; CHEM 1303; two additional 3000 level or higher Math or Science courses with the approval of the student's adviser.	31
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381 and 5322.	53
Specialization:	EMIS 3308, EMIS 3309, CSE 4360 and ENCE 3302.	12
Advanced Major Electives:	Must be selected from 3000 level or higher ME courses with the approval of the student's adviser.	6
Wellness I and II		2
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Minimum total hours required		125

Any deviation from the ME curriculum requires approval of a petition submitted by the student to the ME faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Bachelor of Science in Mechanical Engineering (Manufacturing Specialization)

This specialization enables students to select four major electives related to manufacturing engineering and manufacturing systems management. For details of the program, the student should consult the department.

Curriculum Notes

The minimum requirements for a Bachelor of Science in Mechanical Engineering degree with Manufacturing Specialization are as follows:

Curriculum Requirements		TCH
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations Courses.	21
Mathematics and Sciences:	MATH 1337, 1338, 2339, 2343 and STAT 4340 or equivalent. PHYS 1403, 1304; CHEM 1303; two additional 3000 level or higher Math or Science courses with the approval of the student's adviser.	31
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4360, 4160, 4370, 4380, 4381 and 5322.	53
Manufacturing Electives:	Manufacturing electives must be approved by the student's adviser and must be selected from the following list: ME 5350, 5351, 5352, 5353, 5354, 5355, 5356, 5357, 5358, 5365, 5366, 5368, 5369, 5372 and 5391.	12
Leadership Electives:	Select two from EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360.	6

Minimum total hours required 125

Any deviation from the ME curriculum requires approval of a petition submitted by the student to the ME faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Bachelor of Science in Mechanical Engineering

(Premedical/Biomedical Specialization)

The Mechanical Engineering Department offers a B.S.M.E. degree with a Premedical/Biomedical specialization. This program enables students to satisfy the premedical or pre-dental requirements for admission to medical or dental school, while at the same time satisfying the requirements for an accredited degree in Mechanical Engineering.

Curriculum Notes

The minimum requirements for a Bachelor of Science in Mechanical Engineering degree with Premedical/Biomedical Specialization are as follows:

<i>Curriculum Requirements</i>		<i>TCH</i>
General Education:	ENGL 1301, 1302, Perspectives and Cultural Formations courses.	21
Mathematics:	MATH 1337, 1338, 2339, 2343, STAT 4340.	15
Sciences:	BIOL 1401, 1402, 3304, 3350; CHEM 1303, 1113, 1304, 1114, 3371, 3117, 3372, 3118; PHYS 1403, 1404.	38
Mechanical Engineering:	ME 1202, 1102, 1305, 2310, 2320, 2331, 2131, 2340, 2140, 2342, 2142, 3332, 3132, 3340, 3370, 4338, 4370, 4380, 4381 and 5322.	49
<i>Curriculum Requirements</i>		<i>TCH</i>
Advanced Major Elective:	ME 5332 or any 3000 level or higher ME course.	3
Leadership Elective:	Select one from EMIS 3308, EMIS 3309, ENCE 3302, or CSE 4360.	3
Wellness I and II:		2

Minimum total hours required 125

Any deviation from the ME curriculum requires approval of a petition submitted by the student to the ME faculty prior to the beginning of the term during which the student expects to complete the requirements for graduation.

Minor in Mechanical Engineering

For approval of a minor in Mechanical Engineering, the student should consult the department. A total of 15 term hours in mechanical engineering courses is required. For example, a choice of five of the following courses represents a minor that provides a broad introduction to mechanical engineering.

ME 1202 and **1102** Introduction to Engineering

ME 2310 Statics

ME 2320 Dynamics

- ME 2331** Thermodynamics
- ME 2340** Mechanics of Deformable Bodies
- ME 2342** Fluid Mechanics
- ME 3340** Engineering Materials
- ME 3370** Manufacturing Processes

Based on the student's interests and background, other sets of mechanical engineering courses may be substituted with the approval of the department..

The Courses (ME)

1102. Introduction to Engineering Lab. Companion laboratory to ME 1202; introduction to machine shop operations; mechanical measurements; basic research skills; the design process including group projects. *Corequisite:* ME 1202

1202. Introduction to Engineering. Introduction to mechanical engineering and the engineering profession; the design process; sketching; forces in structures and fluids; conservation laws and thermal systems; motion of machinery. *Corequisite:* ME 1102.

