Course Description Information

Course Numbers

In fall 2004, West Texas A&M University changed from a three-digit numbering scheme to a four-digit numbering system, known as the Texas Common Course Numbering System (TCCNS). The four-digit numbers are identified as:

- First digit identifies the level (1 = freshman, 2 = sophomore, 3 = junior, 4 = senior, 5 = stacked undergraduate/masters, 6 = masters, 7 = masters/doctoral, 8 = doctoral);
- Second digit identifies the credit-hour value; and
- Third and fourth digits establish the course sequence or type of course.

0001–0999—developmental courses, do not count toward degree.
1000–2999—primarily freshman and sophomore courses.
3000–4999—open to students who have completed at least 30 hours and any prerequisite.
5000–5999—graduate level stacked with undergraduate.
6000–6999—master’s level.
7000–7999—master’s/doctoral level.
8000–8999—doctoral students only.

NOTE: Students who have taken undergraduate “stacked” courses at WTAMU that have a graduate component cannot take the graduate course if they have already received credit for the corresponding undergraduate course.

Course Prefix

The course prefix indicates the assigned WTAMU course abbreviation and course number; e.g., ACCT 2301.

Course Abbreviation and Number in Brackets

A course abbreviation (prefix) and number in brackets indicates the corresponding common course number, established by the Texas Higher Education Coordinating Board, if the common course number and/or prefix is different from the WTAMU number; e.g., [GOVT 1310].

Field-of-Study Curriculum (FOSC)

Field-of-study curriculum is a set of courses that satisfy lower-division requirements for a bachelor’s degree in a specific academic area. All public four-year institutions of higher education are required to accept Texas Higher Education Coordinating Board-approved field-of-study courses. Field-of-study curriculum is indicated with the abbreviation “FOSC” within the brackets indicating the common course number of a course; e.g., [MUSI 1181, 1182; FOSC].

Numbers in Parentheses

Numbers in parentheses indicate semester credit hours, lecture clock hours per week and lab clock hours per week; e.g., (3 3 0) indicates three semester credit hours, three clock hours of lecture per week and zero clock hours of lab per week.

ACCT—Accounting

(Offered through the Department of Accounting, Economics and Finance.)

ACCT 2301 Principles of Accounting I. (3 3 0) Completing an accounting cycle for sole proprietorships, both service and retail; analyzing balance sheet items—cash, receivables, inventory, long-term assets and current liabilities; accounting for partnership equity. Course fee $12.

ACCT 2302 Principles of Accounting II. (3 3 0) Prerequisite: 2301. Corporations: organization, equity, dividends, bonds and investments; cash flows, financial statement analysis; job order and process cost systems, cost behavior and analysis; budgeting; standards, differential analysis; capital investment analysis. Course fee $12.

ACCT 3311 Federal Tax Accounting I. (3 3 0) Prerequisite: 2302. Practice and procedure in determination of income tax liability of individuals. Course fee 15.

ACCT 3331 Intermediate Accounting I. (3 3 0) Prerequisite: 2301, 2302. Financial statement format, accounting cycle review; cash and temporary investments; inventories; noncurrent investments; fixed assets.

ACCT 3332 Intermediate Accounting II. (3 3 0) Prerequisite: 3331. Current liabilities; long-term liabilities; capital stock; retained earnings; statement analysis.


ACCT 3375 Accounting Information Systems. (3 3 0) Prerequisite: 3331, recommended IDM 3330, demonstrated computer competence or concurrent enrollment. Using technology and computing in specific business and accounting contexts, using and controlling accounting information systems.

ACCT 4096 Supervised Readings in Accounting. (1-6 0-6 0) Prerequisite: 12 semester hours of advanced work in accounting, junior standing, approval of department head. Current problems in accounting through reading of periodicals, government publications and books which have had a profound influence on American business philosophy.

ACCT 4311 Federal Tax Accounting II. (3 3 0) Prerequisite: 3311, junior standing. Income tax reporting requirements with respect to property transactions and corporations; analysis and research of tax questions.

ACCT 4331 Taxation of Business Entities. (3 3 0) Prerequisite: 3311. Taxation of partnerships, S Corporations, trusts and estates, and federal estate and gift taxes. Analysis and research of tax questions.

ACCT 4332 Advanced Accounting. (3 3 0) Prerequisite or concurrent enrollment: 3332. Principles and techniques of consolidated statements; foreign exchange; governmental; actuarial science.

ACCT 4334 Fundamentals of Petroleum Accounting. (3 3 0) Prerequisite: 3332. Generally accepted accounting practices in petroleum accounting, including successful efforts, full cost, tax, joint interest, conveyances, international aspects.

ACCT 4351 Auditing. (3 3 0) Prerequisite: 3332 or concurrent enrollment. Ethics and standards, internal control, and auditing techniques and objectives. Course fee $10.

ACCT 4352 Advanced Auditing. (3 3 0) Prerequisite: 4351. Procedures with emphasis on use of statistical computer-based methods.

ACCT 4361 Advanced Accounting Theory. (3 3 0) Prerequisite: senior standing. Development of accounting theory;
### Course Descriptions

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 4371</td>
<td>Accounting Law</td>
<td>(3 0 0) Prerequisite: junior standing, Law regarding the Bankruptcy Act, the Federal Corrupt Practice Act, accountant’s legal liability, product liability, employer-employee laws, Uniform Commercial Code and other topics.</td>
<td>Advanced cost and managerial topics relating to planning, control and decision making, including flexible budgeting, variable costing, differential cost analysis, decision making with uncertainty, profitability analysis, and cost accumulation and analysis relating to activity-based costing and just-in-time systems.</td>
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<tr>
<td>ACCT 4372</td>
<td>Advanced Cost Accounting</td>
<td>(3 0 0) Prerequisite: 3371.</td>
<td>Advanced cost and managerial topics relating to planning, control and decision making, including flexible budgeting, variable costing, differential cost analysis, decision making with uncertainty, profitability analysis, and cost accumulation and analysis relating to activity-based costing and just-in-time systems.</td>
</tr>
<tr>
<td>ACCT 4391</td>
<td>Governmental and Non-Profit Accounting</td>
<td>(3 0 0) Prerequisite: 2302. Fund and government-wide accounting and reporting for governmental, proprietary and fiduciary funds; accounting and reporting for both public and private non-profit entities.</td>
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<tr>
<td>ACCT 4398</td>
<td>Internship in Accounting</td>
<td>(3 0 0) Prerequisite: junior standing, approval of department head. On-the-job experience in a phase of the accounting profession. Must be first-time experience on a full-time basis.</td>
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<td>ACCT 5311</td>
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<td>Taxation of Business Entities</td>
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<td>Advanced Accounting</td>
<td>(3 0 0) Prerequisite: 3332 or concurrent enrollment. Principles and techniques of consolidated statements; foreign exchange; governmental; actuarial science.</td>
<td>Advanced cost and managerial topics relating to planning, control and decision making, including flexible budgeting, variable costing, differential cost analysis, decision making with uncertainty, profitability analysis, and cost accumulation and analysis relating to activity-based costing and just-in-time systems.</td>
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<tr>
<td>ACCT 5334</td>
<td>Fundamentals of Petroleum Accounting</td>
<td>(3 0 0) Prerequisite: 3332. Fund and government-wide accounting in petroleum accounting, including successful efforts, full cost, tax, joint interest, conveyances, international aspects.</td>
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<td>ACCT 5351</td>
<td>Auditing</td>
<td>(3 0 0) Prerequisite: 3332 or concurrent enrollment. Ethics and standards, internal control, and auditing techniques and objectives. Course fee $10.</td>
<td>Auditing.</td>
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<td>ACCT 5361</td>
<td>Advanced Accounting Theory</td>
<td>(3 0 0) Prerequisite: 3331 and 3332. Development of accounting theory; AICPA research bulletins and opinions; pronouncements of other authoritative bodies.</td>
<td>Advanced cost and managerial topics relating to planning, control and decision making, including flexible budgeting, variable costing, differential cost analysis, decision making with uncertainty, profitability analysis, and cost accumulation, analysis relating to activity-based costing and just-in-time systems.</td>
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<td>ACCT 5391</td>
<td>Governmental and Non-Profit Accounting</td>
<td>(3 0 0) Prerequisite: 2302. Fund and government-wide accounting and reporting for local governments; accounting and reporting for health care providers, college and universities, and voluntary health and welfare organizations.</td>
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</tr>
<tr>
<td>ACCT 6092</td>
<td>Special Topics</td>
<td>(1-3 0 0) Prerequisite: 12 hours of accounting. Topics of special graduate interest. May be repeated for credit when topics change. Course fee $10.</td>
<td>Special Topics.</td>
</tr>
<tr>
<td>ACCT 6096</td>
<td>Reading and Conference</td>
<td>(1-3 0 3 0) Prerequisite: approval of department head. Directed reading and reporting accounting related to student’s sphere of concentration.</td>
<td>Reading and Conference.</td>
</tr>
<tr>
<td>ACCT 6304</td>
<td>Accounting for Decision Making</td>
<td>(3 0 0) Prerequisite: 6320 or 12 hours upper-division courses in accounting and/or business administration. Preparation and use of budget with respect to measuring performance of the firm;</td>
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<tr>
<td>ACCT 6306</td>
<td>Seminar in Accounting Theory</td>
<td>(3 0 0) Prerequisite: 18 semester hours of accounting. Financial accounting theory; current pronouncements and theory; assigned readings of selected literature; oral and written reports.</td>
<td>Seminar in Accounting Theory. 18 semester hours of accounting. Financial accounting theory; current pronouncements and theory; assigned readings of selected literature; oral and written reports.</td>
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<tr>
<td>ACCT 6307</td>
<td>Seminar in Accounting Systems</td>
<td>(3 0 0) Prerequisite: 18 semester hours of accounting, including ACCT 3375. Analysis of design and installation of professional and private accounting systems from the standpoint of consultants. Emphasis on survey techniques, budgets, internal control, procedures, manuals, operating controls and reporting objectives.</td>
<td>Seminar in Accounting Systems. Analysis of design and installation of professional and private accounting systems from the standpoint of consultants. Emphasis on survey techniques, budgets, internal control, procedures, manuals, operating controls and reporting objectives.</td>
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<tr>
<td>ACCT 6310</td>
<td>Seminar in Auditing</td>
<td>(3 0 0) Prerequisite: 15 semester hours of accounting. Comprehensive analysis of theory and practice of independent auditing with emphasis on real-world applications and current topics.</td>
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<tr>
<td>ACCT 6320</td>
<td>Seminar in Professional Accounting</td>
<td>(3 0 0) Prerequisite: 24 completed or concurrent accounting hours and consent of instructor. Development and refinement of knowledge of auditing and attestations, financial accounting and reporting, taxation, ethics, professional responsibilities, business law, and the business environment and concepts to assist students in preparing for the CPA exam.</td>
<td>Seminar in Professional Accounting. 24 completed or concurrent accounting hours and consent of instructor. Development and refinement of knowledge of auditing and attestations, financial accounting and reporting, taxation, ethics, professional responsibilities, business law, and the business environment and concepts to assist students in preparing for the CPA exam.</td>
</tr>
<tr>
<td>ACCT 6321</td>
<td>Ethical Solutions in Professional Accounting</td>
<td>(3 0 0) Prerequisite: 18 semester hours of accounting. Theory and practice of effective ethical decision-making approaches, using models from accounting situations. Students practice what they learn with a variety of in-class activities, written assignments and oral presentations where they will discuss contemporary ethical issues facing the accounting profession. Teamwork and use of interpersonal skills are included.</td>
<td>Ethical Solutions in Professional Accounting. 18 semester hours of accounting. Theory and practice of effective ethical decision-making approaches, using models from accounting situations. Students practice what they learn with a variety of in-class activities, written assignments and oral presentations where they will discuss contemporary ethical issues facing the accounting profession. Teamwork and use of interpersonal skills are included.</td>
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<tr>
<td>ACCT 6398</td>
<td>Internship in Accounting</td>
<td>(3 0 0) Prerequisite: graduate standing, approval of department head. On-the-job experience in a phase of the accounting profession. Must be first-time experience on a full-time basis.</td>
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</table>
AGBE—Agricultural Business and Economics

(Offered through the Department of Agricultural Sciences.)

AGBE 2317 Fundamentals of Agricultural Economics. [AGRI 2317] (3 3 0) Prerequisite: minimum of 15 semester hours. Introduction to fundamental economic principles and their application to problems of agricultural firms. (3 3 0)

AGBE 2375 Computer Records for Agribusiness. (3 3 0) Application of computer software to the development, maintenance and analysis of agricultural business records. Utilization of personal income tax software in income tax planning, management and reporting. Development and analysis of production, marketing and efficiency records with specialized software. (3 3 0)

AGBE 3301 Farm and Ranch Management. (3 3 0) Prerequisite: 2317 or six semester hours of economics. Application of economic and business principles to organization and operation of farms and ranches. (3 3 0)

AGBE 3302 Marketing of Agricultural Products. (3 3 0) Prerequisite: 2317 or six semester hours of economics. Problems of marketing grains, cotton, vegetables, livestock and livestock products. (3 3 0)

AGBE 3304 Agricultural Business Management. (3 3 0) Prerequisite: junior standing. Organizational structure and management principles of agricultural businesses and cooperatives. (3 3 0)

AGBE 3320 Quantitative Analysis in Agricultural and Environmental Economics. (3 3 0) Prerequisite: 2317 or six hours of economics, and AGRI 3318. Econometric and mathematical methods used to solve problems in agricultural and environmental economics relating to decision making, marginal analysis, production and consumption functions, optimization models, maximization and minimization principles, firm and market equilibrium, uncertainty, and static and dynamic models. Course fee $15. (3 3 0)

AGBE 4097 Undergraduate Research. (2-4 0 0) Prerequisite: consent of instructor. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work. (2 4 0)

AGBE 4098 Management Training in Agribusiness. (1-6 0 0) Prerequisite: 2317, 3301 and consent of instructor. Supervised work and training in management of selected agribusinesses, farms or ranches. Practical working knowledge combined with training received through conference and supervision from managers of cooperating business. A report will be submitted to the instructor. (1-6 0)

AGBE 4301 Advanced Farm and Ranch Management. (3 3 0) Prerequisite: 2317, 3301, ACCT 2301. Acquisition and use of land, capital and other production inputs under risks and uncertainty. Utilization of computers in management of farms, ranches and agribusiness firms. (3 3 0)

AGBE 4310 Agricultural Policy and Trade. (3 3 0) Prerequisite: 2317 or six semester hours of economics. Development and implementation of public policy in agriculture; implications of international competition and trade; and development and interpretation of argument in policy development. (3 3 0)

AGBE 4311 Agricultural Land Use and Appraisal. (3 3 0) Prerequisite: 2317, 3301, ACCT 2301 or consent of instructor. Principles and practices applied to use and appraisal of agricultural lands. (3 3 0)

AGBE 4312 Agricultural Marketing Analysis. (3 3 0) Prerequisite: 2317, 3302, 3318 or nine semester hours of approved economics. Development and analysis of statistical models essential in decision-making processes associated with marketing of agricultural products; individual commodity problems. (3 3 0)

AGBE 4313 Agricultural Finance. (3 3 0) Prerequisite: 2317, ACCT 2301, 2302 or consent of instructor. Characteristics of agriculture in relation to financing costs, risks and returns; organization and practices of agricultural credit institutions. (3 3 0)

AGBE 4316 Food and Fiber Marketing. (3 3 0) Prerequisite: 3302 or MKT 3340. Structural and functional dimensions and dynamics of the U.S. food and fiber marketing industry. Food and fiber marketing management, including dynamic social, technological, economic and political environments facing food and fiber marketing firms. (3 3 0)

AGBE 4328 Futures and Options. (3 3 0) Prerequisite: 2317, 3302 or consent of instructor. Theory and practical trading applications for agricultural, financial, and petroleum futures and options markets. Same as FIN 4328. (3 3 0)

AGBE 4354 Speculation in Agricultural Commodity Futures Markets. (3 3 0) Prerequisite: 3302, 4328 or consent of instructor. Use of commodity futures markets for speculation in agricultural products. (3 3 0)

AGBE 4355 Environmental and Natural Resource Economics. (3 3 0) Prerequisite: 2317. Economic issues involved in development and maintenance of the environment; problems of resource allocation, social cost, pollution and policy issues involved in these areas. Competing uses for natural resources, including agricultural, industrial, domestic and municipal, will be evaluated along with current environmental issues. Same as ECON 4355. (3 3 0)

AGBE 4365 Advanced Agribusiness Management. (3 3 0) Prerequisite: 3304, senior standing or consent of instructor. Examination of organization, management and operation of agricultural business with special reference to the application of managerial principles for effective decision making in a dynamic environment. (3 3 0)

AGBE 5301 Advanced Farm and Ranch Management. (3 3 0) Prerequisite: graduate standing. Acquisition and use of land, capital and other production inputs under risks and uncertainty. Utilization of the computer in management of farms, ranches and agribusiness firms. (3 3 0)

AGBE 5310 Advanced Agricultural Policy and Trade. (3 3 0) Prerequisite: 2317 or six semester hours of economics. Development and implementation of public policy in agriculture; implications of international competition and trade; and development and interpretation of argument in policy development. (3 3 0)

AGBE 5312 Advanced Agricultural Marketing Analysis. (3 3 0) Prerequisite: 2317, 3302 or six semester hours of approved economics. Analysis of statistical models essential in decision-making processes associated with marketing of agricultural products; individual commodity problems. (3 3 0)

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AGBE 5328 Futures and Options. (3 3 0) Prerequisite: 2317, 3302 or consent of instructor. Theory and practical trading applications for agricultural, financial, and petroleum futures and options markets. Same as FIN 5328. (3 3 0)
AGBE 5354 Advanced Speculation in Agricultural Commodity Futures Markets. (3 3 0) Prerequisite: 3302, 4328 or consent of instructor. Use of commodity futures for speculation in agricultural products.

AGBE 5355 Environmental and Natural Resource Economics. (3 3 0) Prerequisite: 2317. Economic issues involved in development and maintenance of the environment; problems of resource allocation, social cost, pollution and policy issues. Competing uses for natural resources, including agricultural, industrial, domestic and municipal, will be evaluated along with current environmental issues. Same as ECON 5355.

AGBE 6095 Problems and Research. (1-6 0 0) Investigation of current economic problems facing segments of the agricultural industry. May be repeated for credit.

AGBE 6098 Advanced Management Internship. (2-6 0 0) Supervised work and management training in a selected agribusiness, farm or ranch. A detailed business analysis will be made and written report prepared.

AGBE 6394 Directed Studies in Agricultural Business and Economics. (3 3 0) Prerequisite: consent of instructor. Readings and directed individual studies in various topic areas that specifically relate to the graduate student's interests and needs. May be repeated with approval of the department head.

AGBE 7092 Special Topics. (1-6 0 0-12) Recent advances and current topics in agricultural business and economics. May be repeated once for credit. Course fee $10.

AGBE 7301 Organization, Operation and Management of Agribusiness. (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Structure, operation and management of the agribusiness firm. Integration of personnel management, finance, asset management, and operational structure into the planning, production and marketing of the firm's products.

AGBE 7302 Policy, Trade and the Agribusiness Firm. (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Effect of monetary and fiscal policy on the growth and operation of the agribusiness firm.

AGBE 7304 Advanced Management Techniques. (3 3 0) Prerequisite: 3301 or consent of instructor. Economic principles and techniques applied to decision-making processes required in management of farms, ranches and agricultural management, marketing, financing and policy.

AGBE 7305 Agricultural Production Economics. (3 3 0) Resource allocation, production selection, scale of operation of agricultural firms, including risk and uncertainty associated with agricultural production.

AGBE 7313 Financial Analysis and Management. (3 3 0) Prerequisite: 4313 or 5313, or consent of instructor. Application of finance and credit to agricultural business situations. Decision-making techniques related to alternative uses of limited capital in agriculturally related business.

AGBE 7320 Econometrics. (3 3 0) Prerequisite: Nine hours of graduate courses in agricultural economics, economics or statistics. Introduction to econometric analysis. Application of econometric analysis techniques to problems in agriculture and business. Includes multivariate distributions, maximum likelihood, simultaneous equations systems, nonlinear regression and nonlinear optimization. Same as IDM 6320. Course fee $15.

AGBE 7330 Agricultural Risk Management. (3 3 0) Current issues and solutions to associated risks present in production agriculture. Market, production, financial, legal and environmental risk.

AGBE 7365 Management of Agricultural Business Firms. (3 3 0) Prerequisite: 4365 or consent of instructor. Strategic planning, organization, marketing and analysis of agribusiness firms, including logistics, sales and human resource management. Summer II.