1301. Machines and Society. Introduces engineering systems to non-engineering students. The course is divided into four parts: 1) What is engineering, and what do engineers do? In particular, what do mechanical engineers do? Historical perspective on engineering design, principles of design engineering and energy conversion processes. 2) Engineered products. What do mechanical engineers produce? The basic principles of converting science to technology. 3) The development of technology for society and humanity. 4) The laboratory and workshop experience, including computer animation and simulation.

1303. Energy, Technology and the Environment. An elementary introduction to how energy is produced and distributed, energy resources, electrical power, heating and cooling, solar energy applications and other topics related to people and the environment.

1305. Information Technology and Society. A comprehensive survey of information technologies and the growing interconnectivity between them as currently utilized throughout society. Students will acquire portable IT skills in the use of word processing, spreadsheets, presentation tools, graphics applications and the Internet that will prepare them for success in the workplace and beyond. Issues surrounding IT will be discussed, including history, ethics, legal questions, use in producing and maintaining a competitive advantage, effects on society and associated costs and benefits.

2131. Thermodynamics Laboratory. One three-hour laboratory session per week. Basic thermal-property and power-device measurements to complement lecture material of ME 2331. *Prerequisite or corequisite:* ME 2331.

2140. Mechanics of Materials Laboratory. Experiments in mechanics of deformable bodies, to complement ME 2340. Simple tension tests on structural materials, simple shear tests on riveted joints, stress and strain measurements, engineering and true stress, engineering and true strain, torsion testing of cylinders, bending of simple supported beams, deflection of simply supported beams, buckling of columns, strain measurements of pressure vessels, Charpy Impact tests, effect of stress concentrators. *Prerequisite or corequisite:* ME 2340.

2142. Fluid Mechanics Laboratory. One three-hour laboratory session per week. Experiments in fluid friction, pumps, boundary layers and other flow devices to complement lecture material of ME 2342. *Prerequisite or corequisite:* ME 2342.

2310. Statics. Equilibrium of force systems; computations of reactions and internal forces; determinations of centroids and moments of inertia; introduction to vector mechanics. *Prerequisite:* MATH 1337 or equivalent.

2320. Dynamics. Introduction to kinematics and dynamics of particles and rigid bodies; Newton's laws, kinetic and potential energy, linear and angular momentum, work, impulse, and inertia properties. *Prerequisite:* ME 2310 or equivalent.

2331. Thermodynamics. The first and second laws of thermodynamics and thermodynamic properties of ideal gases, pure substances and gaseous mixtures are applied to power production and refrigeration cycles. *Prerequisites:* CHEM 1303, ME 2310 and MATH 2339.

2340. Mechanics of Deformable Bodies. Introduction to analysis of deformable bodies including stress, strain, stress-strain relations, torsion, beam bending and shearing stresses, stress transformations, beam deflections, statically indeterminate problems, energy methods and column buckling. *Prerequisite:* ME 2310.

2342. Fluid Mechanics. Fluid statics, fluid motion, systems and control volumes, basic laws, irrotational flow, similitude and dimensional analysis, incompressible viscous flow, boundary layer theory and an introduction to compressible flow. *Prerequisites:* MATH 2339, ME 2310 and PHYS 1303; *Corequisite:* MATH 2343.

3132. Heat Transfer Laboratory. One three-hour laboratory session per week. Experiments in conduction, convection, and radiation to complement lecture material of ME 3332 – Heat and Mass Transfer. *Prerequisite or corequisite:* ME 3332.

3332. Heat and Mass Transfer. Fundamental principles of heat transmission by conduction, convection and radiation; mass transfer; and application of these principles to the solution of engineering problems. *Prerequisites:* ME 2331 and ME 2342.

3340. Engineering Materials. A study of the fundamental factors influencing the structure and properties of structural materials, including metals, polymers and ceramic. Phase diagrams, heat treatment, metallography, mechanical behavior, atomic bonding and corrosion are covered in lecture and laboratory. *Prerequisite:* CHEM 1303 or equivalent.

3341. Intermediate Thermal Sciences. Application of the laws of thermodynamics, availability, irreversibility, real gases and mixtures, generalized thermodynamics relations and charts, and chemical equilibrium. *Prerequisite:* ME 2331.

3350. Structural Analysis. Emphasis on the classical methods of analysis of statically determinate and indeterminate structural systems. Computation of reactions, shears, moments, and deflections of beams, trusses, and frames. Use of computers as an analytical tool. *Prerequisites:* ME 2340/2140.

3370. Manufacturing Processes. A comprehensive, balanced, and up-to-date coverage of the relevant fundamentals and real-world applications of manufacturing processes (casting, forming, machining, laser beam machining, electrical discharge machining, abrasive waterjet machining, etc.). Rapid prototyping is included in this course as well. The lab portion consists of experiments intended to introduce students to the basics of manufacturing processes through hands-on work on a set of projects designed for such purpose. The lab work is intended to familiarize the students with the general tools used in a manufacturing environment and also to reinforce the learning of the lecture material. *Prerequisite:* ME 3340.

3390 (CFA 3390). German Technoculture. Fundamentals of German contemporary culture within the context of technology and study abroad experience. Emphasis is placed on communication skills. Field trips are an integral part of the course.

4090. Senior Project.

4160. Control Laboratory. Experiments in control engineering. Digital and analog simulation of feedback control systems. Actuator saturation. Design and implementation of simple control systems on various laboratory equipment. *Prerequisite or corequisite:* ME 4360.

4338. Thermal Systems Design. Thermal systems designs are prepared, presented and critiqued. Associated problems of simulation, optimization and economics are solved. Solving problems and design with a thermal network analyzer is included. *Prerequisite:* ME 3332.

4350. Structural Design. Study of strength, behavior and design of steel structures and reinforced concrete structures: members subjected to flexure, shear and axial loads. *Pre-*

requisite: ME 3350..

4351. Ethical Decision-Making in Applied Science and Engineering Technology. Ethical issues, hard choices, and human failures in notorious, historical cases such as the Space Shuttle *Challenger*, Grand Teton Dam and Union Carbide-Bhopal disasters. Principles, methods and bases for ethical decision-making and action. Application of classical ethical philosophy to hypothetical, modern problems and dilemmas in the business of control and implementation of technology.

4360. Design and Control of Mechanical Systems. Block modeling of mechanical systems. Mathematical models of linear systems. Solution of differential equations by use of Laplace transforms. Feedback control systems, time domain analysis, stability, frequency response, and root locus plots, Bode diagrams, performance criteria and system compensation. Design of control systems for mechanical systems. *Prerequisite:* ME 5322 or equivalent.

4370. Elements of Mechanical Design. Application of the principles of mechanics and physical properties of materials to the proportioning of machine elements, including consideration of fatigue, functioning, productivity, and economic factors. Computer applications. *Prerequisites:* ME 2340 and ME 3370.

4380. Mechanical Engineering Design I. A study of design methodology and development of professional project-oriented skills including communication, team management, creative problem solving, interpersonal management and leadership skills. Team-project activities are used to apply project-oriented skills to solution of design problems. Nontechnical considerations in design, including patents, ethics, aesthetics, safety and economics are investigated. *Prerequisite or corequisite:* ME 3370.

4381. Mechanical Engineering Design II. Student design teams have full responsibility for conducting a full-term design project for an industrial client. Periodic design reports and design reviews are presented to, and critiqued by, the industrial client, the faculty and the design team. *Prerequisite or corequisite:* ME 4370. *Prerequisite:* ME 4380.

5050. Undergraduate Internship. Components: Internship.

5302 (EE 5362). Linear Systems Analysis. The course will introduce students to the topics within the domain of modern control theory. Special emphasis will be placed on the application of the developed concepts in designing linear systems and casting their responses in prescribed forms. Topics covered include state representation of linear systems, controllability, observability, and minimal representation, linear state variable feedback, observers and quadratic regulator theory. *Prerequisite:* ME 4360 or instructor approval.

5319. Advanced Mechanical Behavior of Materials. A senior-graduate course that relates mechanical behavior on a macro and microscopic level to design. Topics include: macroscopic elasticity and plasticity, viscoelasticity, yielding, yield surfaces, work hardening, geometric dislocation theory, creep, temperature-dependent and environment-dependent mechanical properties *Prerequisites:* ME 2340 and ME 3340.

5320. Intermediate Dynamics. Kinematics and dynamics of particles and rigid bodies: kinematics, inertia properties, Kane's dynamical equations, Euler's equations of motion, D'Alembert's principle, Lagrange's equations of motion. Use of Autolev, a symbol manipulation program for dynamics. *Prerequisites:* ME 2320, MATH 2339 and MATH 2343.

5321. Failure Analysis. A senior-graduate course in the evaluation of the failure of structural materials and components. Topics include: site examination, macroscopic examination, optical microscopy, transmission electron and SEM interpretation, examination and interpretation of failure surfaces, failure modes, causes of failure. *Prerequisite:* ME 3340.