AGBE 8095 Directed Studies in Agricultural Business and Economics. (1-6 0 0) Prerequisite: approval of instructor and program director. Readings and directed individual studies in various topic areas that specifically relate to the graduate student's needs and interests. May be repeated for up to six hours credit. Allowed for elective credit only.

AGRI—Agriculture

(Offered through the Department of Agricultural Sciences.)

AGRI 1329 Food Science. [AGRI 1329] (3 3 0) Food types, composition, nutritional quality, processing and preservation, including Federal Food and Drug Regulations. Nutrient classification emphasized.

AGRI 2371 Introduction to Agriculture Education. (3 3 0) An introduction to the field of agriculture science education at the secondary school level with an in-depth examination of ag science curricula in Texas schools.

AGRI 2372 Welding and Metalwork. (3 1 4) Basic principles of welding and metalwork, including an introduction to basic metallurgy, cutting and joining metals, use of oxyacetylene, electric arc welding, and plasma arc welding. Emphasis on understanding properties and theory of welding of various metals. Course fee $125.

AGRI 3301 Genetics. (3 3 0) Principles of genetics to include historical development, fundamental concepts, and contemporary advancements as applied to animal, plant, microbial and human heredity. Cannot receive credit for both AGRI 3301 and BIOL 3301. Same as BIOL 3301.

AGRI 3303 Agricultural Agencies in the United States. (3 3 0) An in-depth study of the goals, mission and purpose of agricultural agencies, including the U.S. Department of Agriculture and the cooperative extension service.

AGRI 3304 Mechanical Systems Management in Agriculture. (3 1 4) Basic principles of internal combustion engine theory and operation with emphasis on small gas power plants for agricultural and non-agricultural systems. Course fee $75.

AGRI 3306 Principles of Agricultural Leadership. (3 3 0) Application of leadership principles with emphasis on the national FFA organization, interpersonal and personal skills, dynamics of organizational structure, and institutional and agency leadership.

AGRI 3318 Agricultural Statistics. (3 3 0) Prerequisite: MATH 1314 or 1324; demonstrated computer competency. Principles and procedures involved in analysis of agricultural data, including indices of central tendency and dispersion, probability, sampling, significant tests, concepts of experimental design, one-way and multi-way analysis of variance, and linear and multiple regression techniques.

AGRI 4097 Undergraduate Research. (2-4 0 0) Prerequisite: consent of department head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work. May be repeated for a maximum of four credit hours.

AGRI 4098 Agricultural Internship. (1-6 0 0) Prerequisite: consent of department head. Supervised internship in an approved discipline of agricultural education. May be repeated for a maximum of six credit hours.

AGRI 4103 Senior Seminar. (1 1 0) Prerequisite: senior standing. Group discussion and oral and written presentations on current topics in agriculture. Career orientation and development of professional résumé.
AGRI 4302 Agricultural Buildings and Environmental Control. (3 1 4) Determination of agricultural building requirements, materials, design and construction. Includes construction, tools and equipment, framing, environmental control and utilities. Course fee $100.

AGRI 4304 Transfer of Agricultural Technology. (3 3 0) Examination process by which professional agriculturists influence the introduction, adoption and diffusion of technological change. Spring.

AGRI 4305 Conducting Supervised Agricultural Experience Programs. (3 2 2) Prerequisite: AGRI 2371 or consent of instructor. Designed for students to gain an understanding of competencies needed to successfully manage and supervise agricultural experience programs conducted through agricultural science FFA programs. Course fee $30.

AGRI 4310 Global Agriculture and the Environment. (3 3 0) Prerequisite: PSES 3411 or BIOL 3418 or consent of instructor. Discussion of agriculture systems and practices in relation to how they affect environmental quality from local to global scales. Same as ENVR 4310. Course fee $15.

AGRI 4320 Agrosecurity and Agricultural Disaster Preparedness. (3 3 0) Prerequisite: approval from Department of Agricultural Sciences. Prepare students to evaluate vulnerabilities in agricultural operations and to modify or create plans to reduce risk of security breach. Introduction to the National Incident Management System. Students will evaluate and develop primary response plans and provide persuasive justification for adoption. Guest lecturers will complement course lectures and student exercises.

AGRI 5310 Global Agriculture and the Environment. (3 3 0) Prerequisite: PSES 3411 or BIOL 3418 or consent of instructor. Discussion of agriculture systems and practices in relation to how they affect environmental quality from local to global scales. Same as ENVR 5310. Fall.

AGRI 5320 Agrosecurity and Agricultural Disaster Preparedness. (3 3 0) Prerequisite: approval from Department of Agricultural Sciences. Prepare students to evaluate vulnerabilities in agricultural operations and to modify or create plans to reduce risk of security breach. Introduction to the National Incident Management System. Students will evaluate and develop primary response plans and provide persuasive justification for adoption. Guest lecturers will complement course lectures and student exercises.

AGRI 6111 Seminar. (1 1 0) Review and analysis of current professional literature. Preparation of written literature review, oral presentations and discussions. May be repeated for up to three credit hours.

AGRI 6301 Thesis. (3 0 0)

AGRI 6302 Thesis. (3 0 0)

AGRI 6316 Agricultural Statistical Analysis I. (3 3 0) Sampling techniques, univariate analysis, analysis of variance and other basic statistical methods. Emphasis on application and interpretation.

AGRI 7092 Special Projects. (1-6 0 0-12) Approval of instructor. Recent advances and current topics in agriculture. Repeatable for up to six credit hours.

AGRI 7101 Doctoral Leadership. (1 0 0) Prerequisite: doctoral student or consent of instructor and program director. Analysis of significant research with oral presentations and discussions. Development of leaders for agriculture. May be repeated for up to three semester credit hours.

AGRI 7301 Advanced Agricultural Statistics. (3 0 0) Prerequisite: 6316, 7318 or equivalent; doctoral student or approval of instructor and program director. Advanced statistical methods for design and analyses of research data from both traditional and non-traditional data sets. Course fee $30.

AGRI 7302 Agricultural Perspectives on Environmental Risk. (3 2 2) Prerequisite: 7301; doctoral student or approval of instructor and program director. Contemporary approaches to the assessment of environmental and human health risks from agricultural sources.

AGRI 7318 Agricultural Statistical Analysis II. (3 3 0) Prerequisite: 6316 or consent of instructor. Simple and multiple regression/correlation, multivariate analysis of variance, and experimental design. Emphasis on application and interpretation.

AGRI 7375 Systems Agriculture I. (3 3 0) Prerequisite: doctoral student standing or approval of instructor and program director. A multi-disciplinary introduction to key issues faced by agriculture with emphasis on developing a systems approach to problem solution.

AGRI 7376 Biotechnology in Agriculture. (3 3 0) Technological, economic and social issues surrounding the use of biotechnology in the various agricultural sectors, including plant and animal production, waste management, food safety and environmental engineering.

AGRI 7381 Systems Methods. (3 3 0) Prerequisite: approval of instructor and program director. Use of tools to facilitate systems thinking and modeling. Multi-disciplinary approach of systems modeling for agriculture. Basic concepts in modeling, Properties of models. Types of models including deterministic, stochastic, process, physical, etc. Modeling parameters and limitations. Introduction to stocks (or reservoirs), flows, converters, connectors, ghosts, etc. Philosophy of model development and use. Spring of odd years.

AGRI 8000 Doctoral Dissertation. (1-6 0 0) Prerequisite: consent of department head; doctoral students only. Doctoral dissertation. Doctoral students only.

AGRI 8070 Graduate Experiences in Systems Agriculture. (1-3 0 1-3) Prerequisite: consent of instructor. Graduate experience in systems agriculture to be taken under supervision of approved faculty in a discipline different than the primary emphasis of student to develop broad perspective of agriculture. Approval by student's major adviser, instructor and program director is required. May be repeated for a total of six credit hours.

AGRI 8095 Directed Studies in Agriculture. (1-6 0 0) Prerequisite: approval of instructor and program director. Readings and directed individual studies in various topic areas that specifically relate to the graduate student's needs and interests. May be repeated for up to six hours credit. Allowed for elective credit only.

AGRI 8097 Doctoral Research. (1-6 0 0) Prerequisite: consent of department head; doctoral students only. Investigation of a topic requiring a multi-disciplinary solution. May be repeated for credit.

AGRI 8303 Systems Agriculture II. (3 3 0) Prerequisite: 7375, 7376, 8301, 8302; doctoral students only. An interactive, team-taught, multi-disciplinary capstone course taken near the end of the Ph.D. program, focusing on development of useful solutions to problems in production agriculture.
### ANSC—Animal Science

(Offered through the Department of Agricultural Sciences.)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisite(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANSC 1176</td>
<td>Horsemanship I</td>
<td>(1 0 2)</td>
<td>Review of fundamental horse safety and horsemanship to include handling, grooming, equipment, riding western or English, and the relationship of riding to physical and mental well-being. May be repeated for credit with instructor approval for a maximum of five credit hours. Same as PHED 1176. Course fee $65.</td>
</tr>
<tr>
<td>ANSC 1274</td>
<td>Western Horsemanship</td>
<td>(2 0 4)</td>
<td>Prerequisite: ANSC/PHED 1176 or consent of instructor. Development of balanced seat, hands and posture at natural gait of the horse. Emphasis on control of the horse through primary and secondary aids. Welfare and communication considerations for effective horse-human relationships. Relationship of riding to physical and mental well-being. Same as PHED 1274. Course fee $80.</td>
</tr>
<tr>
<td>ANSC 1275</td>
<td>English Riding and Jumping I</td>
<td>(2 0 4)</td>
<td>Prerequisite: 1176 or consent of instructor. Introduction to principles of forward seat riding with emphasis on control and use of primary and secondary aids. Use of cavalletti and introduction to jumping. Safety considerations for jumping. Same as PHED 1275. Course fee $80.</td>
</tr>
<tr>
<td>ANSC 1319</td>
<td>Principles of Animal Science</td>
<td>(3 2 2)</td>
<td>Prerequisite: Introduction to the livestock industry and application of genetics, physiology, endocrinology, meat science and nutrition to breeding, selection, feeding and management of farm animals. Course fee $12.</td>
</tr>
<tr>
<td>ANSC 2074</td>
<td>Directed Studies</td>
<td>(1-3 0 0)</td>
<td>Individual study designed to meet needs and interests of the student.</td>
</tr>
<tr>
<td>ANSC 2276</td>
<td>English Riding and Jumping II</td>
<td>(2 0 4)</td>
<td>Prerequisite: 1275 or consent of instructor. Development of principles of English riding with emphasis on primary and secondary aids. Fence work, course designing, show-ring techniques and cross-country jumping. Safety considerations for advanced jumping activities. Course fee $70.</td>
</tr>
<tr>
<td>ANSC 2279</td>
<td>Introduction to Hippo Therapy</td>
<td>(2 1 2)</td>
<td>Prerequisite: Overview of hippo therapy (equine-assisted therapy) programs, including facility, personnel and animal requirements. Requirements for personnel and horse-training program certification. Application of a hippo-therapy program. Course fee $10.</td>
</tr>
<tr>
<td>ANSC 2300</td>
<td>Animal and Product Evaluation</td>
<td>(3 1 4)</td>
<td>Prerequisite: Critical examination of the effects of genetics and environment on the phenotype and desirability of animals and animal products with emphasis on development of critical-thinking, problem-solving and written- and oral-communication skills.</td>
</tr>
<tr>
<td>ANSC 2371</td>
<td>Anatomy and Physiology of Domestic Farm Animals</td>
<td>(3 2 2)</td>
<td>Prerequisite: 1319. Anatomy and physiology of domestic livestock relevant to commercial production agriculture. Spring. Course fee $50.</td>
</tr>
<tr>
<td>ANSC 2374</td>
<td>Equine Industry and Care of Horses</td>
<td>(3 2 2)</td>
<td>Prerequisite: Review of history, breeds, careers and all segments of the horse industry. Overview of equine anatomy and physiology, including feet and legs. Acceptable management procedures, welfare issues, equine health, and nutritional and reproductive management. Overview of facility design. Course fee $40.</td>
</tr>
<tr>
<td>ANSC 2375</td>
<td>Selection and Evaluation of Horses</td>
<td>(3 1 4)</td>
<td>Prerequisite: Influence of heredity, conformation, training and environmental effects on performance. Detailed evaluation of athletic performance and conformation as it relates to function, and criteria used for evaluation and selection of breeding, race and show animals. Emphasis on developing critical-thinking and oral-presentation skills. Course fee $35.</td>
</tr>
<tr>
<td>ANSC 2376</td>
<td>Meat Animal and Carcass Evaluation</td>
<td>(3 2 2)</td>
<td>Prerequisite: 1319 or consent of instructor. Consideration of factors involved in classifying, grading, and evaluating meat animals and beef, pork and lamb carcasses. Course fee $15.</td>
</tr>
<tr>
<td>ANSC 2377</td>
<td>Equine Behavior Modification</td>
<td>(3 1 4)</td>
<td>Prerequisite: Review of principles of behavior, learning and behavior modification. Practicum on proper techniques and procedures for routine handling, training and presentation of horses. Preparation and training of horses for handling and care of hooves. Course fee $80.</td>
</tr>
<tr>
<td>ANSC 3074</td>
<td>Independent Studies in Livestock Evaluation and Selection</td>
<td>(3-0 6)</td>
<td>Prerequisite: Visual evaluation of traits pertaining to selection of livestock for the breeding herd and for slaughter. Emphasis on use of performance records and terminology related to selection. Students from this course will be chosen to participate in collegiate livestock-judging contests.</td>
</tr>
<tr>
<td>ANSC 3075</td>
<td>Applied Animal Nutrition</td>
<td>(3 3 0)</td>
<td>Prerequisite: 1319. Nutritional functions of water, protein, carbohydrates, fats, minerals and vitamins, and their digestion, absorption and excretion in livestock. Characteristics of feedstuffs and processing, feeding of farm animals, nutritional requirements, and principles of diet evaluation and formulation. Not for animal science majors. Will not qualify as prerequisite for 3375.</td>
</tr>
<tr>
<td>ANSC 3317</td>
<td>Meat Science</td>
<td>(3 2 2)</td>
<td>Prerequisite: 1319 or consent of instructor. Introduction to the value of meat and meat products. Harvest, fabrication and anatomy of beef, lamb and pork carcasses, and the curing of meat products. Animal by-products and its utilization. Course fee $15.</td>
</tr>
<tr>
<td>ANSC 3340</td>
<td>Reproductive Physiology</td>
<td>(3 2 2)</td>
<td>Prerequisite: 1319 or BIOL 2401 or consent of instructor. Anatomy and physiology of reproduction in mammals. Includes hormones, reproductive communications, cycles, spermatogenesis, folliculogenesis, oogenesis, ovulation, gestation, parturition, lactation and reproductive management techniques. Same as BIOL 3340. Course fee $12.</td>
</tr>
<tr>
<td>ANSC 3355</td>
<td>Animal Breeding</td>
<td>(3 0 6)</td>
<td>Prerequisite or concurrent enrollment: AGRI 3301. Principles of inheritance, breeding systems and selection and their application to domestic species.</td>
</tr>
<tr>
<td>ANSC 3374</td>
<td>Principles of Nutrition</td>
<td>(3 0 6)</td>
<td>Prerequisite: 1319 or consent of instructor. In-depth study of function, digestion, absorption, metabolism and excretion of nutrients. Anatomy and physiology of the gastrointestinal tract and related organs. Introduction to nutrient requirements for maintenance, growth and performance. Same as SES 3374.</td>
</tr>
<tr>
<td>ANSC 3375</td>
<td>Feeds and Feeding</td>
<td>(3 2 2)</td>
<td>Prerequisite: 3374 or consent of instructor. Characteristics of feedstuffs used in livestock enterprises. Nutrition requirements of livestock. Manual and computer diet formulation; and nutritional management of beef and dairy cattle, sheep, goats, swine, horses, poultry and other animals. Methods of grain, protein supplement, and forage evaluation and processing. Course fee $35.</td>
</tr>
<tr>
<td>ANSC 4097</td>
<td>Undergraduate Research</td>
<td>(2-4 0 0)</td>
<td>Prerequisite: consent of department head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work.</td>
</tr>
</tbody>
</table>
| ANSC 4098   | Animal Science Internship | (1-6 0 0) | Prerequisite: consent of department head. Supervised internship in an
approved discipline of animal agriculture. Students receive on-the-job training under supervision of faculty and industry personnel.

ANSC 4320 Beef Cattle Management. (3 2 2) Prerequisite: 3374 or 3310 or consent of instructor. Breeding, feeding, reproduction, care, management and marketing of beef cattle. Emphasis on profitable commercial cow-calf operations. Includes field trips to purebred and commercial ranches. Course fee $40.

ANSC 4321 Stocker Cattle Management. (3 2 2) Prerequisite: 3374 or consent of instructor. Purchasing, animal health, animal welfare, forage utilization, risk management and marketing aspects of the stocker cattle business sector. Includes field trips to commercial operations. Fall. Course fee $40.

ANSC 4322 Dairy Cattle Management. (3 2 2) Prerequisite: 3374 or 3310 or consent of instructor. Dairy industry, including milk production, product quality evaluation and marketing. Dairy cattle husbandry emphasized. Course fee $12.

ANSC 4324 Swine Management. (3 2 2) Prerequisite: 3374 or 3310 or consent of instructor. Management of genetics and environment for efficient swine production. Methods of breeding, feeding, managing and marketing swine for profitable production. Includes field trips to commercial swine operations. Course fee $12.

ANSC 4326 Poultry and Game Bird Management. (3 2 2) Prerequisite: 3374 or consent of instructor. In-depth study of poultry, including anatomy and physiology, genetics, nutrition, diseases, rearing, housing and marketing. Game-bird and habitat management for commercial hunting. Course fee $12.

ANSC 4328 Feedlot Management. (3 2 2) Prerequisite: 3374 or 3310 or consent of instructor. Application of modern technology to cattle feeding with emphasis on the Texas High Plains area. Procurement, marketing, feeding, waste management, and care and management of feeder cattle. Course fee $12.

ANSC 4370 Equine Science and Production. (3 2 2) Prerequisite: 3374 or consent of instructor. In-depth study of genetics, nutrition and feeding, exercise physiology, and reproduction and breeding as it pertains to the horse. Course fee $40.

ANSC 4473 Equine Business Planning and Management. (4 3 2) Prerequisite: AGRJ 3330, 3318, AGBE 3302 or MKT 3340, and AGBE 4313 or FIN 3320. Review of economic forces that influence the equine industry. Legal aspects, taxation and tax laws as they pertain to the equine industry, including contracts, waivers, liability laws and syndication agreements. Operational strategies and management issues involved in business plans, including organization, implementation and administration of equine enterprises. Spring. Course fee $40.

ANSC 5370 Equine Science and Production. (3 2 2) Prerequisite: 3374 or 3310 or consent of instructor. In-depth study of genetics, nutrition and feeding, exercise physiology, and reproduction and breeding as it pertains to the horse. Course fee $40.

ANSC 5473 Equine Business Planning and Management. (4 3 2) Prerequisite: AGRJ 3330, 3318, AGBE 3302 or MKT 3340, and AGBE 4313 or FIN 3320. Review of economic forces that influence the equine industry. Legal aspects, taxation and tax laws as they pertain to the equine industry, including contracts, waivers, liability laws and syndication agreements. Operational strategies and management issues involved in business plans, including organization, implementation and administration of equine enterprises. Spring. Course fee $40.

ANSC 6097 Research. (1-6 0 0) Investigation of current interest. May be repeated for credit.

ANSC 6396 Directed Studies in Animal Science. (3 0-3 0) Readings and independent study of topics related to the graduate student's special needs and interests. May be repeated with different content.

ANSC 6698 Advanced Professional Internship. (6 0 0) Supervised internship in a selected area of animal agriculture. Detailed analysis of the selected work area will be made and a written report prepared.

ANSC 7092 Special Topics. (1-6 0-6 0-12) Recent advances and current topics in animal science. May be repeated once for credit.

ANSC 7301 Integrated Animal and Resource Management (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Structure of the animal industry, use of natural and capital resources, and effects on the environment and society.

ANSC 7302 Case Studies in Integrated Animal Management. (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Case studies of actual entities in animal industries, focusing on integration of business, production and environmental challenges faced by the beef, dairy, swine, equine and poultry industries. In-depth view of actual financial and regulatory documents pertaining to modern animal production. Fall of odd years.