5322. Vibrations. Fundamentals of vibrations with application of simple machine and structural members. Harmonic motion, free and forced vibration, resonance, damping, isolation, and transmissibility. Single, multiple and infinite degree-of-freedom systems. *Prerequisites:* ME 2320 and MATH 2343 or equivalent.

5323. Introduction to Fracture Mechanics. Linear elastic fracture mechanics, application of theory to design and evaluation of critical components: elastic stress intensity calculations, plane strain fracture toughness, plane stress and transitional behavior, crack opening displacements, fracture resistance, fatigue crack propagation, transition temperature approach to fracture control, microstructure of fracture and fracture control programs. *Prerequisite:* ME 2340.

5324. Fatigue Theory and Design. A senior-graduate course. Includes continuum, statistical and fracture mechanics treatments of fatigue, stress concentrators, planning and analysis of probit, SNP and response tests, mechanisms of fatigue design, fail safe vs. safe life design, crack propagation. Emphasizes engineering design aspects of fatigue rather than theoretical mechanisms. *Prerequisite:* ME 3340.

5326. Vehicle Dynamics. Modeling of wheeled vehicles to predict performance, handling and ride. Effects of vehicle center of mass, tire-characteristic traction and slip, engine characteristics and gear ratios of performance. Suspension design and steady-state handling models of four-wheeled vehicles and car-trailer systems to determine oversteer and understeer characteristics, critical speeds and stability. Multi-degree-of-freedom ride models including tire and suspension compliance. Computer animation and simulations. *Prerequisite:* ME 2320 or consent of instructor.

5330. Heat Transfer. Application of the principles of conduction, convection and radiation heat transfer. Topics include steady and unsteady state, special configurations, numerical and analytical solutions and design. *Prerequisite:* ME 3332 or equivalent.

5331. Advanced Thermodynamics. Laws of thermodynamics, availability, irreversibility, real gases and mixtures, thermodynamic relations and generalized charts, combustion, chemical and phase equilibrium, and computational combustion. *Prerequisite:* ME 2331 or equivalent.

5332. Heat Transfer in Biomedical Sciences. Fundamentals of heat transfer in medicine and biology. Biothermal properties. Thermal regulation processes. Biomedical heat transfer processes with applications in tissue laser radiation, freezing and thawing of biological materials, cryosurgery and others. *Prerequisites:* ME 2342 and ME 3332 or consent of instructor.

5333. Transport Phenomena in Porous Media. Fractals and their role in characterizing complex structures. Fundamental concepts of momentum, heat, and mass transport through heterogeneous (e.g., composites, porous) materials. Emphasis is placed on the mathematical modeling of heat and mass transfer in heterogeneous and fully saturated systems. Relevant industrial and natural applications are presented throughout the course. *Prerequisites:* ME 2342 and ME 3332 or consent of instructor.

5336 (MATH 6336). Intermediate Fluid Dynamics. Review of fundamental concepts of undergraduate fluid mechanics and introduction to advanced fluid dynamics, including irrotational flow, tensor notation, and the Navier-Stokes equations. *Prerequisite:* ME 2342 or equivalent.

5337. Introduction to Computational Fluid Dynamics: Fundamentals of Finite Difference Methods. Concepts of stability, convergence, accuracy and consistency. Applications to linear and nonlinear model partial differential equations. Curvilinear grid generation. Advanced topics in grid generation. Beam and Warming factored implicit technique. MacCormack techniques. Solution methods for the Reynolds equation of lubrication, the boundary layer equations and the Navier-Stokes equations. *Prerequisites:* ME 2342 (or equivalent) and MATH 2343 (or equivalent) or consent of instructor.

5340. Introduction to Solid Mechanics. Three-dimensional stress and strain, failure theories, introduction to two-dimensional elasticity, torsion of prismatic members, beams on elastic foundation, plates and shells, and energy methods. *Prerequisites:* ME 2340 and MATH 2343.

5341. Structural Properties of Solids. Designed to develop an understanding of the structural aspect of solids and their relationship to properties and applications. Topics

include structural defects, bonding and crystal structure, solid state reactions and phase transformations, degradation, and deformation. *Prerequisite:* ME 3340 or consent of instructor.

5342. Mechanical Engineering Aspects of Electronic Packaging. Thermal and mechanical design of electronic packaging to include fundamentals of fluid flow, heat transfer, modern cooling technologies and thermal management; mechanical designs including stress and vibrations covered through industrial applications; coupled thermal and mechanical problems; systems including selection of cooling methods and hardware important to good design; design of equipment that operates in severe vibration environments developed using classical methods.

5343. Electronic Packaging Materials: Processes, Properties and Testing. Provides an overview of materials for electronic packaging. Examines solderability, microscopic processes and alloy selection. Looks at composites and ways to apply conducting polymer-matrix composites, metal films and vacuum processes. The importance of encapsulation, temperature humidity bias testing, and temperature cycle testing will be covered. Measurement of properties of materials in electronic packaging, thermal properties, physical properties and manufacturing properties and materials selection will also be covered.

5350. Design for Manufacturability and Concurrent Engineering. The advantages of involving both manufacturing and engineering in the early design of products and processes effectively, and cost determination and assessment of processing alternatives at the early design/manufacturing interface. Designing for manufacturing processing and factory capabilities as a function of quality, price, performance and productivity will be examined with emphasis on parts and process simplification, alternative methods, anticipated volumes, and automated assembly.

5351. Computer-Integrated Manufacturing Systems. Imparts the basic concepts and use of computer-integrated manufacturing. Topics include integration techniques for manufacturing islands of automation; process planning and the production process life cycle in relation to automated control systems; process design techniques for shop-floor control of multiple interacting processes; distributed network process control; real-time aspects; interface protocols and languages of shop-floor machinery; computational and data processing techniques for planning, design, production, and shipping; and methods of optimizing output quality, price, and productivity. Economic justification and the use of artificial intelligence with respect to planning and process control will be examined.

5352. Modern Manufacturing Methods and Systems. Highly successful manufacturing methods and systems will be examined. Topics include the evolution of manufacturing technology in the United States, mass manufacturing, integrated manufacturing, distribution and manufacturing automation, just-in-time systems, continuous improvement, Kaizen, poka yoke, and total quality management. Modern Japanese manufacturing techniques will be examined in depth. The underlying concepts and strategic benefits of flexibility, agility, time-based competition and global manufacturing operation will be covered. The course will be presented from the perspective of the manufacturing manager.

5353. Manufacturing Management Practices. New organizational structures, paradigms and leadership styles. Problem solving within the business context: manufacturing strategies for optimizing production processes across the enterprise. Measuring and reporting business performance. Investment decision making under conditions of risk and uncertainty. Intellectual property strategies, products liability and the legal environment. Contemporary practices, including self-directed work forces, competitive assessment, total productive maintenance, managerial and activity-based costing, and other topics.

5354. Total Quality Management in Manufacturing. An overall total quality management perspective for the design of quality management systems. Metrics for cycle time and defects, baselining and benchmarking, and House of Quality approaches are examined. Managing product quality from inception to deployment. Topics include acquiring and stabilizing new production processes, data collection and analysis for improvement,

and decision making. Purchasing, process control and reliability are covered in detail. Taguchi and poka-yoke and other practices are examined as tools for implementing TQM.

5355. Integrated Design and Manufacturing. Industrial performance is strongly correlated to success in integrating design and manufacturing. The interrelationships between the total product realization cycle, product generation and manufacturing are examined with the objective of improving industrial performance.

5356. Human Factors in Design and Manufacturing. A senior-graduate course dealing with human factors or ergonomics relating to designing for human use. The lectures cover the empirical and analytic aspects of design and manufacturing as affected by the need to accommodate human use and abilities. Included are topics on visual displays of static and dynamic information, text, graphics, symbols, codes, auditory tactual and olfactory displays, speech and nonverbal communications, physical work/materials handling, motor skills, and hand tool devices and controls. Workplace design, anthropometry, component arrangement in space, lighting, sound, climate and motion will be covered. *Prerequisite:* Senior or graduate standing, or permission of instructor. *Recommended:* Understanding of simple statistical analysis.

5357. Optimized Mechanical Design. Principles and methods for optimal design of machine elements (springs, shafts, gears, weldments of joints, etc.) and mechanical systems (transmissions, cam systems, inertia loads and balancing, etc.). Computer applications. *Prerequisite:* ME 4370 or equivalent.

5358. Design of Electronic Packaging. Thermal and mechanical design of electronic packaging. Fundamentals of heat transfer and fluid flow are applied to electronic packages and systems, including selection of fans, heat sinks and other hardware important to good design. Mechanical designs of equipment that operates in more severe shock and vibration environments are developed using classical methods, with consideration given to selecting appropriate hardware. *Prerequisites:* ME 2340 and ME 3332, or permission of instructor.