ANSC 7322 Ruminant Nutrition I. (3 3 0) Prerequisite: CHEM 2573 or equivalent or instructor consent. Classification of ruminants and anatomy and physiology of the ruminant gastrointestinal tract. Rumen microbiology, ruminal fermentation, intestinal digestion, and tissue metabolism of carbohydrates, nitrogen and lipids.

ANSC 7324 Digestive Physiology. (3 3 0) Prerequisite: CHEM 2573 or equivalent or instructor consent. Digestion and absorption of nutrients by ruminants and nonruminants with emphasis on gastrointestinal physiology. Metabolism of absorbed nutrients by the intestines, liver and other tissues.

ANSC 7325 Forage Resource Utilization by Grazing Animals. (3 3 0) Prerequisite: acceptance to the Ph.D. program. Integration of livestock production with rangeland and pasture management practices. Investigation of livestock and plant community interactions that impact productivity and utilization of rangeland and improved pastures. Manipulation of the grazing process to meet management objectives. Fall of odd years.

ANSC 7328 Advancements in Livestock Production. (3 3 0) Prerequisite: appropriate undergraduate production course or consent of instructor. Student may enroll in each of the following areas: (1) beef cattle, (2) sheep, (3) swine, (4) horse production, (5) feedlot management. Survey of current knowledge and concepts in the specific livestock production area; professional literature, scientific basis, and relation to future production practices and investigations. Economic considerations and current problems operation. Enrollment once in each production area.

ANSC 7330 Advanced Reproduction in Farm Animals. (3 2 2) Theory and development of appropriate skills in application of animal reproduction techniques; artificial insemination, pregnancy diagnosis, fertility testing, and semen processing and evaluation. Course fee $25.


ANSC 7363 Advanced Meat Science and Technology. (3 2 2) Prerequisite: 2377 or equivalent. Conversion of muscle to meat with emphasis on physical and biochemical changes.
Course Descriptions

Microbiology and other related characteristics of meat and its implication in commercial meat processing. Course fee $15.

ANTH 7370 Endocrinology. (3 3 0) Prerequisite: permission of instructor. Function of endocrine glands and hormonal regulatory systems. Mechanisms of action of hormones at the cellular and molecular level. Recent advances in endocrinological research. Same as BIOL 7370.

ANTH 7380 Applied Epidemiological Methods. (3 3 0) Prerequisite: AGRI 7318 or consent of instructor. Problem-based course that will cover advanced and applied epidemiological analytical methods, including linear and non-linear regression techniques, model building and interpretation, partitioning of random variation to explained and unexplained factors, and inferential limitations and issues associated with epidemiological analyses. Spring of odd years.

ANTH 7381 Principles of Epidemiology. (3 3 0) Prerequisite: AGRI 7318 or consent of instructor. Problem-based course content that will cover fundamental epidemiological concepts, including measures of disease burden, measures of effect, bias, precision, study design, diagnostic tests and causal inference. Spring of even years.

ANTC 7407 Research Techniques in Animal Nutrition. (4 1 6) Prerequisite: 3310 or 3375 or equivalent. Sampling techniques and preparation of samples for analysis in nutrition experiments. Laboratory techniques for measurement of proximate components of feeds, detergent fiber components, and in vitro and in vivo digestibility. Use of spectroscopy and chromatography in analysis of biological samples. Evaluation of experimental designs commonly used in nutrition.

ANTC 8095 Directed Studies in Animal Science. (1-6 0 0) Prerequisite: approval of instructor and program director. Readings and directed individual studies in various topic areas that specifically relate to the graduate student's needs and interests. May be repeated for up to six hours credit. Allowed for elective credit only.

ANTH—Anthropology

(Offered through the Department of Life, Earth and Environmental Sciences.)

ANTH 2351 Cultural Anthropology. (3 3 0) Examination of nature and activities of contemporary cultures throughout the world. Fall, spring.

ANTH 3301 Introduction to Archaeology. (3 3 0) Investigation of scientific study of ancient people using field, laboratory and theoretical approaches. Fall.

ANTH 3302 American Archaeology. (3 3 0) Survey of prehistoric cultures of North and South America. Spring.

ANTH 3321 Human Origins. (3 3 0) A survey of physical, biological and cultural origins of humans in the Old World using data gathered from the fossil record, archeological excavations, modern primate behavior, geological age dating and stratigraphy, genetics and molecular biology. Fall of odd years.

ANTH 4095 Problems in Anthropology/Archaeology. (1-3 0 0) Prerequisite: consent of instructor. Library, field and laboratory research in anthropology/archaeology problems. May be repeated for up to six credit hours. Fall, spring.

ARTS—Art

(Offered through the Department of Art, Theatre and Dance.)

ARTS 1303 Art History I. (3 3 0) Survey of painting, sculpture, architecture and minor arts from prehistoric times to the 14th century. Fall, spring.

ARTS 1304 Art History II. (3 3 0) Survey of painting, sculpture, architecture and minor arts from the 14th century to present. Fall, spring.

ARTS 1311 Two-Dimensional Design. (3 2 4) Emphasis on two-dimensional design: fundamentals of dot, line, color, form, texture, shape, space and arrangement. Fall.

ARTS 1312 Three-Dimensional Design. (3 2 4) Continuation of Design I with emphasis on three-dimensional forms and concepts. Spring.

ARTS 1316 Drawing I. (3 2 4) Beginning course investigating a variety of media, techniques and subjects, exploring perceptual and descriptive possibilities with consideration of drawing as a development process as well as an end in itself. Fall, spring, summer.

ARTS 1317 Drawing II. (3 2 4) Prerequisite: 1316. Expansion of Drawing I stressing expressive and conceptual aspects of drawing, including the human figure within a spatial environment. Spring.

ARTS 1319 Digital Photography. [ARTS 2357] (3 3 0) Introduction to digital photography, exploring uses of the digital camera, as well as print, negative and slide scanning. Appropriate software applications and ethical concerns of image manipulation. Every other spring. Same as MCOM 1319. Spring. May intersession. Course fee $30.

ARTS 2313 Graphic Design I. (3 2 4) Prerequisite: foundation studio core. Introduction to visual communication through graphic design. Problems in design, color, type, concept, history, etc. Emphasis on clear visual thinking, craftsmanship, execution and an introduction to graphic design software. Fall. Course fee $20.

ARTS 2316 Painting I. (3 2 4) Prerequisite: foundation studio core. Exploring potentials of oil, acrylic or mixed media with emphasis on color and composition. May be repeated once. Fall, spring.

ARTS 2323 Drawing III—Life. (3 2 4) Prerequisite: foundation studio core. Life drawing emphasizing anatomy, structure and action of the human figure. Live models provided. May be repeated once. Fall. Course fee $25.

ARTS 2326 Sculpture I. (3 2 4) Prerequisite: foundation studio core. Exploration of various sculptural approaches in a variety of media, including additive and subtractive techniques. May be repeated once. Fall. Course fee $30.

ARTS 2333 Printmaking I. (3 2 4) Prerequisite: foundation studio core. Introduction to basic printmaking techniques. Emphasis on proper use of tools and equipment. Basic exploration of relief, planographic and intaglio processes. May be repeated once. Spring. Course fee $40.

ARTS 2341 Metalsmithing/jewelry I. (3 2 4) Prerequisite: foundation studio core. Introduction to basic jewelry-making processes and materials. May be repeated once. Spring. Course fee $25.

ARTS 2346 Ceramics I. (3 2 4) Prerequisite: foundation studio core. Introduction to various ceramic processes: hand building, wheel throwing, glazing, and firing in stoneware and raku. May be repeated once. Fall, spring. Course fee $25.

ARTS 2366 Watermedia I. (3 2 4) Prerequisite: foundation studio core. Exploring potentials of watercolor and other aqueous media with instructor's consent; emphasis on color and composition. May be repeated once. Spring.
ARTS 2375 Glass I. Introduction to Basic Glass Processes. (3 2 4) Prerequisite: Foundation Studio Core. Introduction to basic glass and glass-blowing processes. Emphasis on process and safety. May be repeated once for credit. Fall, spring. Course fee $70.

ARTS 2377 Computer Art I. (3 2 4) Prerequisite: foundation studio core. Introduction to computer art. Exploring use of the computer as a tool for both studio and graphic arts. Basic understanding of hardware and software. May be repeated once. Fall, spring. Course fee $20.

ARTS 2378 Type I. (3 2 4) Prerequisite: foundation studio core. Introduction to typography and use of type as the primary design element. Emphasis on type nomenclature, history and communication problems. The computer is the primary tool. Spring. Course fee $20.

ARTS 3313 Graphic Design II. (3 2 4) Prerequisite: 2313. Exploration of print design, web design and motion design. Emphasis on concept, design and execution. The computer is used as a primary tool. Fall. Course fee $20.

ARTS 3323 Drawing IV—Life. (3 2 4) Prerequisite: 2323. Emphasis on composition and exploration of various media, techniques and individual concepts. Live models provided. May be repeated once. Fall. Course fee $25.

ARTS 3326 Sculpture II. (3 2 4) Prerequisite: 2326. Advanced investigation of various sculpture processes: welding, metal casting, assembling, and stone and wood carving. May be repeated once. Fall. Course fee $30.

ARTS 3331 Metalsmithing/Jewelry II. (3 2 4) Prerequisite: 2341. Advanced investigation of basic metalsmithing techniques and introduction of raising, forging and advanced fabrication in nonferrous metals. May be repeated once. Spring. Course fee $40.

ARTS 3341 Ceramics II. (3 2 4) Prerequisite: 2346. Continuation of 2346. Glazing and firing processes and contemporary and historical ceramic forms. May be repeated once. Fall, spring. Course fee $25.

ARTS 3366 Watermedia II. (3 2 4) Prerequisite: 2366. Techniques of utilizing water media on various surfaces. May be repeated once. Spring.

ARTS 3375 Glass II—Advanced Investigation of Various Techniques. (3 2 4) Prerequisite: 2375. Advanced investigation of various glass techniques; glass blowing, stained glass, glass fusing and lamp work. May be repeated once for credit. Fall, spring. Course fee $70.

ARTS 3376 Animation I. (3 2 4) Prerequisite: foundation studio core and 2313. Introduction to video, animation, photography and moviemaking. May involve mixed or experimental media and techniques. May be repeated once. Course fee $40.

ARTS 3377 Computer Art II. (3 2 4) Prerequisite: 2377 or consent of instructor. Further investigation of computer art. Exploration of various bit-mapped and vector-based drawing programs, including photo-image editing software. May be repeated once. Fall, spring. Course fee $20.

ARTS 3378 Type II. (3 2 4) Prerequisite: 2378. Advanced typography problems using type as the primary design element. More in-depth solutions to communications problems using typography. The computer is the primary tool. May be repeated once. Spring. Course fee $20.

ARTS 3379 Illustration I. (3 2 4) Prerequisite: foundation studio core. Exploration of image-making techniques and visualization of ideas. The computer will be used for typesetting. Spring. Course fee $20.

ARTS 3381 Art Fundamentals. (3 2 4) Prerequisite: junior standing. To acquaint the student with several basic art media and their use. Fall, spring. Course fee $10.

ARTS 3392 Special Topics. (3 3 0 or 3 2 4, pending) Intensive exploration of a selected topic in art. Topic to be determined each semester course is offered. May be repeated as topic changes.

ARTS 3394 Individual Study. (3 0, 0, 6*) Prerequisite: 24 semester hours of art and consent of instructor. Individual work in the student's area of interest developed through individual conferences with the instructor in the field of study. May be repeated once. *Classes may meet on a TBA schedule. Fall, spring.

ARTS 4098 Art Internship. (3, 6, 0, 0) Prerequisite: junior standing and permission of instructor. Internship program for students to gain practical experiences in operation and management of museums, art galleries and art sales, or for students to gain practical experiences in the graphic-design industry. May be repeated once. Fall, spring.

ARTS 4180 Professional Practices. (1 1 0) Wide range of practical topics: résumé and portfolio preparation, exhibitions and gallery procedures, artists' legal rights and tax laws, framing and presentation, and others. Topic to be determined each semester course is offered. May be repeated as topic changes.

ARTS 4313 Graphic Design III. (3 2 4) Prerequisite: 3313. Continued exploration of print design, web design and motion design. Emphasis on concept, design and execution. Assignments require more in-depth solutions. The computer is the primary tool. May be repeated once. Fall. Course fee $40.

ARTS 4316 Painting III. (3 2 4) Prerequisite: 3316. Advanced techniques of oil, acrylic or mixed media. May be repeated once. Fall, spring.

ARTS 4323 Drawing V—Life. (3 2 4) Prerequisite: 3323. Drawing, emphasizing individuality and experimentation in techniques, composition and subject matter. Live models will be provided. May be repeated once. Fall. Course fee $25.

ARTS 4326 Sculpture III. (3 2 4) Prerequisite: 3326. Advanced individual investigation of sculpture techniques with emphasis on production of major professional-quality pieces. May be repeated once. Fall, spring. Course fee $30.

ARTS 4333 Printmaking III. (3 2 4) Prerequisite: 3333. Advanced individual investigation of graphic techniques with emphasis on production of major professional-quality pieces. May be repeated once. Spring. Course fee $40.

ARTS 4341 Metalsmithing/Jewelry III. (3 2 4) Prerequisite: 3341. Advanced individual investigation of metalsmithing techniques with emphasis on production of major professional-quality pieces. May be repeated once. Spring. Course fee $25.

ARTS 4346 Ceramics III. (3 2 4) Prerequisite: 3346. Advanced individual investigation of ceramic techniques with emphasis on production of major professional-quality pieces. May be repeated once. Spring. Course fee $25.

ARTS 4366 Watermedia III. (3 2 4) Prerequisite: 3366. Advanced watermedia techniques. May be repeated once. Spring.

ARTS 4370 Seminar in Aesthetics and Advanced Criticism. (3 3 0) Discussions of critical literature and issues as well as aesthetic philosophies of art. Research projects related to semester topic. Topic to be determined each semester course is offered. May be repeated as topic changes. Fall. Course fee $15.
ARTS 4371  Art History. (3 3 0) (1) Western; (2) 20th century; (3) history of art media, styles and techniques; (4) Non-Western. In-depth investigation into a selected period, style or group of art works. Topic to be determined each semester course is offered. May be repeated as topic changes. Fall, spring.

ARTS 4375  Glass III—Advanced Investigation of Glass Techniques. (3 2 4) Prerequisite: 3375. Advanced individual investigation of glass techniques. May be repeated once for credit. Fall, spring. Course fee $70.

ARTS 4376 Animation II. (3 2 4) Prerequisite: 3376. Emphasis on experimental animation, video, photography and moviemaking. Some individual investigation encouraged. May involve mixed or experimental media and techniques. May be repeated once. Course fee $40.

ARTS 4377  Computer Art III. (3 2 4) Prerequisite: 3377 or consent of instructor. Advanced techniques in computer art. Individual exploration of computer imagery with emphasis on production of professional-quality pieces. May be repeated once. Fall, spring. Course fee $20.

ARTS 4379  Illustration II. (3 2 4) Prerequisite: 3379. Various assignments to solve communications problems through original imagery and conceptual thinking. Digital and traditional illustration techniques will be explored. The computer will be used for typesetting, etc. May be repeated. Spring. Course fee $20.

ARTS 4394  B.F.A. Senior Project. (3 0 0-6) Prerequisite: completion of 60 hours of art and consent of instructor. Advanced individual work in the student’s major area. Preparation for the B.F.A. candidate’s senior exhibition or portfolio presentation. Must be repeated once. *Classes may meet on a TBA schedule. Fall, spring.

ARTS 5316  Special Problems in Painting. (3 0 0-6) Prerequisite: 3316, 3366, 5316 or 5366. Advanced individual exploration and experimentation in one or more painting media. May be repeated. Fall, spring.

ARTS 5323  Special Problems in Drawing. (3 0 0-6) Prerequisite: 3323 or 5323. Advanced individual exploration and experimentation in one or more drawing processes. May be repeated. Fall, spring.

ARTS 5326  Special Problems in Sculpture. (3 0 0-6) Prerequisite: 3326. Advanced individual exploration of unique problems relating to sculpture. Emphasis on developing new and uniquely personal sculptural statements. May be repeated. Fall. Course fee $30.

ARTS 5333  Special Problems in Printmaking. (3 0 0-6) Prerequisite: 3333 or 5333. Advanced individual exploration and experimentation in one or more printmaking processes. May be repeated. Spring. Course fee $55.

ARTS 5346 Special Problems in Ceramics. (3 0 0-6) Prerequisite: 3346 or 5346. Advanced individual exploration of unique problems relating to ceramics. Emphasis on developing new and uniquely personal ceramic statements. May be repeated. Fall, spring. Course fee $25.

ARTS 5377  Special Problems in Computer Art. (3 0 0-6) Prerequisite: 3377 or consent of instructor. Advanced projects in computer art. Individual exploration of computer imagery with emphasis on content and production of major professional-quality pieces. May be repeated once. Fall, spring. Course fee $20.

ARTS 5394  Advanced Individual Problems. (3 0 0-6) Advanced individual work in the student’s major area, developed through individual conferences with the instructor in the field of study. May be repeated. *Classes may meet on a TBA schedule. Fall, spring.
**Course Descriptions**

**ARTS 6395** Problems in Art History. (3 0 3 0) Prerequisite: six hours advanced art history. Advanced exploration and research in art history. May be repeated. Fall, spring.

**ARTS 6397** Research Problems in Art History. (3 0 3 0) Prerequisite: six hours advanced art history. Advanced individual research in art history. Topics to be selected in conference with adviser. May be repeated. Fall, spring.

**ARTS 7002** M.F.A. Terminal Project/Thesis. (3 0 0, 12*) *Classes may meet on a TBA schedule. Fall, spring.

**ATTR—Athletic Training**

(Offered through the Department of Sports and Exercise Sciences.)

**ATTR 2170** Introduction to Clinical Experience. (1 1 1) Prerequisite: admission to Athletic Training Education Program (ATEP); instructor consent required. Emphasis includes policies, procedures, documentation, basic athletic training skills, and athletic training room organization and administration. Fall. Course fee $20.

**ATTR 2271** Clinical Experience in Athletic Training I. (2 1 2) Prerequisite: 2170. Follow-up course to 2170, providing emphasis on documentation, initiation of basic injury evaluation and modality skills. Course fee $20.

**ATTR 2272** Clinical Experience in Athletic Training II. (2 1 2) Prerequisite: 2271. Clinical education course with emphasis on athletic training specific administration and preservice activities (budget, inventory, facilities, insurance, physicals, athletic training service provision, etc.) and communicating community health services. Course fee $15.

**ATTR 2371** Athletic Training I. (3 2 2) Prevention, care and rehabilitation of athletic injuries and illnesses.

**ATTR 2372** CPR for the Health Professional. (3 3 0) Course will provide student the ability to recognize and care for breathing and cardiac emergencies using professional rescuer techniques. Acute care for injuries and sudden illness, prevention of disease transmission, use of automated external defibrillation. Course fee $25.

**ATTR 3091** Directed Studies in AT. (1-6 0 0) Prerequisite: approval of ATEP program director. Topic and mode of study are agreed upon by the student and faculty. May be repeated for credit with department approval.

**ATTR 3263** Clinical Experience in Athletic Training III. (2 1 2) Prerequisite: 2272. Clinical education courses with emphasis on equipment-intensive sports and knowledge regarding common injuries during collision-type activities. Course fee $20.

**ATTR 3264** Clinical Experience in Athletic Training IV. (2 1 2) Prerequisite: 3263. Clinical education course with emphasis on athletic training care directed to athletes involved in upper extremity, throwing activities, and review of injury evaluation and treatment for common injuries. Course fee $20.

**ATTR 3308** Therapeutic Exercise. (3 2 2) Prerequisite: 2371. SES 3302. Designed for student to attain competency in procedures and techniques used in sports rehabilitation. Specific indications, contraindications, physiological effects and resistance methods. In laboratory setting, the student will demonstrate the ability to develop, instruct, and evaluate rehabilitation and reconditioning programs.

**ATTR 3309** Therapeutic Modalities. (3 2 2) Prerequisite: 2371. Designed for student to attain competency in application and use of modalities in treating injuries. Exploration of wound healing, thermal, electrical and mechanical agents. In laboratory setting, student will demonstrate the ability to develop, implement and evaluate modality treatment programs.

**ATTR 3331** Athletic Training Evaluation I—Lower Extremity. (3 2 2) Prerequisite: 2371. Lower-extremity and lumbar spine evaluation techniques and injury/illness conditions to assist in assessment of injuries. In laboratory setting, student will identify and demonstrate accepted techniques and procedures for clinical evaluation of athletic injuries/illnesses.