5359. Analysis and Design of Optoelectronic Packaging. Provides an overview of optical fiber interconnections in telephone networks, packaging for high-density optical back planes, selection of fiber technologies; semiconductor laser and optical amplifier packaging, optical characteristics and requirements, electrical properties, mechanical properties, waveguide technologies, optical alignment and packaging approaches, passive device fabrication and packaging, array device packaging; hybrid technology for optoelectronic packaging, and flip-chip assembly for smart pixel arrays. *Prerequisites:* ME 5342 and ME 5343.

5360. Electronic Product Design and Reliability. Provides a complete description of the fundamentals of the design process for electronic products. Covers the obtaining of the voice of the customer through processes such as Quality Function Deployment. Analyzes the process of conceptual design. Carries the concept through the parametric and tolerance analysis. The design review process will be discussed as well as a review of the use of CAD tools for schematic capture and PWB layout. Reviews the use of modern tools for the maintenance of design documentation, the process of product realization through prototypes, manufacturing trials, and the introduction into high volume manufacturing. The impact of design choices on product quality and reliability will be discussed in detail as will the prediction and measurement of product lifetimes. *Prerequisites:* ME 5342 and ME 5343.

5361. Matrix Structural Analysis and Introduction to Finite Element Methods. A systematic approach to formulation of force and displacement method of analysis; representation of structures as assemblages of elements; computer solution of structural systems. *Prerequisite:* ME 3350 or equivalent.

5362. Engineering Analysis with Numerical Methods. Application of numerical and approximate methods in solving a variety of engineering problems. Examples include: equilibrium, buckling, vibration, fluid mechanics, thermal science and surveying problems. *Prerequisite:* Senior standing.

5363. Electronic Manufacturing Technology. Covers the complete field of electronics manufacturing. Topics include an introduction to the electronics industry, electronic components, the theory and methods of manufacture of solid state devices, packaging techniques such as wire bonding flip chip and TAB, printed wiring board, soldering and solderability, leaded and surface mounted components, electromagnetic interference, electrostatic discharge prevention, testability and electronic stress screening. In each area, the current technology, as well as leading edge tools are discussed. *Prerequisites:* ME 5342 and ME 5343 or permission of instructor.

5364. Introduction to Structural Dynamics. Dynamic responses of structures and behavior of structural components to dynamic loads and foundation excitations; single- and multi-degree-of-freedom systems response and its applications to analysis of framed structures; introduction to systems with distributed mass and flexibility. *Prerequisite:* MATH 2343.

5365. Strategies for Manufacturing Firms. Examines the development and implementation of strategies for product design and manufacturing that best supports the overall strategy of the firm. Topics include positioning the product and production system in the industry, location and capacity decision, implementing manufacturing technologies, facilities planning, vertical integration, logistics planning, and organizational culture. Case studies of manufacturing firms are used extensively.

5366. Manufacturing in a Global Era. Examines goals and strategies for manufacturing operations in the multinational environment. Topics include decision making for decentralizing and setting up foreign manufacturing operations, marketing, sales and distribution strategies, R&D support, location and capacity decisions, implementing new manufacturing technologies, facilities planning and modernizations, vertical integration, outsourcing strategies, logistics planning and organizational cultures. Case studies of manufacturing firms are used.

5368. Project and Risk Management. Focuses on specific concepts, techniques and tools for managing projects successfully. Network planning techniques, resource allocation, models for multi-project scheduling, methods of controlling costs, determining schedules and performance parameters. The basics of risk management including hard analysis, risk analysis, risk control and risk financing are covered. The focus of the course is to integrate risk assessment with managerial decision making. Examples and case studies are emphasized.

5369. Managing Technology and Innovation. In the face of rapid technological growth and innovation, a disciplined management approach is necessary to assure a reasonable expectation of success. The course examines the factors of proper selection, justification and implementation of new technologies within the framework of consumer electronics, advanced materials, and emerging information capabilities, expert systems and machine tool industry. Topics include technological forecasting risk and uncertainty and project management.

5371. Gas Dynamics and Design of Propulsion Systems. One-dimensional compressible flow, linearized two-dimensional flow method of characteristics, and oblique shocks. Design of air-breathing propulsion systems components: inlets, nozzles, compressors, turbines and combustors. Interactions with the external flow. *Prerequisites:* ME 2342 and ME 3341.

5372. Introduction to CAD. Introduction to mechanical computer-aided design. Survey of technical topics related to computer-aided design and computer-aided manufacturing. Emphasis on the use of interactive computer graphics in modeling, drafting, assembly, and analysis. Extensive hands-on use of Pro/Engineer, a state-of-the-art computer aided design system. *Prerequisite:* Junior standing or consent of instructor.