**ATTR 3332** Athletic Training Evaluation II—Upper Extremity. (3 2 2) Prerequisite: 2371. Upper-extremity, head and cervical spine evaluation techniques and injury/illness conditions to assist in assessment of injuries. In laboratory setting, student will identify and demonstrate accepted techniques and procedures for clinical evaluation of athletic injuries/illnesses.

**ATTR 4265** Clinical Experience in Athletic Training V. (2 1 2) Prerequisite: 4264. Clinical education course with emphasis on athletic training care directed to athletes involved in lower extremity, running activities, and review of injury evaluation and treatment for common injuries. Course fee $20.

**ATTR 4266** Clinical Experience in Athletic Training VI. (2 1 2) Prerequisite: 4265. Capstone clinical education course with specific exposure to general medical practice settings and broad-based clinical experience outside the University athletic-training setting. Course fee $20.

**ATTR 4412** Advanced Athletic Training. (4 3 2) Prerequisite: 3331, 3332 or consent of instructor. Current trends in athletic training. Emphasis on evaluation of thorax, abdomen and non-orthopedic injuries and illnesses, pharmacology, and activities of professional preparations, credentialing, continuing education and practice settings.

**BIOL—Biology**

(Offered through the Department of Life, Earth and Environmental Sciences.)

**BIOL 1406** Basic and Contemporary Biology I. (4 3 2) Introduction to principles and concepts of biological sciences. Contemporary problems in biology are integrated into discussion of principles and concepts in the lecture and experiments demonstrate principles and concepts in the lab. Students may not receive science credit for both BIOL 1406 and 1408. Fall, spring, summer I. Course fee $15.

**BIOL 1407** Basic and Contemporary Biology II. (4 3 2) Prerequisite: 1406. Continuation of discussion of basic principles, and concepts of biology sciences in the lecture coupled with experiments to demonstrate principles and concepts in the lab. Students may not receive science credit for both BIOL 1407 and 1409. Fall, spring, summer II. Course fee $15.

**BIOL 1408** Biology for Non-Science Majors I. (4 3 2) Fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptations and classification. Concepts of reproduction, genetics, ecology and the scientific method are included. Students may not receive science credit for both BIOL 1406 and 1408. Fall, spring, summer I. Course fee $15.

**BIOL 1409** Biology for Non-Science Majors II. (4 3 2) Prerequisite: 1406 or 1408. Continuation of scientific understanding of life with emphasis on animal and plant utilization of Earth resources to sustain life through change, adaptation and information exchange. Students may not receive science credit for both BIOL 1407 and 1409. Fall, spring, Course fee $15.

**BIOL 1411** Botany. (4 3 2) Introduction to botanical principles, including structure and functions of leaves, stems, roots, seeds and fruits. Basic cell chemistry, plant and community ecology, taxonomy, reproduction, natural selection and plant biotechnology with laboratory investigations and observations of cells, leaves, stems, roots, plant physiology and ecology. Fall, spring. Course fee $15.
Course Descriptions

BIOL 1413 Zoology. (4 3 2) General zoological principles, including life histories and classification of invertebrates and vertebrates with laboratory investigations of various zoological principles and study of representative organisms. Fall, spring. Course fee $15.

BIOL 2374 Wildlife Conservation. (3 3 0) Prerequisite: one of the following courses or consent of instructor—1406, 1411 or 1413. Introduction to principles of wildlife ecology and management with emphasis on North American wildlife. Fall.

BIOL 2401 Human Anatomy and Physiology I. (4 3 2) Prerequisite: minimum of 24 semester credit hours. Introduction to basic biological principles as applied to the human. Detailed studies of the human body plan, terminology and the integumentary, skeletal, muscular and nervous systems. Fall, spring. Course fee $15.

BIOL 2402 Human Anatomy and Physiology II. (4 3 2) Prerequisite: 2401 or equivalent. Continuation of 2401. Endocrine, digestive respiratory, cardiovascular and blood, lymphatic, urinary and reproductive systems. Cannot receive credit for both 2402 and 3440. Fall, spring. Course fee $15.

BIOL 2420 Applied Microbiology. (4 3 2) Prerequisite: four hours of lab science. General review of characteristics of microorganisms and how activities of microbes relate to public health and industry. Not open to biology and allied-health majors. Cannot receive credit for both 2420 and 2572. Course fee $15.

BIOL 2572 Microbiology. (5 3 4) Prerequisite: four hours of lab science. Fundamental biological processes observed in microorganisms together with beneficial and harmful activities related to man and other forms of life. Cannot receive credit for both 2420 and 2572. Fall, spring. Course fee $15.

BIOL 3092 Special Topics. (1-6 0-6 0-12) Prerequisite: consent of instructor. Consideration of recent advances in biology. May be repeated for a maximum of six hours credit.

BIOL 3099 Field Biology. (1-8 0-8 0-16) Prerequisite: consent of instructor. Field trips to various ecological areas. Practice in procurement, analysis and evaluation of both extensive and intensive data on plants, invertebrates and vertebrates. May be repeated for a maximum of eight hours credit. Summer. Course fee $15.

BIOL 3101 Medical Terminology. (1 1 0) Prerequisite: 2401 and 2402 or 3440 or consent of instructor. Introduction to medical terminology: word roots, combining forms, suffixes, prefixes and vocabulary of common medical terms. Fall.

BIOL 3201 Genetics Laboratory. (2 3 4) Prerequisite: AGRI/Biol 3301 or consent of instructor. Basic laboratory techniques in genetic research, including genomic DNA recovery, PCR amplification, and DNA sequencing and fragment analysis. Fall. Course fee $40.

BIOL 3301 Genetics. (3 3 0) Principles of genetics and the bearing that recent developments in the field of genetics have on modern concepts of plant and animal biology. Cannot receive credit for both BIOL 3301 and AGRI 3301. Same as AGRI 3301. Fall, spring.

BIOL 3303 Human Genetics. (3 3 0) Modern principles of genetics applied to both normal and abnormal characteristics of human beings. Summer.

BIOL 3312 Environmental Microbiology. (3 3 0) Prerequisite: 2420 or 2572. Role of microorganisms in maintaining the balance in nature, disposing of human pollution through bioremediation and future use of non-polluting pesticides, herbicides and chemical synthetics. Spring of odd years.

BIOL 3331 Parasitology. (3 3 0) Important parasites affecting man and domestic animals with concentration on protozoans and helminths. Spring of odd years.

BIOL 3340 Reproductive Physiology. (3 2 2) Prerequisite: 2402 or ANSC 1319 or consent of instructor. Anatomy and physiology of reproduction in mammals. Includes hormones, reproductive communications, cycles, spermatogenesis, folliculogenesis, oogenesis, ovulation, gestation, parturition, lactation and reproductive management techniques. Same as ANSC 3340. Course fee $12.

BIOL 3345 Fisheries Techniques. (3 2 2) Prerequisite: 2374 or consent of instructor. Laboratory and field techniques used in management of fish in Texas and southwest United States. Course fee $17.

BIOL 3350 Hematology. (3 3 0) Characteristics of the formed elements of blood and their relationship to physiological and pathological processes. Fall of odd years. Course fee $10.

BIOL 3374 Wildlife Management. (3 3 0) Intermediate theory and science of wildlife management, including the ecology and conservation of wildlife and an emphasis on management of habitats. Fall of odd years.

BIOL 3385 Marine Biology. (3 3 0) Chemical and physical characteristics of major ocean habitats and organisms occupying those habitats. Analysis of man’s impact on oceans and the potential of oceans as a food source. Spring of even years.

BIOL 3402 Cell Biology. (4 3 2) Prerequisite: CHEM 2525 or permission of instructor. Morphology, anatomy, physiology and biochemistry of cells as the basic structural unit of life. Spring, fall. Course fee $15.

BIOL 3404 Evolution. (4 3 2) Prerequisite: genetics or permission of instructor. Nature of the evolutionary process; history and philosophical issues, including creationism. Spring of even years. Course fee $15.

BIOL 3406 Paleontology. (4 3 2) Prerequisite: GEOL 1404 or BIOL 1413 or permission of instructor. Origin, classification, morphology, evolution, paleoecology, geographic distribution and geologic occurrences of fossil animals. Field collecting, identification and museum preparation of fossils in the laboratory. Same as GEOL 3406. Spring of even years. Course fee $15.

BIOL 3411 Arthropods and Public Health. (4 3 2) Prerequisite: 1406, 1407, or 1413. Arthropods (insects and arachnids) which directly or indirectly affect the health of man. Spring of even years. Course fee $15.

BIOL 3418 Wildland Soils. (4 3 2) Formation, properties, classification, distribution and problems of soils of uncultivated lands. Fall of even years. Course fee $15.

BIOL 3420 Natural History of Vertebrates. (4 3 2) Classification, taxonomy and distribution of vertebrates. Spring of even years. Course fee $15.

BIOL 3424 Wildlife Management Techniques. (2 4 2) Prerequisite: 2374. Laboratory and field techniques used in management of game mammals, non-migratory and migratory game birds. Techniques in management of populations of non-game birds and mammals. Spring of odd years. Course fee $15.

BIOL 3425 Introduction to Medicinal Chemistry. (4 3 2) Prerequisite: CHEM 2523. Principles of modern medicinal chemistry, including drug design and theory. Spring of even years. Course fee $35.

BIOL 3440 Anatomy and Physiology of Humans. (4 3 2) Basic structure and functioning of organ systems of the human. Cannot receive credit for either 2401 or 2402 and 3440. Summer I. Course fee $15.
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BIOL 4434 Mammalogy. (4 2 4) Diversity of mammals, taxonomic relationships, morphological and physiological adaptations to different environments, mating systems, population genetics, habitat requirements and conservation biology. Identification of orders, families, genera and species of common mammals of Texas through use of museum specimens and field trips. Fall of odd years. Course fee $15.

BIOL 4440 Advanced Physiology. (4 3 2) Prerequisite: 2401 and 2402 or 3440 or permission of instructor. Fundamentals of the physiology of basic organs and systems. Homeostatic mechanisms of neural, muscular, cardiovascular, respiratory and renal systems emphasized. Spring. Course fee $15.

BIOL 4460 Arachnology. (4 3 2) Natural history, classification, phylogeny and functional morphology of scorpions, spiders and related forms. Laboratory study of comparative morphology as well as collection and identification of specimens. Fall of even years.

BIOL 4480 Aquaculture. (4 3 2) Introduction to culture of freshwater organisms used for both aesthetic and food purposes. Reproduction, nutritional and environmental requirements for optimal productivity. Fall of odd years. Course fee $15.

BIOL 4510 General Ecology. (3 3 4) Interrelationships between plants, animals and the environment. Fall, summer I.

BIOL 4513 Plant Ecology. (3 3 4) Autecology and synecology of plants. Classical and modern techniques of vegetational and environmental analysis will be applied to Texas High Plains habitats. Spring of even years. Course fee $15.

BIOL 5099 Field Biology. (1-8 0-8 0-16) Prerequisite: consent of instructor. Field trips to various, diverse ecological areas. Practice in procurement, analysis and evaluation of extensive and intensive data on plants, invertebrates and vertebrates. May be repeated for a maximum of eight hours credit. Summer. Course fee $15.

BIOL 5340 Neuroscience. Structure and functions of the human nervous system with emphasis on functional and clinical aspects. Includes development of central nervous system, blood supply, sensory and motor systems, special senses, pain mechanisms, receptors and reflex pathways. Fall.

BIOL 5351 Conservation Biology. (3 3 0) Prerequisite: 3424 or 4510 or consent of instructor. Fundamentals of theory, techniques and applications of conservation ecology as it relates to maintenance of biodiversity and sustainable management of the biosphere. Includes elements from population genetics; biogeography; habitat management, public policy and design strategies for natural preserves.

BIOL 5365 Marine Fisheries. (3 3 0) Prerequisite: consent of instructor. Survey of fisheries for marine vertebrates and invertebrates primarily in the Gulf of Mexico and South Atlantic with emphasis on their biology, economics and management. Spring of odd years.

BIOL 5375 Immunology and Serology. (3 3 0) Investigation into theories of the human body's defense mechanisms against infection. Human serum (serology) as a diagnostic tool to detect and evaluate infection. Summer.

BIOL 5401 Molecular Cytogenetics. (4 3 2) Prerequisite: 3301. Advanced course in molecular cytogenetics focusing on mechanisms and cytological interpretation of eukaryotic karyotypes and chromosomal aberration. Laboratory will include classic cytogenetic methodology as well as preparation of tagged DNA probes, comparative genome hybridization, and image and data analysis. Fall of odd years. Course fee $20.

BIOL 5402 Cytechnology. (4 3 2) Prerequisite: 1406 and 3447 or 1441 and 1413; 3301 or 3303. Understanding structure and functions of various types of cells, gene expression, cancer biology and biotechnology. Techniques to prepare slides from bacteria, blood, cell, chromosomes and fungi. May intersession. Course fee $15.

BIOL 5404 Bioinformatics. (4 3 2). Prerequisite: 1406 and 1407, or 1411 and 1413, 3301 or 3303, or BIOL 4385 or 4401. Understanding bioinformatics, proteomics and genomics, structure and functions of gene, gene expression. Winter intersession. Course fee $10.

BIOL 5416 Introductory Biometry. (4 3 2) Introduction to statistical methods and techniques as they apply to biology. Fall. Course fee $15.

BIOL 5418 Wildland Soils. (4 3 2) Formation, properties, classification, distribution and problems of soils of uncultivated lands. Fall of even years. Course fee $15.

BIOL 5425 Limnology. (4 3 2) Prerequisite: 1413. Physical, chemical and biological factors affecting productivity in lakes and ponds. Familiarization with approved methods of studying static fresh-water areas in the Texas Panhandle. Fall of odd years. Course fee $15.

BIOL 5430 Introduction to Dendrochronology. (4 3 2) Dendrochronology or tree-ring science; principles and application to archaeology, environmental studies, ecology and climatology. Same as ESC 5430. Course fee $15.

BIOL 5431 Ichthyology. (4 3 2) Prerequisite: 1413. Biology of fresh-water and marine fish of the world with emphasis on natural history, ecology, physiology and taxonomy. Spring of odd years. Course fee $15.

BIOL 5432 Herpetology. (4 3 2) Prerequisite: 1413. Biology of amphibians and reptiles; classification, ecology, and adaptation and economic importance. Spring of even years. Course fee $15.

BIOL 5433 Ornithology. (4 2 4) Morphological and anatomical adaptations to flight, origin of birds and flight, mating systems, population ecology, habitat relationships and community ecology of birds. Taxonomic relationships through use of museum specimens and field identification during field trips. Spring of odd years. Course fee $15.

BIOL 5434 Mammalogy. (4 2 4) Diversity of mammals, taxonomic relationships, morphological and physiological adaptations to different environments, mating systems, population genetics, habitat requirements and conservation biology. Identification of orders, families, genera and species of common mammals of Texas through use of museum specimens and field trips. Fall of odd years. Course fee $15.

BIOL 5440 Advanced Physiology. (4 3 2) Prerequisite: 2401, 2402 or 3440, or permission of instructor. Fundamentals of the physiology of protoplasm; basic processes and functions of organs and systems. Digestion, respiration, metabolism, excretion, muscular action and reproduction. Use of basic physiological instruments and techniques in laboratory periods. Spring. Course fee $15.

BIOL 5460 Arachnology. (3 3 2) Natural history, classification, phylogeny, and functional morphology of scorpions, spiders and related forms. Laboratory will emphasize comparative morphology, collection and identification of specimens. Fall of even years. Course fee $15.

BIOL 5480 Aquaculture. (3 3 2) Introduction to the culture of freshwater organisms used for both aesthetic and food purposes. Reproduction, nutritional and environmental requirements for optimal productivity. Fall of even years. Course fee $15.

BIOL 5513 Plant Ecology. (5 3 4) Autecology and synecology of plants. Classical and modern techniques of vegetational and environmental analysis will be applied to the Texas...
BIOL—Biotechnology

(Biotechnology. (3-3-0) Prerequisite: 4401, CHEM 4324. Provides a foundation in contemporary aspects of biotechnology. Current issues in biotechnology include new technologies in gene expression, DNA microarray technology and bioinformatics; and ethical, social and legal implications of biotechnology and resultant products, therapeutics and databases. Fall.

BIOE 4401 Molecular Cytogenetics. (4 3 2) Advanced course in molecular cytogenetics focusing on mechanisms as well as preparation of tagged DNA probes, comparative genomic hybridization and image and data analysis. Same as BIOL 4401. Fall of odd years. Course fee $20.

BIOT 4402 Cytotechnology. (4 3 2) Prerequisite: BIOL 1406 and 1407 or 1411 and 1413; BIOL 3301 or 3303. Understanding structure and functions of various types of cells, gene expression, cancer biology and biotechnology. Techniques to prepare slides from bacteria, blood, cells, chromosomes and fungi. Fall. Course fee $25.

BIOT 5402 Cytotechnology. (4 3 2) Prerequisite: BIOL 1406 and 1407 or 1411 and 1413; BIOL 3301 or 3303. Understanding structure and functions of various types of cells, gene expression, cancer biology and biotechnology. Techniques to prepare slides from bacteria, blood, cells, chromosomes and fungi. May intersession. Fall. Course fee $15.

BUSI—Business

(Business. (Offered through the Department of Management, Marketing and General Business.)

BUSI 1301 Survey of Business. (3 3 0) Open to non-business majors. Introduces areas of accounting, computer information systems, economics, finance, marketing, management and production. Furnishes an overview of subjects covered in more depth in more specialized business and economic courses. May not be taken to satisfy requirements for B.B.A. degree after junior standing has been attained without advance permission of instructor and dean.

BUSI 1304 Business Communication. (3 3 0) Prerequisite: ENGL 1302. Relationship of creative, logical and critical thought to problem-solving aspects of business communication designed to build and develop effective letters and reports. Course fee $10.

BUSI 1371 Keyboarding/Introduction to Word Processing. (3 3 0) Basic keyboarding skills to key accurately and rapidly; format letters, memoranda, reports, tables and administrative documents appropriately; produce documents efficiently; and apply total quality management concepts to document production. Basic use of Word or Word Perfect features to create and print a document.

BUSI 3312 Business Law. (3 3 0) Prerequisite: junior standing. Overview of selected topics including, but not limited to, U.S. judicial process; constitutional, criminal,
Course Descriptions

contract, bankruptcy, commercial paper, tort, property, agency, securities regulation, antitrust, employment, discrimination and environmental law as related to business activity; business organization, ethics, self-regulation and government regulation. Fall, spring.

BUSI 3319 International Business. (3 3 0) Prerequisite: MGT 3330, MKT 3340, junior standing. Study and analysis of business activities that cross national boundaries. Includes growth of multinational enterprise, foreign direct investment, cross-cultural management, international marketing, international finance, global business strategy, and exports and imports. Fall.

BUSI 3391 Applications in Free Enterprise. (3 0 0) Prerequisite: member of Students in Free Enterprise team and consent of instructor. Project management, leadership development, team building, service learning, and presentation delivery skills are enhanced through hands-on free enterprise education and consultation projects. Course may be repeated with consent of instructor.

BUSI 4096 Supervised Readings in Business. (1-6 0-6 0) Prerequisite: 12 semester hours of advanced work in a business major, junior standing and permission of department head. Current problems in business through reading business periodicals, government publications and books which have had a profound influence on American business philosophy. Fall, spring, summer.

BUSI 4370 Legal Aspects of Health Care. (3 3 0) Prerequisite: junior standing. Health-care law course designed for health care and research-related business administrators and executives who do not have a background in law. Topics include the U.S. legal system, government regulation, privacy, insurance and government payments, fraud and abuse, antitrust, intellectual property, torts and malpractice, and business organization.

BUSI 4398 Supervised Internship. (3 0 0) Prerequisite: junior standing and approval of department head. One semester of prearranged work in operational activities in a designated enterprise cooperating with the College of Business. Students will obtain comprehensive work experience and be responsible for periodic reports and appraisals as required by the instructor. No class hours are to be met; conferences are arranged. Maximum of six credits, total, may be taken in BUSI 4398, MGT 4398 and MKT 4398. Fall, spring. Course fee $40.

BUSI 5370 Legal Aspects of Health Care. (3 3 0) Health-care law course designed for health-care and research-related business administrators and executives who do not have a background in law. Topics include U.S. legal system, government regulation, privacy, insurance and government payments, fraud and abuse, antitrust, intellectual property, torts and malpractice, and business organization.

BUSI 6105 M.B.A. Portfolio. (1 0 0) Prerequisite: completion of 30 semester hours of M.B.A. course work (excluding foundation courses). The M.B.A. portfolio provides evidence of personal accomplishment and a tangible demonstration of skills and learning outcomes established for the M.B.A. program. Students need to assemble a portfolio of a personal résumé and at least seven projects which demonstrate competencies in the program learning outcomes.

BUSI 6300 Business Law. (3 3 0) Prerequisite: graduate standing, consent of department head. Legal environment of business, contracts, business organizations, government regulation and application of ethics to each aspect of law. Spring.

BUSI 6317 Current Issues in Business. (3 3 0) Prerequisite: completion of all M.B.A. degree leveling courses or equivalent. Current issues relevant to business. Focus on issues that are timely and relevant to problems facing decision makers, including ethics in business and the impact of the information age.

BUSI 6396 Reading and Conference. (3 0-3 0) Prerequisite: approval of instructor of record. Directed reading and reporting in areas of business related to the student's sphere of concentration. Fall, spring.

BUSI 6398 Internship. (3 0 0) Prerequisite: approval of department head. One semester of prearranged work in operational activities of designated enterprises. Comprehensive experience in management of special projects. Students will be responsible for periodic reports as required by the instructor. May be repeated once. Fall, spring, summer. Course fee $40.

CD—Communication Disorders

(Offered through the Department of Communication Disorders.)

CD 2074 Individual Problems in Communication Disorders. (1-3 0 0) Prerequisite: consent of program director. Individual study designed to meet needs and interests of student. May be repeated for a maximum of six hours.

CD 2370 Phonetics. (3 3 0) An introduction to English phonetics. Fall.

CD 2371 Anatomy and Physiology of Speech. (3 3 0) Anatomical physiological systems that underlie speech production. Fall.

CD 2372 Language Development. (3 3 0) Speech and language development in the normally developing child. Five hours of observation of normal speech and language development required. Fall.

CD 2373 Survey of Communication Disorders. (3 3 0) Survey of human communication and disorders in children and adults. Fall.

CD 3094 Advanced Individual Problems in Communication Disorders. (1-3 0 0) Prerequisite: consent of program director. Advanced individual study designed to meet needs and interests of student. May be repeated for a maximum of six hours.

CD 3330 Child Language Disorders. (3 3 0) Prerequisite: 2370, 2372, 2371. Assessment and intervention of language disorders in preschool children. Five hours of childhood disorders observation required. Spring.

CD 3340 Child Phonological Disorders. (3 3 0) Prerequisite: 2370, 2371, 2372. Nature of articulation and phonological disorders in preschool children with focus on assessment and intervention. Five hours of observation required. Spring.

CD 3345 Introduction to Fluency Disorders. (3 3 0) Prerequisite: 2370, 2372, 2373. Etiology, characteristics, assessment, treatment and prevention of fluency disorders. Two-and-a-half hours of observation required. Spring.

CD 3355 Introduction to Audiological Assessment. (3 3 0) Prerequisite: MATH 1314. Physical characteristics of sound and the structure and function of the human auditory system. Pathologies of the ear and disorders of hearing. Measurement of basic audiologic test battery, including audiograms, masking, speech recognition and immittance. Five hours of audiology observation required. Fall.

CD 3356 Aural Rehabilitation. (3 3 0) Prerequisite: 3355. Approaches to aural rehabilitation in children and adults. Introduction to educational audiology and assistive listening devices. Spring.

CD 3365 Introduction to Voice Disorders. (3 3 0) Prerequisite: 2370, 2372, 2373. Etiology, characteristics, assessment, treatment and prevention of voice disorders. Communication disorders related to anomalies of craniofacial structures, including orofacial clefting of lips and palate. Fall.
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CD 3370  Diagnosis in Communication Disorders. (3 3 0) Prerequisite: 3330. Overview of general procedures in diagnosis in communication disorders. Fall.

CD 3392  Special Topics. (3 3 0) Prerequisite: 2371, 3350. Intensive exploration of a selected topic in communication disorders. Topic to be determined each semester course is offered.

CD 4372  Language Literacy Disorders. (3 3 0) Prerequisite: 3330, 3340. Theoretical models and current best evidence concerning the relationships among language disorders, learning disabilities and dyslexia; definitional and diagnostic issues and treatment approaches. Interventions aimed at improving phonological processing, fluency, comprehension, compensatory strategies and social skills will be emphasized. Spring. Course fee $30.

CD 4380  Introduction to Research in Communication Disorders. (3 3 0) Prerequisite: 3330, 3340. Introduction to research design in communication sciences and disorders. Developing understanding of research protocol, data analysis and professional writing skills needed for manuscript preparation. Application of research knowledge base in critically evaluating strength of evidence-based results supporting assessment and intervention. Spring.

CD 4381  Neural Basis of Communication Disorders (3 3 0) Prerequisite: 2370, 2371. Neuroscience and its application to aspects of normal and disordered communication. Spring.

CD 4385  Technology Applications in Communication Disorders. (3 3 0) The application of current technology as it relates to the assessment and intervention with people with communication disorders. Fall.

CD 4386  Acquired Speech and Language Disorders. (3 3 0) Prerequisite: 3370. Introduction to acquired speech and language disorders across the life span. Two-and-a-half hours of acquired speech and language disorders observation required. Spring.

CD 4390  Clinical Professional Issues in Communication Disorders. (3 0 0) Prerequisite: 3330, 3340. Senior-level introduction to clinical professional practices in communication disorders relating to professional ethics and scope of practice. Coverage of cultural diversity as it applies to characteristics, assessment, treatment and prevention of communication disorders. Spring. Course fee $60.

CD 4460  Speech Science and Instrumentation. (4 3 2) Prerequisite: 3330, 3340. Normal process of speech production from anatomic, physiologic, kinematic, aerodynamic, acoustic and perceptual perspective. Emphasis on measurement and analysis techniques, instrumentation and experimental paradigms used to study speech production and perception. Fall. Course fee $30.

CD 6301  Thesis. (3 0 0) Fall, spring.

CD 6302  Thesis. (3 0 0) Prerequisite: 6301, consent of instructor, graduate standing. Fall, spring.

CD 6305  Neuromotor Speech Disorders. (3 3 0) Evaluation and treatment of dysarthrias and apraxia of speech. Spring.

CD 6310  Voice Disorders. (3 3 0) Communication disorders related to dysfunction of the phonatory and resonance system. Voice production, assessment and treatment intervention. Spring.

CD 6315  Research in Communication Disorders. (3 3 0) Research design in behavioral sciences with emphasis in speech-language pathology. Development of a research protocol and design, data analysis and manuscript preparation. Fall.

CD 6320  Language Disorders in Children: Birth to 5. (3 3 0) Prevention, assessment and treatment of language disorders from birth to 5. Clinical and instrumentation evaluation techniques. Compensatory strategies and rehabilitation techniques in context of evidence-based research. Differences in assessment and treatment in children versus adults will be emphasized. Fall.

CD 6325  Augmentative and Alternative Communication. (3 3 0) Augmentative and alternative communication for severe speech and language disorders across the life span. Summer.

CD 6330  Aphasia and Related Neurogenic Language Disorders. (3 3 0) Assessment and treatment of acquired neurologically based disorders, including aphasia, dementia and Alzheimer's disease as well as closed-head injuries. Fall.

CD 6335  Fluency Disorders. (3 3 0) Theories, etiology, assessment, personal impact and therapeutic intervention of fluency disorders in children and adults. Fall.


CD 6370  Articulation and Phonological Disorders. (3 3 0) Assessment and treatment of articulation and phonological disorders in culturally diverse populations across the life span with transcription, scoring and analysis of assessment results explored. Fall.

CD 6375  Language Disorders in School-Age Children. (3 3 0) Current issues and approaches relative to the etiologies, characteristics, assessment, intervention and prevention of language and learning disorders in school-age children and adolescents. Fall.

CD 6388  Applied Clinical Research. (3 3 0) Clinical research process including review of the literature, problem statement, hypothesis, generation, testing hypotheses in the context of therapy, quantification of clinical progress and written reports. Evidence-based practices and scientific problem-solving approaches with clients will be facilitated. Single-subject experimental design application is highlighted. Spring.

CD 6392  Special Topics. (3 3 0) Various areas of speech-language pathology. Attention to individual needs of the student will be a primary objective. Emphasis on habilitative and rehabilitative aspects of the field. May be repeated once for credit. Summer.

CD 6394  Advanced Independent Study in Communication Disorders. (3 0 0) Various areas of speech-language pathology with attention to individual needs of the student. Emphasis on habilitative and rehabilitative aspects of the field. May be repeated once for credit. Spring.

CD 6398  Application of Clinical Principles. (3 0 6) Prerequisite: consent of instructor; student must not have provisional admission status. Supervised clinical practicum in communication disorders. Techniques to elicit and support appropriate professional behaviors in clinic, home and school situations; methods for facilitating social skills for communication, social interaction guidelines for clients of diverse cultural backgrounds; ASHA Code of Ethics and Scope of Practice, universal health precautions, clinical procedures in written clinical documentation and appropriate evidence-based intervention methods. Student will address standards of the Council of Academic Program in Communication Sciences and Disorders (CAPCSD)—Standard IV-D and Standard III-G. Portfolio of current information on wide range of professional issues, including policies, practices and guidelines to document knowledge of contemporary professional issues will be required. May be repeated for nine hours credit. Fall, spring, summer. Course fee $60.
CENG 2361 Surveying. (3 0 6) Prerequisite: consent of instructor; student must not have provisional admission status. Supervised advanced clinical practicum in communication disorders at selected external practicum sites. Student will address standard of the Council of Academic Programs in Communication Sciences and Disorders (CAPCSD); Standard III-H, Standard IC-A, Standard IV-G, Standard IV-B, Standard IV-C and Standard IV-D. Student must consult with clinical coordinator for contract with externship site, approval of outside facility. Maximum of nine hours credit. Fall, spring, summer. Course fee $20.

CENG—Civil Engineering
(Offered through the Department of Engineering and Computer Science.)

CENG 2361 Surveying. (3.2 2) Prerequisite: ENGR 1201 and 1304. Engineering principles and practices of plane surveying, staking, leveling, traversing, surveying errors and error theory, introduction to photogrammetry, earthwork including mass diagrams, road/highway curves and construction surveys. Fall, spring. Course fee $25.


CENG 3331 Introduction to Environmental Engineering. (3 2 2) Prerequisite: ENGR 1201 and CHEM 1412. Introduction to environmental problems, water quality indicators and requirements, potable water quality and quantity objectives, water sources and treatment methods; water pollution control objectives and treatment methods; solid waste management and introduction to air pollution control. Course fee $25. Fall, spring.

CENG 3341 Geotechnical Engineering. (3 2 2) Prerequisite: MENG 3340. Introduction to geotechnical engineering and testing. Identification and classification tests, flow net, principles of settlement, stresses in soils and shear strength testing; slope stability, retaining walls, bearing capacity. Course fee $25. Fall, spring.

CENG 3351 Structural Analysis. (3 3 0) Prerequisite: MENG 3340. Statically determinate/indeterminate structures by consistent deformation. Loads, shear, moment, and deflected shape diagrams for beams and framed structures. Deformation calculations. Application of flexibility methods to frames and continuous beams. Application of moment distribution and stiffness methods to continuous beams and braced frames. Influence lines for determinate and indeterminate beams. Fall, spring.

CENG 3352 Concrete Design. (3 3 0) Prerequisite: 3351. Analysis and design of beams, one-way slabs and columns. Mechanics, behavior and design of reinforced concrete members subject to axial loads, bending and shear. Spring.

CENG 3353 Steel Design. (3 3 0) Prerequisite: 3341. Design and behavior of the elements of steel structures with AISC specifications, proportioning members and connections using load and resistance factor design.

CENG 3362 Transportation Engineering. (3 3 0) Prerequisite: ENGR 2302, CENG 2361 and MATH 3342, and PHYS 2426. Introduction to planning and operations of transportation facilities, vehicle/operation/infrastructure characteristics, technological, economic and environmental factors. Fall, spring.

CENG 4097 Civil Engineering Research. (1-6 0 0) Selected individual research topics in civil engineering to accommodate more substantial research than can be encountered in normal course work. May be repeated for a maximum of six hours.

CENG 4322 Pavement Analysis and Design. (3 3 0) Prerequisite: 3362 and 3321. Serviceability concept, design factors, pavement types, basic differences between pavement types, basic differences between airport and highway pavements, stresses in flexible pavement, traffic considerations, materials and material characterization for different pavement layers, variability in pavement materials, methods of pavement design. Spring of odd years.

CENG 4332 Water and Wastewater Treatment. (3 3 0) Prerequisite: 3331. Physical, chemical and biological processes for the treatment of water and wastewater including air stripping, coagulation and flocculation, sedimentation, filtration, adsorption, chemical oxidation/disinfection, fixed film and suspended growth biological processes, and sludge management. Fall of even years.

CENG 4354 Finite Element Method for Structural Analysis. (3 3 0) Prerequisite: MENG 3340. Introduction of finite element analysis through applications to one-dimensional, steady-state problems such as elastic deformation and beam bending. Two-dimensional triangular and quadrilateral elements. Plane problems of stress analysis. Simple computer programs for one- and two-dimensional problems. Fall of even years.

CENG 4355 Structural Dynamics. (3 3 0) Prerequisite: 3351. Elementary vibration analysis, single and multiple degrees of freedom, free and forced vibrations, viscous damping, modal analysis. Spring of even years.

CENG 4356 Bridge Design. (3 3 0) Prerequisite: 3351 and 3353 or 3352. Bridge design in structural steel and reinforced concrete using AASHTO Bridge Design Specifications. Preliminary designs include investigating alternative structural systems and materials. Final designs include preparation of design calculations and sketches. Fall of even years.

CENG 4357 Wind Engineering. (3 3 0) Prerequisite: 3351. Atmospheric circulations, atmospheric boundary layer wind, bluff-body aerodynamics, aerelastic phenomena, wind-tunnel and full-scale testing, wind-load code and standards, effect of tornado and thunderstorm winds, design applications. Fall of odd years.

CENG 4358 Computer-Aided Structural Analysis. (3 2 2) Prerequisite: MENG 3340. Geometric and solid modeling, finite elements and optimization. Design an artifact, represent it on the computer, and analyze it using Finite Element Analysis using ANSYS and MatLAB. Fall of even years. Course fee $25.

CENG 4363 Road and Highway Design. (3 3 0) Prerequisite: 3362 and 3321. Introduction to traffic engineering and road/highway planning. Design, construction and maintenance of road/highway facilities; earthwork, drainage structures; pavements. Engineering design concepts used to produce practical, efficient, economical and feasible solutions to problems in such transportation areas. A complete design project is required. Oral and written reports. Computer applications. Fall.

CENG 4371 Hydrology and Hydraulics. (3 3 0) Prerequisite: 3331 and MENG 4304. The hydrologic cycle: precipitation, infiltration, runoff, evapotranspiration, groundwater and stream flow. Hydrograph analysis, flood routing, frequency analysis and urban hydrology. Hydraulics including pipe and channel flow with design applications in culverts, pumping, water distribution, storm and sanitary sewer systems. Fall, spring.

CENG 4380 Civil Engineering Senior Design. (3 1 4) Prerequisite: senior standing and instructor approval. Engineering concepts integrated from topics taught in sequences of upper-division courses to produce practical, efficient and feasible solutions of civil engineering problems. Computer applications are included. Final oral and written reports
CHEM 1405 General Chemistry I. (4 3 2) Prerequisite: MATH 1314, 1324 or 1332 or a mathematics course for which one of these courses is a prerequisite. Introductory course for non-chemistry majors. Fundamental concepts of chemistry, including atomic structure, chemical bonding, chemical reactions and states of matter. Selected laboratory experiments. Course is not open to students who have credit in CHEM 1411 and does not count as a prerequisite for CHEM 1412. Fall, spring. Course fee $35.

CHEM 1411 Chemistry I. (4 3 2) Prerequisite: MATH 1314 or 1324. Chemical laws and theory for science, engineering and pre-professional majors. Selected laboratory experiments. Fall, spring, summer I. Course fee $35.

CHEM 1412 Chemistry II. (4 3 2) Prerequisite: 1411. Continuation of 1411. Solutions, chemical equilibrium, ionic equilibria, acids and bases, thermodynamics and chemistry of selected elements. Selected laboratory experiments. Fall, spring, summer II. Course fee $35.

CHEM 2523 Organic Chemistry I. [CHEM 2423] (5 3 4) Prerequisite: 1412. Comprehensive study of carbon compounds, including discussion of properties, stereochemistry, resonance, and reactions and preparations of hydrocarbons. Laboratory techniques of organic chemistry; methods of purification and more important reactions; reactions used to classify organic compounds. Fall. Course fee $25.


CHEM 2533 Elementary Organic Chemistry. [CHEM 1419] (5 3 4) Prerequisite: 1412. Fundamental concepts of organic chemistry, including bonding and electronic structure, nomenclature, stereochemistry and reactions and preparations of organic compounds. Not open to students who have credit in 2523. Selected experiments in organic chemistry, including techniques of crystallization, distillation, extraction and organic reactions. Fall and spring of even years, fall of odd years. Course fee $25.

CHEM 3310 Environmental Chemistry. (3 3 0) Prerequisite: 1412. Environmental impacts of technological developments: air and water pollution, pesticides, food additives, energy production and distribution. Spring.

CHEM 3425 Introduction to Medicinal Chemistry. (4 3 2) Prerequisite: 2525. Principles of modern medicinal chemistry, including drug design and theory. Spring of even years. Course fee $35.

CHEM 3511 Analytical Chemistry. [CHEM 2401] (5 3 4) Prerequisite: 1412. Principles and methods of quantitative chemical analysis, dealing with volumetric, gravimetric and selected instrumental methods of analysis. Fall. Course fee $50.

CHEM 3521 Physical Chemistry I. (5 3 4) Prerequisite: 1412 and MATH 2414. Quantum theory, atom formation and molecular structure. Selected laboratory experiments. Fall of even years. Course fee $50.

CHEM 3522 Physical Chemistry II. (5 3 4) Prerequisite: 3521. Continuation of 3521. Molecular symmetry, rotational and vibrational spectroscopy, electronic transitions, magnetic resonance, and electric and magnetic properties of molecules. Selected laboratory experiments. Spring of odd years. Course fee $35.

CHEM 4223L Biochemistry I Laboratory. (2 0 4) Prerequisite: 4323 or concurrent enrollment. Current methods in biochemistry using modern equipment for spectrophotometry, chromatography, electrophoresis and immunology. Fall. Course fee $35.

CHEM 4224L Biochemistry II Laboratory. (2 0 4) Prerequisite: 4324 or concurrent enrollment. Continuation of 4223L. Selected experiments to complement lectures. Spring. Course fee $35.

CHEM 4323 Biochemistry I. (3 3 0) Prerequisite: 2525 (or 2533 and permission of instructor). Chemical structures and reactions that occur in living systems: amino acids, lipids and membranes, carbohydrates, nucleic acids, proteins, enzymes, mechanisms of enzymes, coenzymes and vitamins. Fall.

CHEM 4324 Biochemistry II. (3 3 0) Prerequisite: 4323. Continuation of 4323. Metabolic pathways (such as glycolysis, citric acid cycle, and urea cycle), bioenergetics, electron transport and oxidative phosphorylation, photosynthesis and biological information flow. Spring.

CHEM 4335 Industrial Laboratory Procedures and Techniques. (3 0 0) Prerequisite: 3511 and consent of instructor prior to registration. Introduction to industrial laboratory procedures and techniques. Fall, spring, summer I, summer II.

CHEM 4397 Undergraduate Research. (3 0 0) Prerequisite: 3511 and consent of instructor prior to registration. Selected individual research problems in chemistry. May be repeated once for credit. Fall, spring, summer I, summer II.

CHEM 4410 Environmental Analytical Chemistry. (4 3 2) Prerequisite: 1411, 1412, 2533, ENVR 4404. Principles of chemical and instrumental methods for quantitative chemical analysis of environmental samples with U.S. EPA/USEA standard methods as examples, statistical data treatment of analytical results, and applications of analytical technologies for solving problems in environmental/agricultural science and engineering.

CHEM 4411 Instrumental Analysis. (4 3 4) Prerequisite or concurrent enrollment in 3511, 3522. Introduction to theory of instrumental methods of chemical analysis. Infrared, visible ultraviolet, atomic absorption, and magnetic resonance spectroscopy, mass spectrometry, gas chromatography and electroanalytical methods. Same as PHYS 4411. Spring of even years. Course fee $50.