5376. Robotics – Introduction to Computer-Aided Manufacturing. Introduction to industrial robotics and numerically controlled machines. Economics of CAM. Applications of robotics in industry. Robot safety. Addition of senses and intelligence. Research in CAM Flexible manufacturing cells and systems. Hands-on laboratory work with

industrial robots and NC machines. Independent study and report on a specific robot application. *Prerequisites:* CSE 1341, PHYS 1403 and MATH 2343 or equivalent.

5383. Heating, Ventilating and Air Conditioning. Selection and design of basic refrigeration, air conditioning, and heating systems are treated. Load calculations, psychometrics, cooling coils, cooling towers, cryogenics, solar energy applications and special topics are included. *Prerequisites:* ME 2331 and ME 3332.

5386. Convection Heat Transfer. Advanced topics in forced convection heat transfer using analytical methods and boundary-layer analysis. Laminar and turbulent flow inside smooth tubes and over external surfaces. Convection processes in high-speed flows. *Prerequisite:* ME 3332 or equivalent.

5(1-4)90. Undergraduate Seminar. An opportunity for the advanced undergraduate student to undertake independent investigation, design and development. The project, and the supervising faculty, must be approved by the chairman of the department in which the student expects to receive the degree. Variable credit of one to four term hours.

5(1-4)9(1-5). Special Projects. Intensive study of a particular subject or design project not available in regular course offerings and under the supervision of a faculty member approved by the department chair. Variable credit of one to four term hours.

5/7342. Mechanical Engineering Aspects of Electronic Packaging. Thermal design of electronic packages and systems. Basics of conduction, convection (natural and forced), and radiation heat transfer. Pool boiling and flow boiling, extended surfaces, as applied to the design of heat exchangers and cold plates; and thermal interface resistance, as applied to the design of electronic packages. Single-phase and two-phase cooling, heat pipes, and thermoelectric coolers

5/7343, Electronic Packaging Materials: Processes, Properties and Testing. An overview of materials used in electronic packaging. Solderability, microscopic processes and alloy selection. Composites and applying conducting polymer-matrix composites, metal films, and vacuum processes. Encapsulation, temperature humidity bias testing and temperature cycle testing. Measurement of properties of materials in electronic packaging, thermal properties, physical properties and manufacturing properties, and materials selection.

5/7354. Total Quality Management in Manufacturing. Overall total quality management perspective for the design of quality management systems. Metrics for cycle time and defects, base-lining and benchmarking, and House of Quality approaches are examined. Also covered is the basic concept of managing product quality from inception to deployment. Topics include acquiring and stabilizing new production processes, data collection and analysis for improvement and decision making. Purchasing, process control, reliability are covered in detail. Taguchi and poka-yoke and other practices are examined as tools for implementing TQM.

5/7358 - Design of Electronic Packaging. Problems encountered in the mechanical design of electronics, particularly in the area of vibrations. Vibrations of simple electronic systems, component lead wire and solder joint vibration fatigue life, beam structures for electronic subassemblies, printed wiring boards and flat plates, snubbing and damping to increase PWB fatigue life, prevention of sinusoidal vibration failure, designing electronics for random vibration, acoustic noise effects on electronics, shock environments, design of electronic boxes, effects of manufacturing methods on reliability of electronics, and vibration testing.

5/7359. Analysis and Design of Optoelectronic Packaging. Overview of optical fiber interconnections in telephone networks, packaging for high-density optical back planes, selection of fiber technologies; semi-conductor laser and optical amplifier packaging, optical characteristics and requirements, electrical properties, mechanical properties, waveguide technologies, optical alignment and packaging approaches, passive device fabrication and packaging, array device packaging; hybrid technology for optoelectronic packaging, and flip-chip assembly for smart pixel arrays.

5/7360. Electronic Product Design and Reliability. Failures, failure modes, and failure mechanisms in electronic systems. Failure detection, electrical simulation, and environmental stress tests. Failure analysis: use of X-rays, thermal imaging/infrared microscopy, acoustical imaging, scanning laser acoustic microscopy, infrared spectroscopy, differential scanning calorimeter, thermo-mechanical analyzer, and other testing procedures. Solder joint reliability of balls grid array (BGA) assemblies, plastic ball grid array (PBGA) assemblies, flip-chip assemblies, chip-scale package (CSP) assemblies, and fine pitch, surface mount technology (SMT) assemblies will. Temperature as a reliability factor, an overview of high temperature electronics, the use of silicon devices at high temperatures, and selection of passive devices for use at high temperatures.