CHEM 4431 Inorganic Chemistry. (4 3 4) Prerequisite: 3522. Modern theories of chemical bonding and molecular structures of inorganic compounds, including elementary concepts of molecular orbital, valence bond, crystal field and ligand field theories. Use of physical measurements to solve current problems in inorganic chemistry. Fall of odd years. Course fee $50.

CHEM 5223L Biochemistry I Laboratory. (2 0 4) Prerequisite or concurrent enrollment: 4323 or 5323. Current methods in biochemistry using modern equipment for spectrophotometry, chromatography, electrophoresis and immunology. Fall. Course fee $35.

CHEM 5224L Biochemistry II Laboratory. (2 0 4) Prerequisite or concurrent enrollment: 4324 or 5324. Continuation of 5223L. Selected experiments to complement lectures. Spring. Course fee $35.

CHEM 5323 Biochemistry I. (3 3 0) Prerequisite: 2525 (or 2533 and permission of instructor). Chemical structures and reactions that occur in living systems: amino acids, lipids and membranes, carbohydrates, nucleic acids, proteins, enzymes, mechanisms of enzymes, coenzymes and vitamins. Fall.

CHEM 5324 Biochemistry II. (3 3 0) Prerequisite: 4323 or 5323. Continuation of 5323. Metabolic pathways (such as
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glycolysis, citric acid cycle and urea cycle), bioenergetics, electron transport and oxidative phosphorylation, photosynthesis and biological information flow. Spring.

CHEM 5411 Instrumental Analysis. (3 3 4) Prerequisite: 3511, 3522. Introduction to theory of instrumental methods of chemical analysis. Infrared, ultraviolet and magnetic resonance spectroscopy, mass spectrometry, gas or chromatography, and radiochemical and electroanalytical methods. Spring of even years. Course fee $25.

CHEM 5431 Inorganic Chemistry. (4 3 4) Prerequisite: 3522. Modern theories of chemical bonding and molecular structures of inorganic compounds, including elementary concepts of molecular orbital, valence bond, crystal field and ligand field theories. Use of physical measurements to solve current problems in inorganic chemistry. Fall of odd years. Course fee $50.

CHEM 5521 Physical Chemistry I. (5 3 4) Prerequisite: 3511 and MATH 2414. Quantum theory, atomic structure and molecular structure. Selected laboratory experiment. Fall of even years. Course fee $50.

CHEM 5522 Physical Chemistry II. (5 3 4) Prerequisite: 3521 or 5521. Continuation of 5521. Molecular symmetry, rotational and vibrational spectroscopy, electronic transitions, magnetic resonance, and electric and magnetic properties of molecules. Selected laboratory experiments. Spring of odd years. Course fee $50.

CHEM 6094 Advanced Problems. (1-6 0 0) Individual special topics not covered by regular course work. Fall, spring, summer I, summer II.

CHEM 6095 Graduate Research. (1-6 0 0) Graduate research in chemistry. Fall, spring, summer I, summer II.

CHEM 6097 Graduate Research. (1-6 0 0) Graduate research in chemistry. Fall, spring, summer I, summer II.

CHEM 6110 Graduate Seminar. (1 0 0) Discussion of selected topics from chemical literature and from the student's thesis research. May be repeated once. Fall, spring, summer I, summer II.

CHEM 6301 Thesis. (3 0 0) Fall, spring, summer I, summer II.

CHEM 6302 Thesis. (3 0 0) Fall, spring, summer I, summer II.

CHEM 6314 Advanced Analytical Chemistry. (3 3 0) Prerequisite: 4411 or 5411. Advanced principles of analytical measurements and instrumentation. Topics include spectrophotometry, electroanalytical methods, highly sensitive laser spectroscopy, process analytical technology, sensor technology, sensor technology and lab-on-chip technology. Required for students pursuing a M.S. degree in chemistry and recommended for biology, biochemistry, forensic chemistry and environmental science. Spring of even years.

CHEM 6320 Advanced Inorganic Chemistry. (3 3 0) Prerequisite: 4431. Determination of molecular structure of inorganic and organometallic species, modern aspects of d-orbit, magnetic resonance, vibrational and electronic methods.

CHEM 6340 Advanced Organic Chemistry. (3 3 0) Prerequisite: 2525. Topics vary from year to year and include stereochemistry, conformational analysis, heterocyclic chemistry and alkaloids.

CHEM 6341 Enzymology. (3 3 0) Prerequisite: 4324. Advanced course in enzyme classification, structure and mechanism. Crystallographic, kinetic and thermodynamic analysis of enzyme catalysis, and modern methods in rational design and directed evolution of enzyme structure and function. Recommended for biochemistry, biology, agriculture and forensic science students requiring sophisticated knowledge of biocatalysis. Spring of even years.

CHEM 6342 Advanced Metabolism. (3 3 0) Prerequisite: 4324. Advanced course in metabolism of nitrogen, carbon, sulfur, and implications in mammalian, plant and microorganism pathways. Emphasis on plant secondary biosynthesis and anaerobic microorganism metabolic metabolism. Recommended for biochemistry, biology and agriculture students requiring sophisticated knowledge of metabolism. Fall of even years.

CHEM 6350 Introduction to Quantum Mechanics. (3 3 0) Prerequisite: 3522. Basic concepts of quantum mechanics; square well, rigid rotor, harmonic oscillator and hydrogen atom. Application to chemical systems in terms of resonance, wave mechanics, perturbation and variation methods.


CIDM—Computer Information and Decision Management

(Offered through the Department of Information and Decision Management.)

CIDM 1105 Computer Literacy. (1 0 0) Introduction of computing concepts and overview of related information technologies. Exploration of software applications, and their uses and impact on society and enterprises. Hands-on experience with applications software to show students how digital technologies are used in professional environments. Fall, spring. Course fee $10.

CIDM 1301 Introduction to Information Science. [BCIS 1301] (3 3 0) Beginning course emphasizing use of productivity software to develop technological skills for the Information Age. Focuses on enhancing personal productivity and communication through effective retrieval, evaluation, synthesis and presentation of information from the Internet and other sources. Fall, spring, summer. Course fee $20.

CIDM 1315 Programming Fundamentals. [COSC 1315] (3 3 0) Introduces the fundamental concepts of procedural programming. Topics include data types, control structures, functions, arrays, files and mechanics of running, testing and debugging. Course offers an introduction to the historical and social context of computing and an overview of computer science as a discipline. Fall, spring. Course fee $20.

CIDM 2315 Programming Business Applications. (3 3 0) Prerequisite: 1315. In-depth coverage of programming business application paradigms. Students will use a high-level object oriented language to define, design and build a variety of business applications with robust graphical user interfaces. Object-oriented paradigms will be covered in depth; various incarnations of taxonomic and containment hierarchies will be emphasized. Fall.

CIDM 2342 Statistics for Business and Economics. (3 3 0) Prerequisite: MATH 1325 or permission of instructor. Methods of collecting, analyzing, presenting and interpreting numerical data for business purposes. General application of statistical principles. Fall, spring.

CIDM 2345 Video Game Design. (3 3 0) Overview of procedures and processes that make up designing and developing video games. Emphasis on history of gaming, interaction science,
level design, development processes and development life cycle. Hands-on group learning activities and projects will be emphasized. Fall.

CIDM 2390 Systems Analysis and Design. [BCIS 2390] (3 3 0) Prerequisite: 1315. Examination of analysis information, logical and physical specifications of the system development process in an organizational setting, and use of analysis and design to meet business objectives. Topics include systems theory, role of the modern systems analyst, requirement analysis, system analysis methods, data gathering, feasibility, modeling methods, systems design and construction methods, system implementation and project management. Fall, spring. Course fee $20.

CIDM 3310 Spreadsheet Applications in Business. (3 3 0) Use of spreadsheets and spreadsheet tools, macros and add-ins to model, build, maintain, analyze and present corporate data. Perform what-if analysis, risk analysis, statistical data analysis and build decision support models. Course fee $20.

CIDM 3312 Advanced Business Programming. (3 3 0) Prerequisite: 2315. In-depth coverage of advanced programming topics, to include application libraries, exception handling, software quality assurance, threading and user interface implementation. Fall. Course fee $20.

CIDM 3320 Digital Communications and Collaboration. (3 3 0) Theory behind and effective application of digital communications media and workflow automations across the enterprise. Technologies to be studied include blogs, portals, groupware, electronic meeting systems, document management, visualization and virtual team support. Fall.

CIDM 3330 Management Information Systems. (3 3 0) In-depth study of conceptual, behavioral and psychological aspects of organizational information systems. Topics include development, operation, management, use, parties involved, control, structure and social impacts of information systems. Fall, spring. Course fee $20.

CIDM 3342 Principles of Business Informatics. (3 3 0) Prerequisite: 1315, 2342. Principles of data analysis, classification, categorization and sampling in support of business intelligence, decision support and data mining for various kinds of data. In-depth discussion of various analysis techniques such as discretization, aggregation, sampling, dimensionality reduction and variable transformations. Fall.

CIDM 3345 Video Game Design II. (3 3 0) Prerequisite: 2345 or consent of instructor. Application of video game projects and game designer tasks: pre-production, design phase, production, post-production, level design fundamentals, enemy design, character design and story design. Analysis of contemporary game industry platforms and their specific challenges. Class project: video game concept creation. Spring. Course fee $25.

CIDM 3350 Database Systems Design. (3 3 0) Prerequisite: 1315 or equivalent. Principles of database design and structure. Analysis and implementation of database systems with emphasis on the relational model. Detailed study of data modeling concepts and techniques. Topics include physical and logical design, normalization, SQL, transaction and concurrency control, security and data integrity. Students design and implement a major database application project. Fall, spring. Course fee $20.


CIDM 3380 Information Security. (3 3 0) Broad overview of protection of information. Topics include risk identification, risk management, damage assessment and abatement, internet security, ethics and privacy, as well as personal information security. Fall.

CIDM 3382 Enterprise Web-Based Applications Development. (3 3 0) Prerequisite: 3350, 3372. Conceptual foundation of issues, principles, methodologies, system architectures and information infrastructure in building enterprise-level web applications that use component object model (COM) components on both the client and server side in an integrated visual-development environment. Course fee $20.

CIDM 3385 Networking and Data Communications. (3 3 0) Introduction to networks and data communications architecture, protocols and standards. Emphasis on network management of equipment, architectures, security and recovery plans. Survey of emerging networks technologies. Students will be exposed to administration, designing, configuring and implementing networks. Course fee $20.

CIDM 3390 Project Management. (3 3 0) Prerequisite: 2342 or equivalent. Management of projects and the quantitative methods used in managerial supervision. Theoretical and practical applications of project planning, budgeting, scheduling, cost analysis, resource leveling and control, applications of Critical Path Method, Program Evaluation and Review Technique, and the use of computer for project planning and management. Same as MGT 3390.

CIDM 4096 Supervised Reading in Information Systems. (1-6 0 0) Current problems in information systems through reading periodicals, government publications and books, which have had a profound effect on this rapidly changing technology. Course fee $20.

CIDM 4310 Decision Support/Artificial Intelligence Systems. (3 3 0) Prerequisite: 2342. Concepts of decision support systems (DSS), including DSS architecture, information management, model management and interface subsystems. Concept of artificial intelligence (AI) systems. Exploration of AI languages, knowledge representation techniques, reasoning methods and learning approaches. Course fee $20.

CIDM 4325 Principles of Geographic Information Systems. (3 3 0) Prerequisite: 1315, 3350. Principles of geographic information systems, GIS data, GIS data representation models, underlying GIS technology, GIS applications in areas such as utilities, environment, natural resources, marketing, business intelligence and decision support. Fall.

CIDM 4331 Production and Operations Management. (3 3 0) Prerequisite: 2342 and MGT 3330 or equivalent. Study and analysis of planning, design, direction, and control of physical and human resources used in production of goods and services. Emphasis on solutions to operational problems in physical, locational, storage and general service subsystems.

CIDM 4343 Supply Chain Management. (3 3 0) Prerequisite: 3330, 4331 or consent of instructor. Explores coordination and cooperation required between suppliers, manufacturers, distributors and retailers to bring a product to market. Integrates knowledge from operations management, management, marketing and information systems. Covers the five major costs of logistics—inventory, transportation, storage, packaging and information—and the trade-offs involved in managing these costs. Same as MGT 4343. Fall.

CIDM 4350 Data Warehousing and Data Mining. (3 3 0) Prerequisite: 2342, IDM 3350. Study and application of concepts and techniques related to designing and building data warehouse applications and data marts. Reviews management and usage of data, online analytical processing and data mining concepts, tools and techniques. Fall. Course fee $20.
CIDM 4352 Business Forecasting. (3 3 0) Prerequisite: 2342 or equivalent. Measurement of business conditions. Development of trends, seasonal cycles and index numbers to evaluate the position of the firm, industry or national economy. Model building, long-range planning, regression analysis and other quantitative techniques used in business analysis. Course fee $20.

CIDM 4358 Operations Research Methods. (3 3 0) Prerequisite: 2342 or equivalent. Use of deterministic and stochastic processes as effective decision-making tools in solving business and economic problems. Topics include network optimization analysis, resource allocation models, inventory control, replacement processes, queuing theory and markov chains. Course fee $20.


CIDM 4390 Software Systems Development. (3 3 0) Prerequisite: 4360. Capstone course for study of software engineering. Emphasis on requirement specifications, logical design, issues in OOP, design pattern, client-server computing, project management. Students construct original and significant projects that synthesize all course experiences to produce well-designed software applications. Fall, spring. Course fee $20.

CIDM 4398 Internship in CIS. (3 0) Prerequisite: junior standing and approval of department head. One semester of prearranged work in IDM in a designated business or industry cooperating with WTAMU. Students will obtain comprehensive work experience, and be responsible for reports and appraisals as required by the instructor.

CIDM 5310 Decision Support/Artificial Intelligent Systems. (3 3 0) Prerequisite: IDM 2342. Concepts of decision support systems (DSS), including DSS architecture, information management, model management and interface subsystems. Concepts of artificial intelligence (AI) systems. Exploration of AI languages, knowledge representation techniques, reasoning methods and learning approaches.

CIDM 5331 Production and Operations Management. (3 3 0) Prerequisite: 2342 and MGT 3330 or equivalent. Study and analysis of planning, design, direction, and control of physical and human resources used in production of goods and services. Emphasis on solutions to operational problems in physical, locational, storage and general service subsystems. Course fee $20.

CIDM 6096 Reading and Conference. (1-3 0) Directed reading and reporting in information systems as related to the student’s area of interest. May be repeated once. Course fee $20.

CIDM 6300 Statistical Methods in Business and Economics. (3 3 0) Prerequisite: MATH 1325 or equivalent. Probability distributions, estimation, testing, hypotheses, sample survey methods, experimental designs, time-series analysis, correlation and regression analysis.

CIDM 6305 Quantitative Analysis in Business. (3 3 0) Prerequisite: 6300 or equivalent. Application of quantitative techniques to business, including statistics, linear programming and simulation. Techniques in decision making and their relation to information systems. Fall, spring.

CIDM 6310 Information Technology Management. (3 3 0) Examination of managerial and strategic issues associates with using IT in networked enterprise, and the role of information technology to manage organizational efficiency and transformation efforts in global competitive environment. Topics include IT and business strategy alignment, IT-enabled business models, IT security and legal issues.

CIDM 6315 Simulation. (3 3 0) Prerequisite: 6305 or equivalent. Introduction to simulation and comparison with other problem-solving techniques; simulation methodology, including generation of random numbers and variates, time-flow mechanisms, sampling considerations, and validation and analysis of simulation models and results; survey of discrete-event simulation languages; applications of simulation, including operating systems and networks. Course fee $20.

CIDM 6320 Econometrics. (3 3 0) Prerequisite: 6305 or equivalent. Introduction to econometric analysis. Application of econometric analysis techniques to problems in agriculture and business. Includes multivariate distributions, maximum likelihood, simultaneous equations systems, nonlinear regression and nonlinear optimization. Same as AGBE 6320.

CIDM 6325 Development of Internet Applications and Electronic Commerce. (3 3 0) Technical aspects of Internet, intranet and extranet architectures and network technologies for development of corporate strategies and...
initiatives in enterprise networking, Internet information systems, electronic commerce and security issues. Course fee $20.

CIDM 6330 Software Engineering and Systems Development. (3 3 0) Thorough examination of principles of software engineering concepts. Use of object-oriented paradigm to design, analyze, and construct enterprise business applications. Traditional structured systems design and analysis. Emphasis on information analysis and logical requirement specifications of systems and validity, software quality and metrics.

CIDM 6340 Advanced Network Administration and Management. (3 3 0) State-of-the-art network technologies and their applications to solve business problems and/or create strategic advantage. Emphasis on management of equipment, architectures, security, recovery plans, strategic plans and transmission alternatives using case studies and audits of various systems.

CIDM 6350 Database Development for Business Applications. (3 3 0) Concepts of database systems emphasizing data storage, queries, database models and languages related to database design and implementation techniques. Comprehensive presentation of database and administrative issues and concepts in the new business enterprise.

CIDM 6355 Data Mining Methods. (3 3 0) Study and application of concepts and techniques related to management and usage of data, online analytical processing, and data mining concepts, tools and techniques. Principles of data analysis, classification, categorization and sampling in support of business intelligence operations.

CIDM 6362 Advanced Business Forecasting. (3 3 0) Prerequisite: 6305 or equivalent. Analysis of forecasting techniques and business theories, the interconnection between forecasting methods and the conditions under which each are used will be examined. Similarities and differences between forecasting for an industry and for the firm are identified. Same as ECON 6362. Course fee $20.

CIDM 6375 Planning for IT in Biotechnology and Health Care. (3 3 0) Issues and strategies associated with strategic planning and implementation of the application of IT in health-care organizations. Examination of the role of information technology as a critical contributor to strategies and plans to integrate care, reduce costs and respond to a complex reimbursement environment. Course fee $20.

CIDM 6390 Project Management for the Enterprise. (3 3 0) Theoretical foundation, practical applications and information technology tools in support of project planning, budgeting, scheduling, cost analysis, resource leveling and control, and project human resource management. Applications of Critical Path Method, and Program Evaluation and Review Technique are also emphasized. Same as MGT 6390. Fall. Course fee $20.

CIDM 6392 Contemporary Issues in Information Systems. (3 3 0) Selected topics of current interest in the field, including IT impacts on business processes, changing roles of the Internet, privacy and security issues, information visualization and best practices in IT.

COMM—Communication Studies

(Offered through the Department of Communication.)

COMM 1315 Basic Speech Communication. [SPCH 1315] (3 3 0) Emphasis on basic principles of communication with special application to public speaking. Fall, spring, summer I, summer II, winter intersession, May intersession. Web-based.

COMM 1318 Interpersonal Communication. [SPCH 1318] (3 3 0) Psychological, physical and cultural barriers to interpersonal communication with emphasis on overcoming these barriers in order to improve interpersonal communication. Fall, spring, web-based.

COMM 321 Business and Professional Communication. [SPCH 321] (3 3 0) Communication skills and theories most relevant to students in contemporary business and professional fields. Focus on developing skills in interviewing, small-group communication and public speaking. Web-based. Fall, spring.

COMM 2074 Individual Problems. (1-3 0 0) Individual study designed to meet needs and interests of the student. May be repeated. Fall, spring, summer I, summer II.

COMM 2178 Forensics. (1 0 2) Participation in intercollegiate debate and contest activities. Any combination of hours from 2718 and 4278 may be repeated for a total of eight semester hours credit. Only four hours of forensics (2718 or 4278 ) can count toward the speech major. Fall, spring. Course fee $4.

COMM 2335 Argumentation. (3 3 0) Skills necessary for persuasive speech development. Basic argument formation, speaker credibility and research concerns. Practice of critical thinking skills and persuasive techniques through class presentations. Fall.

COMM 2341 Basic Performance of Literature. [SPCH 2341] (3 3 0) Emphasis on oral interpretation of prose, poetry and drama with an understanding of textual analysis, character placement and characterization. Fall. Course fee $10.

COMM 2376 Communication Theory. (3 3 0) Wide variety of communication theories as a foundation for better understanding of the field of communication. Theories will be applied to communication experiences students encounter daily. Fall.

COMM 2377 Intercultural Communication. (3 3 0) Investigates relationship between culture and communication, and strategies to overcome barriers in the communication process created by diverse social forms and belief systems. Cultural patterns and assumptions and how they relate to intracultural, cross-cultural, interethnic and international communication. Fall, spring, web-based.

COMM 3094 Individual Problems. (1-3 0 0) Individual study designed to meet needs and interests of the student. May be repeated. Fall, spring, summer I, summer II.

COMM 3301 Advanced Public Speaking. (3 3 0) Development of a marked degree of skill in composition and delivery of various types of communication, including interviewing and public address. Spring of even years.

COMM 3302 Advanced Performance of Literature. (3 3 0) Oral interpretation of literature with emphasis on experimental forms, character delineation, use of dialect and dual performance. Spring of odd years. Course fee $10.

COMM 3303 Communication in the Legal Process. (3 3 0) Exploration of various types of communication involved in our legal process. Topics include importance of verbal and non-verbal communication in attorney-client relationships, jury selection and courtroom presentations. Fall of even years.
COMM 3315 Research Methods. (3 3 0) Prerequisite: 2376. Introduction to research methods in communication. Designed to improve students’ ability to understand and critique communication research and to understand a variety of research techniques. Spring.

COMM 3320 Nonverbal Communication. (3 3 0) Analysis of fundamentals and forms of nonverbal communication. Focus on use of the body in conscious and unconscious gestures, proxemics, kinesics and effects of these elements on the environment and culture of the individual. Fall.

COMM 3325 Communication for the Classroom. (3 3 0) Means to analyze, develop and facilitate communication behaviors. Theoretical and pragmatic approaches to classroom communication. Fall.

COMM 3331 Organizational Communication. (3 3 0) Communication within organizations, including interpersonal factors, motivation, change and conflict resolution, and communication auditing procedures. Students will gain experience in using the case study in practical applications of theory. Fall.

COMM 3341 Persuasion. (3 3 0) Theory of human motivation as social influence. Analysis of persuasive materials and development of persuasive strategies, preparation and presentation of persuasive appeals. Fall, spring.

COMM 3345 Discussion and Small-Group Communication. (3 3 0) Theory and practice are utilized to develop greater awareness of the dynamics of small-group interaction. Participation in and evaluation of formal and informal discussion groups. Spring.

COMM 3370 Gender Communication. (3 3 0) Explores communication about women and men as well as communication between women and men. Topics include gender differences, images of gender in mass media, gender images shaped by language, and communication between men and women in a variety of contexts. Fall, spring.

COMM 3392 Special Topics in Communication. (3 3 0) Indepth study and discussion of current issues in communication research. May be repeated once for credit.

COMM 3399 WT Leadership. (3 0 0) Prerequisite: consent of instructor. Students serve as trainers for the Teen Leadership Amarillo/Canyon program. Skills-based course relies on experiential learning to develop understanding of leadership theory and of training and development theory. May be repeated once for credit. Fall, spring. Same as IDS 3399.

COMM 4278 Advanced Forensics. (2 0 0) Prerequisite: upperclassman standing. Focuses on developing communication skills, critical thinking skills, performance skills and analysis necessary for effective communication in a variety of competitive forensics events. Any combination of hours from 2178 and 4278 may be repeated for a total of eight semester hours credit. Only four hours of forensics (any combination of 2178 and 4278) can count toward the speech major. Fall, spring.

COMM 4301 Introduction to Rhetorical Criticism. (3 3 0) Designed to acquaint students with rhetorical criticism as a method for answering research questions in communication. Students will apply analytical skills using different methods to evaluate significant contemporary speeches and rhetorical artifacts. Emphasis on developing good writing skills and a critical perspective. Capstone course in communication. Fall.

COMM 4305 Research Practicum. (3 0 0) Prerequisite: junior standing, 3315, consent of adviser. Participation in faculty research projects, data analysis and bibliographic research. Fall, spring.

COMM 4310 Communication Training and Development. (3 3 0) Prerequisite: 2376. Design, development, presentation and evaluation of communication training programs. A guiding principle of the course is that training content is situational, but the process of developing effective training is generalizable. Course will provide practical and theoretical materials. Spring.

COMM 4330 Storytelling and Puppetry. (3 3 0) Acquaints students with the art of storytelling and application of storytelling to school, home and community contexts, and with the use of puppetry in educational settings. Fall, spring. Course fee $5.

COMM 4370 Presidential Rhetoric. (3 3 0) American presidency with specific regard to its role in public persuasion on significant public issues. Fall of even years.

COMM 4373 Methods in Competitive Speech. (3 3 0) Study and application of performance theories. Students design and implement performance activities through teaching experience in conjunction with speech camp. Summer.

COMM 4393 Senior Thesis. (3 0 0) Prerequisite: senior standing, 3315, consent of adviser. Completion of senior thesis. Fall, spring, summer I, summer II.

COMM 4398 Communication Internship. (3 0 0) Professional work experience in a communication-related organization. No class hours are met, however, student interns are expected to meet with the instructor periodically and complete a final report of their work experience. Cannot be repeated. Fall, spring, summer I, summer II.

COMM 5373 Methods in Competitive Speech. (3 3 0) Study and application of performance theories. Students design and implement performance activities through teaching experience in conjunction with speech camp. Fall, spring, summer I, summer II.

COMM 6301 Thesis. (3 0 0) Prerequisite: completion of core and 18 graduate hours. Fall, spring, summer I, summer II.

COMM 6302 Thesis. (3 0 0) Fall, spring, summer I, summer II.

COMM 6303 Performance Thesis. (3 0 0) Prerequisite: completion of core, 18 graduate hours and 6301. Thesis project which results in a public performance. Enrollment must be repeated until public performance is completed. Fall, spring, summer I, summer II.

COMM 6304 Research Project in Corporate Communication. (3 0 0) Study and application of theory in designing and implementing a communication research project in an organization. Fall, spring, summer I, summer II.

COMM 6305 Research Project in Mass Communication. (3 0 0) Study and application of theory in designing, implementing and programming a communication research project in or for an organization. Same as MCOM 6305. Fall, spring, summer I, summer II.

COMM 6306 The Art of Storytelling. (3 3 0) Emphasis on performance of storytelling genres. Students will compile a story file, as well as plan, perform and produce an end-of-semester storytelling festival. Spring.

COMM 6310 Instructional Training and Development in Communication. (3 3 0) Acquaints prospective organizational trainer and/or consultant with significant issues pertaining to design, implementation and assessment of instructional programs. Each student develops a one-day program suitable for a professional audience and presents one module from this program to the class. Spring.

COMM 6315 Theories of Communication. (3 3 0) Analysis of concepts, models and pertinent research across the broad spectrum of theory building and contemporary theories of communication. Spring.
intercultural communication. Intercultural communication is the process through insight provided by different perspectives and experiences is gained. Spring, summer I.

COMM 6330 Mass Communication Seminar. (3 3 0) Interdisciplinary team-taught course by speech communication and mass communication graduate faculty. Topics may vary by semester. Emphasis on providing master's degree students with knowledge of important issues in the field of mass communication. May be repeated once for credit when topic varies. Same as MCOM 6330. Fall.

COMM 6331 Seminar in Organizational Communication. (3 3 0) Review of theories of organizational communication, consulting techniques and research methods in organizational communication. Topics may vary by semester. Emphasis is on providing knowledge of current trends in the field of organizational communication. May be repeated once for credit when topic varies.

COMM 6340 Seminar in Public Communication. (3 3 0) Methods of disseminating information in society. Survey of human relations theory, public relations and community relations. Same as MCOM 6340.

COMM 6350 Seminar in Rhetorical Criticism. (3 3 0) Method of rhetorical criticism as an approach to answering research questions in communication. Variety of methods and artifacts will be analyzed. Spring. Web based.

COMM 6355 Seminar in Nonverbal Communication. (3 3 0) Analysis of fundamental forms of nonverbal communication. Use of the body in conscious and unconscious gestures, proxemics, kinesics and the effect of these on the environment and culture of the individual. Spring.

COMM 6380 Introduction to Graduate Communication Studies. (3 3 0) Overview of the history and current status of communication research and practice. Instruction in basic research; library and other resources; bibliographical format of research reports in accordance with standard style guides. Should be taken the first semester of graduate enrollment. Fall.

COMM 6381 Seminar in Quantitative Research Methods (3 3 0) Methodology, organization and participation in quantitative/statistical communication research. Same as MCOM 6381. Spring.

COMM 6382 Qualitative Research Methods. (3 3 0) Exposure to the experience of qualitative data collection for communication research. Emphasis on observing and interviewing in a field setting and discussing these experiences, supplemented with readings. Upon completion of course, students will be able to design a qualitative study. Fall.

COMM 6383 Internship in Mass Communication. (3 0 0) Practicum in mass communication. Students will identify an approved agency which has agreed to a proposed project. Students will investigate, research, design and complete a mass communication project. Same as MCOM 6383. Fall, spring, summer.

COMM 6384 Internship in Corporate Communication Research. (3 0 0) Practicum in applied organizational communication research. Students will identify an approved organization, which has agreed to a proposed research project. Students will investigate, research, design and complete an applied organizational research project. Fall, spring, summer I, summer II.

COMM 6385 Communication Instruction at the College Level. (3 3 0) Investigation and evaluation of techniques and methods of teaching in various communicative arts. Fall.

COMM 6388 Performance Theory. (3 3 0) Exploration of performance theory and application of theory in solo performances staged by students. Spring.

COMM 6392 Current Issues in Communication. (3 3 0) Special seminars designed to discuss current issues. May be repeated once for credit.

COMM 6395 Problems in Public Communication. (3 0 0) Prerequisite: consent of instructor. May be repeated once with approval of department head. Fall, spring, summer I, summer II.

COMM 6398 Forensics Internship. (3 0 0) Prerequisite: consent of instructor. Experience with sponsoring, planning and coaching collegiate forensics events. Students will assist with tournaments hosted by WTAMU and will travel with the Forensics Team to at least one tournament. Fall, spring, summer I, summer II.

COMM 6399 Field Experience with Non-Profit Organizations. (3 0 0) Students will be assigned to a non-profit organization to assist with the organization’s mission, particularly in performance studies. Fall, spring, summer I, summer II.

CRIJ—Criminal Justice

(Offers through the Department of Political Science and Criminal Justice.)

CRIJ 1301 Introduction to Criminal Justice. [FOSC] (3 3 0) History and philosophy of criminal justice and ethical considerations, crime defined, its nature and impact, overview of criminal justice system, law enforcement, court system, prosecution and defense, trial process and corrections.

CRIJ 1306 Court Systems and Practices. [FOSC] (3 3 0) Jurisdiction in the criminal justice system, structure of the American court system, prosecution, right to counsel, pretrial release, grand juries, adjudication process, types and rules of evidence, sentencing.

CRIJ 1307 Crime in America. [FOSC] (3 3 0) American crime problems in historical perspective, social and public policy factors affecting crime, impact and crime trends, social characteristics of specific crimes, prevention of crime.

CRIJ 1310 Introduction to Law. [FOSC] (3 3 0) Practical study of substantive civil and criminal law and procedures applicable to the average citizen in everyday life, introductory law course for criminal justice majors. Same as POSC 1310.

CRIJ 2328 Contemporary Policing. [FOSC] (3 3 0) Police profession, organization of law enforcement systems, police role, police discretion, ethics, police-community interaction, current and future issues.

CRIJ 3322 Criminal Investigation. (3 3 0) Investigation theory, collection and preservation of evidence, sources of information, interview and interrogation, uses of forensic sciences, case and trial preparation. Course fee $10.

CRIJ 3332 Law of Corrections. (3 3 0) In-depth study of legal aspects of corrections from conviction to release.

CRIJ 3362 Statistics for the Social Sciences. (3 3 0) Introduction to statistical techniques most commonly used in social sciences. Emphasis on nonparametric tests, correlation, sampling techniques and use of SPSS. Same as POSC 3362, SOCI 3362 and SOCW 3362.

CRIJ 3370 Penology. (3 3 0) Corrections in the criminal justice system, organization of correctional systems,
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correctional role, institutional operations, alternatives to institutionalization, treatment and rehabilitation, current and future issues. Same as SOCI 3372.

CRIJ 3372 Prisons in America. (3 3 0) Role and philosophy of imprisonment in both juvenile and adult corrections, including special problems of inmate subculture. Same as SOCI 3372.

CRIJ 3374 Victimology. (3 3 0) Introductory course exploring the role, treatment and remedies of crime victims in the criminal justice system. Same as SOCI 3374.

CRIJ 3382 Women and the Criminal Justice System. (3 3 0) Evolution and impact of women's participation in the justice system as victims, offenders and professionals. Same as SOCI 3382.

CRIJ 3384 Drug Abuse, Crime and Society. (3 3 0) Issues and problems surrounding drugs and drug abuse in society and the connection between drugs and crime. Emphasis on social and legal control measures on alcohol and other drugs, prevention and public safety. Same as SOCI 3384.

CRIJ 4096 Readings. (1-3 0 0) Designed to provide flexibility for students to pursue interests outside established curriculum but within the field of criminal justice. Enhancement of knowledge beyond that offered in prescribed classes. Student may enroll for one, two or three hours credit. May be repeated for a maximum of six hours when topics vary.

CRIJ 4098 Internship. (3,6 0 0) Prerequisite: consent of instructor and 12 hours of criminal justice. Field work in criminal justice agencies under supervision as prescribed and arranged by instructor. Application of criminal justice knowledge in professionally supervised practice with individuals, groups and communities. (Six hours are expected, but three hours may be waived with consent of instructor.)

CRIJ 4324 Community Policing. (3 3 0) Police department integration of delivery of police services to communities.

CRIJ 4326 Managing Police Organizations. (3 3 0) Practical study of police organizations, applicable for students studying management of police organizations.

CRIJ 4328 Terrorism. (3 3 0) Prerequisite: junior standing. Terrorism in our world. Understanding what terrorism is, why it occurs and why it will continue into the future.

CRIJ 4334 Criminal Law. (3 3 0) History and philosophy of modern criminal law with emphasis on provisions of the Texas Penal Code.

CRIJ 4340 Constitutional Rights of the Accused. (3 3 0) In-depth study of processes of the criminal justice system governed by guarantees and protections of U.S. and state constitutions with emphasis on recent developments. Same as POSC 4340.

CRIJ 4348 Ethics and the Justice and EMA Systems. (3 3 0) Introduction to concepts of ethics and examination of contemporary ethical issues in criminal justice and emergency management. Same as POSC 4348.

CRIJ 4350 Administration of Criminal Justice Organizations. (3 3 0) Prerequisite: junior or senior standing. Analysis of theory and practice of applying administrative and management principles to the unique operating processes of various criminal justice organizations.

CRIJ 4356 Principles of Emergency Management. (3 3 0) Prerequisite: POSC 2305, 2306. The devastation caused by hurricanes, floods and wildfires highlights the need for highly trained professionals who can develop effective strategies in response to these disasters. Principles of emergency management will cover social and environmental processes that generate hazards. Will include vulnerability analysis, hazard mitigation, emergency response and disaster recovery. Same as POSC 4356.

CRIJ 4375 Capital Punishment. (3 3 0) Capital punishment in the United States will be examined using a balanced approach. Moral and legal considerations, as well as application of the death penalty, will be investigated. Same as POSC/SOCI 4375.

CRIJ 4376 Community Resources in Corrections. (3 3 0) Introductory study of the role of the community in corrections, community programs for adults and juveniles, administration of community programs, legal issues, future trends in community treatment. Same as SOCIW 4376.

CRIJ 4392 Topics in Criminal Justice. (3 3 0) Thorough examination of a contemporary issue or problem in criminal justice. If taken in conjunction with the Certificate in Mexican Criminal Justice Studies, students may be charged an additional course fee not to exceed the actual cost of travel, including but not limited to transportation, lodging, and food. With permission of instructor, may be repeated when topics vary. Course fee variable.

CRIJ 4393 Honors Practicum in Criminal Justice. (3-6 0 0) Prerequisite: senior and honors standing; permission of Honors Program and instructor. Class will provide advanced honors criminal justice students an opportunity for original research, field research and/or internship in criminal justice. Students will work closely with a professor in preparation and presentation of work to a scholarly/professional audience. Fall, spring, summer.

CRIJ 5328 Terrorism. (3 3 0) Terrorism in our world. Understanding what terrorism is, why it occurs and why it will continue into the future.

CRIJ 5356 Principles of Emergency Management. (3 3 0) Prerequisite: POSC 2305, 2306. The devastation caused by hurricanes, floods and wildfires highlights the need for highly trained professionals who can develop effective strategies in response to these disasters. Principles of emergency management will cover social and environmental processes that generate hazards. Will include vulnerability analysis, hazard mitigation, emergency response and disaster recovery. Same as POSC 5356.

CRIJ 6096 Readings. (1-3 0 0) Directed individual and group readings and investigations in areas of criminal justice. With permission of instructor, may be repeated once when topics vary.

CRIJ 6098 Graduate Internship. (3 0 0) Prerequisite: permission of instructor. Practical application of criminal justice studies in supervised field setting.

CRIJ 6301 Thesis. (3 0 0)

CRIJ 6302 Thesis. (3 0 0)

CRIJ 6312 Problems in Social and Political Institutions. (3 3 0) Critical investigation of social conditions affecting the structure and functioning of contemporary social and political institutions and analysis of public policy solutions to these problems. Same as POSC/SOCI 6312.

CRIJ 6320 Seminar in Police and Society. (3 3 0) Advanced study of the philosophy and role of policing, politics of policing, police-community relations, planning and evaluation of programs, and topical issues and trends.

CRIJ 6322 Issues in Modern Policing. (3 3 0) In-depth examination of operational and administrative practices, police-community relations, professionalization of officer corps (training, education and executive development) and emerging issues and trends. With permission of instructor, may be repeated once when topics vary.

CRIJ 6335 Seminar in American Jurisprudence. (3 3 0) In-depth examination of various issues relating to the national
and state judiciary, including selection of judges, judicial politics, components of the court work group and their functions, problems in administration of justice, and other issues of judicial behavior and process. Same as POSC 6335.

CRIJ 6381 Certificate in Program Evaluation and Assessment: Capstone I. (3 0 0) Prerequisite: CRIJ/POSC 6380. Designed to provide the student an opportunity to implement an evaluation and assessment plan and write the report applying knowledge developed in prerequisite course work. Same as POSC 6381.

CRIJ 6387 Seminar in Research Methods. (3 0 0) Nonparametrics; measurement; surveys, research, design; scale construction; methodology. Same as POSC/SOCI 6387.

CRIJ 6388 Statistics for Social and Criminological Research. (3 3 0) Prerequisite: undergraduate social statistics or equivalent. Statistical techniques most commonly used in social science research with emphasis on probability, estimation, hypothesis methods, sample techniques and use of SPSS. Same as POSC/SOCI 6388.

CRIJ 6392 Advanced Issues in Criminal Justice. (3 3 0) Social and behavioral science perspectives of forensics, policing, forensic psychology, corrections, penology, criminal law and penal statutes, capital punishment, evaluation research in criminal justice, law and society. With permission of instructor, may be repeated once when topics vary.

CS—Computer Science

(Offered through the Department of Engineering and Computer Science.)

CS 1301 Introduction to Computer Science. (3 2 2) A breadth-first and comprehensive introduction to computer science, including algorithmic problem solving, data representation and abstraction, operating systems, programming languages, software engineering, graphics, database systems, artificial intelligence and theory of computation. Social, legal and ethical implications are considered concurrently with course topics and computing in general.

CS 1315 Programming Fundamentals. (3 3 0) Prerequisite: MATH 1314 and 1316 or 2412. Fundamental concepts of procedural programming. Topics include data types, control structures functions, arrays, files, and mechanics of running, testing and debugging. Introduction of historical and social context of computing and overview of computer science as a discipline.

CS 1437 Introduction to Object-Oriented Programming. (4 3 2) Fundamental concepts of programming from an object-oriented perspective, including simple data types, control structures functions, arrays, files, and mechanics of running, testing and debugging. Introduction of historical and social context of computing and overview of computer science as a discipline.

CS 2321 Discrete Structures I. (3 3 0) Prerequisite: MATH 1316 or 2412. Introduction to the foundations of discrete mathematics as they apply to computer science, focusing on a solid theoretical foundation for further work. Topics include functions, relations, sets, simple proof techniques, Boolean algebra, propositional logic, digital logic, elementary number theory and the fundamentals of counting. Same as MATH 2321. Fall, spring, summer.

CS 2322 Discrete Structures II. (3 3 0) Prerequisite: CS or MATH 2321. Continuation of the discussion of discrete mathematics introduced in CS or MATH 2321. Topics include predicate logic, recurrence relations, graphs, trees, matrices, computational complexity, elementary computability and discrete probability. Same as MATH 2322. Spring.