5/7363. Electronic Manufacturing Technology. An introduction to the electronics industry, electronic components, interconnections, printed wiring boards, and soldering and solderability. Automated assembly, including leaded component insertion and surface mount device placement. Packaging techniques such as wire bonding, flip chip, and TAB, electro-magnetic interference, electrostatic discharge prevention, testability and electronic stress screening. A variety of manufacturing systems will be discussed.

5/7368. Project and Risk Management. Specific concepts, techniques and tools for managing projects successfully. Network planning techniques, resource allocation, models for multi-project scheduling, methods of controlling costs, determining schedules and performance parameters. Risk management: hard analysis, risk analysis, risk control, and risk financing. Integrate risk assessment with managerial decision making. Examples and case studies.

CENTER FOR SPECIAL STUDIES

The Special Studies designation is used to accommodate academic programs and courses that do not typically fit within the departments of the School of Engineering. Included under this section are courses designed to enable students who are not concentrating in engineering or applied science to learn about the characteristics, capabilities and limitations of modern technology. Understanding of the machines and technical systems upon which contemporary society depends is of importance to students planning careers in business or the professions, or in the public sector.

The Courses (SS)

1099, 2099, 3099, 4099, 5099. Engineering Co-op Workterm. Each of these courses represents a term of industrial work activity in connection with the Engineering Cooperative Program. The courses are taken in numerical sequence and carry no credit. Students register for these courses in the same manner as other SMU courses except that no tuition is charged. Each course grade is determined by a written report by the student and from the scoring of the employer's evaluation form.

1101. Engineering and Beyond. This one-hour course is designed to assist first-year students in making an informed decision about their choice of major. Students experience each engineering department and the degrees offered through real-world examples of engineering.

3300. Technology and Public Policy. In this course, the effects of technology and public policy are studied by examining issues that involve business, engineering, social sciences and international relations. Selected technological areas such as communications, energy, computers and transportation are explored in detail to identify the problems that government and other institutions attempt to solve.

RESERVE OFFICERS' TRAINING CORPS

Air Force. Air Force ROTC courses are not offered on the SMU campus. SMU students who wish to earn appointments as commissioned officers in the

U.S. Air Force may participate in the Air Force general military course and professional officer course through the University of North Texas in Denton (UNT). Students who participate in the UNT Air Force ROTC program are responsible for their own travel and other physical arrangements. The Air Force ROTC program develops skills and provides education vital to the career officer. Active-duty Air Force personnel provide all instruction and program administration.

The program is open to all students. First-year students may enroll in the four-year program, and students with at least two undergraduate or graduate academic years remaining may apply for the two- or three-year program. Students who complete their program with at least a Bachelor's degree will be awarded commissions as U.S. Air Force officers.

Scholarships, available to qualified students in both four-year and two-year programs, provide full tuition, fees, textbook allowance, and a monthly tax-free \$100 subsistence allowance. National competition is based on SAT or ACT results, Air Force Officer Qualifying Test results or college academic record, and extracurricular and athletic activities. Uniforms and textbooks for AFROTC courses are issued at no cost to cadets. Students with at least six months' active military service may be granted waivers on a portion of the general military course.

UNT's Air Force ROTC courses are described under "Aerospace Studies" in the Dedman College section of this catalog. Further program information and application procedures may be obtained by contacting AFROTC-Det 835, P.O. Box 305400, Denton TX 76203-5400; 940-565-2074; afrotc@unt.edu.

Army. Army ROTC courses are not offered on the SMU campus. Students can participate in the Army ROTC program at the University of Texas at Arlington by enrolling as they enroll for other SMU courses. Further program information and application procedures may be obtained by contacting UTA Department of Military Science at 817-272-2248. Students who participate in the UTA Army ROTC program are responsible for their own travel and other physical arrangements.

Army ROTC offers students the opportunity to graduate as officers and serve in the U.S. Army, the Army National Guard, or the U.S. Army Reserve. Army ROTC scholarships are awarded on a competitive basis. Each scholarship pays for tuition and required educational fees and provides a specified amount for textbooks, supplies, and equipment. Each scholarship also includes a subsistence allowance of up to \$1,000 for every year the scholarship is in effect.

Students can participate in the Army ROTC on-campus program by enrolling as they enroll for other SMU courses. Army ROTC courses are listed under ROTC in the Schedule of Classes and permission to enroll must be obtained from Lisobel Bernal at Lbernal@enr.smu.edu or 214-768-3039.