CS 2425 Computer Organization and Assembly Language. [COSC 2425] (4 3 2) Prerequisite: 2436 and CS or MATH 2321. Introduction to the internal operation of modern computer systems. Topics include low-level hardware details (combinational and sequential circuits), data representation (number systems, character encoding, integer floating point representation), basic computer
system organization (CPU, I/O, memory and disk), and assemblers and assembly language. Course fee $25.

CS 2436  Objects and Data Abstraction. (4 3 2 ) Prerequisite: 2437. Methodology of programming from an object-oriented perspective. Through the study of object-oriented design, an introduction to the basics of human-computer interfaces, graphics and the social implications of computing, with an emphasis on software engineering.

CS 3303  Object-Oriented Software Development. (3 3 0) Prerequisite: 2436 or consent of instructor. Software engineering techniques for programming in the large, intermediate issues in object-oriented programming, design patterns, frameworks and systems support software. Course fee $25.

CS 3305  Data Structures and Algorithms. (3 3 0) Prerequisite: 2436, CS or MATH 2321 and MATH 2413 or consent of computer science coordinator. Continuation of the study of data abstraction begun in CS 2436. Topics include recursion, the underlying philosophy of object-oriented programming, (including stacks, queues, linked lists, hash tables, trees and graphs), basics of algorithmic analysis and introduction to principles of language translation. Course fee $25.

CS 3307  Algorithm Design and Analysis. (3 3 0) Prerequisite: CS or MATH 2322 and 3305. Introduces formal techniques to support the design and analysis of algorithms, focusing on both the underlying mathematical theory and practical considerations of efficiency. Topics include asymptotic complexity bounds, techniques of analysis, algorithmic strategies, and an introduction to automata theory and its application to language translation.

CS 3310  Programming Languages. (3 3 0) Prerequisite: 3305. Introduction to the main constructs of contemporary programming languages with elaboration on the tools necessary for critical evaluation of existing and future programming languages. Fall. Course fee $25.

CS 3315  Scripting Languages. (3 3 0) Prerequisite: 2436 or consent of instructor. Introduces the fundamentals of operating systems use and administration. Topics include the use of editors, file systems, processes, TCP/IP and the Internet, regular expressions, filters and system and network administration using various scripting languages. Applications of these concepts will be realized using shell scripting and other scripting languages. Course fee $25.

CS 3321  Introduction to Enterprise Systems. (3 3 0) Prerequisite: 2436 or consent of computer science coordinator. Introduction to concepts of mainframe and enterprise class computers including usage and architecture. Topics will include fundamentals of z/OS® operating system, mainframe workloads and major middleware applications in use on mainframes today, and introduction to systems and application programming. Fall. Course fee $25.

CS 3322  Enterprise Systems Application Development. (3 3 0) Prerequisite: 3321 or consent of computer science coordinator. Course is intended for mainframe application developers who wish to use workstation-based tools to build applications for enterprise systems. Students will be introduced to use of IBM Rational Developer for System z. Spring. Course fee $25.

CS 3352  Operating Systems and Networking. (3 3 0) Prerequisite: 3305. Fundamentals of operating systems design and implementation. Topics include an overview of the components of an operating system, mutual exclusion and synchronization, implementation of processes, scheduling algorithms, memory management, and file systems. Basics of networking and communications and their impact on operating systems. Course fee $25.

CS 3372  Net-Centric Computing. (3 3 0) Prerequisite: 3352. Introduction of the structure, implementation and theoretical underpinnings of computer networking and the applications that have been enabled by the technology. Fall.

CS 3387  Artificial Intelligence. (3 3 0) Prerequisite: 3305. Introduction of fundamental concepts and techniques of artificial intelligence.

CS 4095  Problems in Computer Science. (1-6 0 0) Prerequisite: consent of instructor. Selected individual problems in computer science to be focused on a specific area not typically encountered in normal course work. May be repeated for a maximum of six hours.

CS 4097  Computer Science Research. (1-6 0 0) Prerequisite: consent of department head. Selected individual research topics in computer science to accommodate more substantial research than is encountered in normal course work. May be repeated for a maximum of six hours.

CS 4310  Programming Language Translation. (3 3 0) Prerequisite: 3307, 3310, and 3315. Programming language translation; functions and general organization of compiler design and interpreters; theoretical and implementation aspects of lexical scanners; parsing of context free languages; code generation and optimization; error recovery. Course fee $25.

CS 4321  Enterprise Systems Assembler Programming. (3 3 0) Prerequisite: 3322 or consent of computer science coordinator. Intermediate-level course for application and system programmers and others who wish to write systems and application programs in Assembler Language. Appropriate introduction for individuals wishing to deepen insight into System z architecture. Fall. Course fee $25.

CS 4325  Computer Architecture. (3 3 0) Prerequisite: CS or MATH 2322, CS 2425 and 3305. Review of von Neumann architecture and its limitations; parallel computer structures and concurrent computation; pipeline computers and vectorization methods; array processors; multiprocessor architectures and programming; database computers.

CS 4330  Computer Graphics. (3 3 0) Prerequisite: 3305. Principles of interactive computer graphics; systems organization and design technologies for raster and vector displays; 2-D and 3-D viewing, clipping, segmentation and interaction handling 3-D geometrical transformations, projections and hierarchical data structures for graphics modeling.

CS 4332  Advanced Topics of Enterprise Systems. (3 3 0) Prerequisite: 4321 or consent of computer science coordinator. Advanced topics of relevance to enterprise systems. Spring. Course fee $25.

CS 4340  Database Systems Use, Design and Implementation. (3 3 0) Prerequisite: 3305. Focus on underlying design and performance of database systems including relational and object-oriented systems. Fall.

CS 4350  Automata and Language Theory. (3 3 0) Prerequisite: 3307, 3310 and senior standing. Introduction to theoretical aspects of programming languages. Finite automata, context-free grammars, Turing machines, Chomsky hierarchy and Church-Turing thesis.

CS 4360  Approaches to Internet and Computer Networks Security. (3 3 0) Prerequisite: CS 3372. Presentations of essential computer network security in wired and wireless network topologies, including authentication, encryption and server side protection. Packets, TCP/IP, UDP, ports, Internet topology, IP addressing scheme and DNS. Hands-on security breaches will be presented and practices implementing security in a local area network (LAN). Course fee $25.
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CS 4385 Concurrency and Distributed Systems. (3 3 0) Prerequisite: 3372. Introduces concurrency in the context of distributed systems. The course covers both the abstract principles of concurrent programming and their concrete realization in distributed, network-based systems. Topics include the basic theory of concurrency, hardware and software features to support concurrency, concurrent and distributed algorithms, and middleware. Course fee $25.

CS 4390 Software Development and Systems Programming. (3 3 0) Prerequisite: senior standing and consent of computer science coordinator. Extends the ideas of software design and development to encompass problems encountered in medium- and large-scale systems. Software engineering, professionalism, ethical responsibilities in software development and human-computer interaction. Fall.

CS 4391 Software Development and Professional Practice. (3 3 0) Prerequisite: 4390. Continuation of 4390. Complete set of deliverables for a software project, including all documentation, design and implementation. Students may be required to learn new technologies to complete the project. Spring.

CS 4392 Special Topics in Computer Science. (3 3 0) Prerequisite: consent of instructor. Advanced topics of current relevance to computer science. May be repeated for up to nine credit hours if topics change.

CS 4398 Internship in Computer Science. (3 0 0) Prerequisite: consent of department head. Closely supervised work experience in an area not normally addressed in other classes. Students will document experience in a format specified by the instructor.

DANC—Dance

(Offered through the Department of Art, Theatre and Dance.)

DANC 1112 Practicum and Performance I. (1 0 0) Introduction to basic dance production and performance. Practical experience in production and performance areas, such as publicity, management, sound and lighting. May be repeated for a total of three credits.

DANC 1210 Tap Dance I. (2 0 3) Exploration of basic skills and techniques of tap dance. May be repeated once for credit. Fall if odd years.

DANC 1241 Ballet I. (2 0 3) Developing skills in ballet technique for the beginner. May be repeated for credit. Course fee $5 per credit hour.

DANC 1205 Improvisational Dance. (2 0 3) Introduction into improvisational dance as compositional form. Fall of odd years.

DANC 1247 Jazz Dance I. (2 0 3) Introduction of basic jazz skills and techniques of jazz dance. Fall of even years.

DANC 2075 Individual Problems. [DANC 2301] (1-3 0 0) Individual work in area of student's special interest.

DANC 2241 Ballet II. (2 0 3) Prerequisite: 1241 or consent of instructor. Designed for the student who has basic knowledge of ballet and wishes to increase artistic, intellectual and physical expectations. The creative process, studio perspectives and credits. May be repeated for a maximum of six hours. Course fee $5/credit hour.

DANC 2244 Modern Dance I. (2 0 3) Prerequisite: 1241 or consent of instructor. Continued development of modern dance skills and techniques. May be repeated once for credit. Fall of odd years.

DANC 2247 Jazz Dance II. (2 0 3) Prerequisite: 1241 or consent of instructor. Continued development of basic jazz dance skills and techniques. Fall of even years.

DANC 2303 Introduction to Dance. (3 3 0) Introduction to dance designed for the general student. Artistic, historical, social and cultural investigation of dance. (A non-studio, non-performance course, this course is not intended for credit for dance majors.)

DANC 3092 Special Topics. (1-3 0 0) Specialized study in dance as necessary for advances in technique or development of new dance forms. May be repeated for a total of three hours credit.

DANC 3112 Practicum and Performance II. (1 0 0) Advanced opportunities in dance production and performance, including leadership responsibilities in area such as publicity, management, sound and lighting. May be repeated for a total of three credits.

DANC 3113 Partnering I. (1 0 2) Prerequisite: consent of instructor. More advanced techniques of partnering and being a partner in ballet and/or modern dance performance. May be repeated for a total of three hours.

DANC 3210 Tap Dance II. (2 0 3) Development of intermediate tap dance skills and techniques. Fall of odd years.

DANC 3216 Teaching Dance. (2 1 2) Analysis of methods used to develop the human body as an instrument for dance. Emphasis on psychological, artistic and physical elements of dance pedagogy.

DANC 3245 Modern Dance II. (2 0 4) Prerequisite: 2245 or consent of instructor. Development and exploration of intermediate modern dance skills and techniques.

DANC 3247 Jazz Dance III. (2 0 3) Prerequisite: 2247 or consent of instructor. Development and exploration of intermediate jazz dance skills and techniques.

DANC 3315 Dance History I. (3 3 0) Survey of dance from prehistoric times to the 18th century. Emphasis on development of classical dance.

DANC 3341 Ballet III. (3 0 6) Prerequisite: 2241 or consent of instructor. Designed for students who have mastered theory and technique of basic ballet. Students will be encouraged to participate in WTAMU productions. May be repeated for credit.

DANC 4095 Individual Problems. (1-3 0 0) Advanced individual work in areas of student's special interest. Course fee $5/credit hour.

DANC 4119 Senior Professional Practice. (1 0 0) For advanced dance majors. Individualized dance project reinforcing and expanding skills of public performance. Emphasis on choreography or performing.

DANC 4120 Senior Project. (1 0 0) Prerequisite: consent of instructor. Individual senior dance project reinforcing and expanding techniques for public performance. Emphasis on choreography or performance.

DANC 4222 Choreography. (2 0 3) Concentrated course in which methods for creating dances are explored and analyzed. Important course for future teachers, directors, choreographers and those in all aesthetic disciplines.

DANC 4245 Modern Dance III. (2 0 3) Development and exploration of advanced modern dance skills and techniques. Spring of even years.

DANC 4315 Dance History II. (3 3 0) Survey of dance from the 19th century to the present. Emphasis on development of modern dance. Spring of even years.

DANC 4341 Ballet IV. (3 0 6) Prerequisite: 3341 or consent of instructor. Advanced classical ballet technique. May be repeated.

DANC 6095 Graduate Problems. (1-3 0 0) Advanced exploration and research in the student's major area. May be repeated up to a maximum of six hours. Course fee $5/credit hour.

DANC 6010 Graduate Seminar in Art. (1 0 0) Overview of graduate-level creativity and research in art. Research expectations, the creative process, studio perspectives and
Course Descriptions

ECON—Economics

(Offered through the Department of Accounting, Economics and Finance.)

NOTE: ECON 2301 and 2302 are prerequisites for 3000-level and above economics courses.

ECON 2301 Principles of Macroeconomics. (3 3 0) Survey of macroeconomic principles and their application to U.S. and global concerns. Course will also deal with multicultural aspects of economic relationships. Course fee $10.

ECON 2302 Principles of Microeconomics. (3 3 0) Survey of microeconomic principles and their application to current economic problems and policies. Course fee $10.

ECON 2371 American Economic History. (3 3 0) Survey of American economic history with emphasis on the United States’ role in the world economy. Topics include early economic systems, immigration, entrepreneurs, labor unions, the war economy, the Great Depression, monetary systems, fiscal governance, and the emergence of a global economy. Course fee $20.

ECON 3302 Fundamentals of Engineering Economics. (3 3 0) Prerequisite: MATH 1314 or 1316 or 1324 or 2412 or 2413. Introduction to concepts of basic economic analysis applied to engineering problems. Topics include cost and design comparison; time value of money; comparison of alternatives; depreciation of tax implications; economic evaluation of projects; risk and uncertainty; replacement analysis; and capital financing.

ECON 3311 Intermediate Microeconomic Theory. (3 3 0) Role of prices in economic organization and determinants of prices and resource allocation under various types of markets. Offered annually.

ECON 3312 Intermediate Macroeconomic Theory. (3 3 0) Analysis of determinants of the aggregate level of the national income and employment; characteristics and causes of fluctuations in production, income and employment; problems of measurement and forecasting and proposals for economic stabilization.

ECON 3321 Development of Modern Capitalism. (3 3 0) Interpretative study of modern capitalism and free market ideology, economic development, technology, capital formation, income and the rise of capitalist institutions, and an economic perspective on personal liberty.

ECON 3355 Supervised Readings in Economics. (3 3 0) Exploration of economic and finance theory to include aspects of human psychology and physiology in order to better explain the actions of economic agents. Topics include comparison of standard vs. behavioral economic models, bounded rationality, framing, heuristics, biases, utility theory, mental accounting, intertemporal choice, revenge, altruism, cooperation, intemperance, neuroeconomics, market efficiency, and financial crashes and bubbles.

ECON 3394 Supervised Readings in Economics. (3 3 0) Prerequisite: approval of department head. Individual study designed to meet needs and interest of the student.

ECON 4301 Industrial Organization and Regulation. (3 3 0) Role, development and problems of public policy in controlling modern industrial organization, price policies and market practices.

ECON 4312 Money, Credit and Banking. (3 3 0) Nature and functions of money and credit; operation of commercial and central banks and other credit agencies; value of money; relationship of monetary policy and banking operation to general economic conditions.


ECON 4331 Economics of the Public Sector. (3 3 0) Economic analysis of tax and spending programs with attention to the impact of the public sector on the economy.

ECON 4341 International Economics. (3 3 0) Basic economic factors in international relations. Distribution of resources; principles of international trade and capital movements; objectives, methods and economic consequences of various commercial policies.

ECON 4342 Economic Development. (3 3 0) Theory of economic growth and problems of economic development of lesser developed areas.

ECON 4351 Economics of Labor Resources. (3 3 0) Economic aspects of employment, wages, income and working conditions; growth of labor organizations and economic implications of their policies and methods; labor legislation and government intervention in labor-management relations. Course fee $25.

ECON 4355 Environmental and Natural Resource Economics. (3 3 0) Economic issues involved in development and maintenance of the environment; problems of resource allocation, social cost, pollution and policy issues involved. Competing uses for natural resources, including agricultural, industrial, domestic and municipal will be evaluated along with current environmental issues. Same as AGBE 4355.

ECON 4361 Development of Economic Philosophy. (3 3 0) Evolution of economic ideas. Emphasis on the period subsequent to the Industrial Revolution. Mercantilism, physiocracy, Marxism and Keynesian contributions.

ECON 4364 Introduction to Quantitative Economics and Finance. (3 3 0) Prerequisite: IDM 2342 or consent of instructor. Application of quantitative methodology in economics and finance with emphasis on forecasting, optimization techniques, regression analysis, and survey methods. Same as IDM 4364.

ECON 4370 Economics of Biotechnology and Health Care. (3 3 0) Broad overview of economics of biotechnology, health and pharmaceuticals. Emphasis includes analysis of health innovations and technologies, comparative health-care systems, market structures in health care and economic impact of health outcomes.

ECON 4372 Managerial Economics. (3 3 0) Applications of economic analysis to a wide range of decisions required of business management and the way economic principles affect management of business enterprise.

ECON 4392 Special Topics in Economics. (3 3 0) Topics in areas of special interest. May be repeated once for credit when topics change.

ECON 4398 Internship in Economics. (3 0 0) Prerequisite: junior standing, approval of department head. On-the-job experience in a phase of the economics profession. Must be first-time experience on a full-time basis.

ECON 5301 Industrial Organization and Regulation. (3 3 0) Role, development, and problems of public policy in controlling modern industrial organization, price policies and market practices.
ECON 5321 Comparative Economic Systems. (3 3 0) Analysis of competing economic ideologies. Emphasis on the theoretical aspects of capitalism, socialism, communism and variants of those systems. Some independent study required by graduate students.

ECON 5351 Economics of Labor Resources. (3 3 0) Economic aspects of employment, wages, income and working conditions; growth of labor organizations and economic implications of their policies and methods; labor legislation and government intervention in labor management relations. Course fee $25.

ECON 5355 Environmental and Natural Resource Economics. (3 3 0) Economic issues involved in development and maintenance of the environment; problems of resource allocation, social cost, pollution and policy issues involved in these areas. Competing uses for natural resources, including agricultural, industrial, domestic and municipal will be evaluated along with current environmental issues. Same as AGBE 5355.


ECON 5372 Managerial Economics. (3 3 0) Applications of economic analysis to a wide range of decisions required of business management. The way economic principles affect management of business enterprise.

ECON 5392 Special Topics in Economics. (3 3 0) Topics in areas of special interest. May be repeated once for credit when topics change.

ECON 6096 Readings and Research. (1-3 0) Prerequisite: approval of department head. Directed individual and group readings and investigations in areas of economics not otherwise covered in available courses. May be repeated once for credit in different field of economics under a different instructor.

ECON 6300 Topics in Contemporary Economic Theory. (3 3 0) Prerequisite: graduate standing. Intensive analysis of essential microeconomic and macroeconomic theory.

ECON 6305 Seminar in Advanced Microeconomic Theory. (3 3 0) Prerequisite: 12 semester hours of upper-division economics and/or business administration. Selected topics concerning market and industrial organization, prices and market performances.

ECON 6306 Seminar in Advanced Macroeconomic Theory. (3 3 0) Prerequisite: 12 semester hours of upper-division economics and/or business administration. Topics relate to macroeconomic theory, monetary theory and policy, and problems of economic stabilization policy.

ECON 6312 Seminar in Money and Banking. (3 3 0) Prerequisite: 2301 and 2302 or 6300. Policy implications of monetary economics with special reference to the role of money in the determination of output, employment and prices. Topics include: demand for and supply of money, Federal Reserve strategies, and financial market issues.

ECON 6332 Problems in Government Finance and Fiscal Policy. (3 3 0) May, with consent of instructor, be repeated when topics vary. Analysis of various problems and theories concerning government revenue, expenditures and fiscal policies.

ECON 6341 Seminar in International Economics and Economic Development. (3 3 0) Selected topics relating to theories, problems, and trends in the international economy and in economic development.

ECON 6352 Environmental Policy Issues. (3 3 0) Prerequisite: 2301 and 2303 or 6300. Federal and state policies, rules and regulations as they apply to planning and policy issues relating to the environment. Selected case studies in American government relating to environmental quality issues will be evaluated. Same as POSC 6352.

ECON 6362 Advanced Business Forecasting. (3 3 0) Prerequisite: IDM 6305 or equivalent. Analysis of forecasting techniques and business theories, interconnection between forecasting methods and conditions under which each are used will be examined. Similarities and differences between forecasting for an industry and for the firm will be identified. Same as IDM 6362.

ECON 6370 Economics of Health and Medical Care. (3 3 0) Fundamental economic relations governing the demand, supply, management and financing of the health-care industry. Topics include the role of government policy, technology, managed care and international comparisons.

ECON 6392 Special Topics. (3 3 0) Prerequisite: 12 hours of economics. Topics of special graduate interest. May be repeated once for credit when topics change.

EDAD—Educational Administration
(Offered through the Department of Education.)

EDAD 6303 Introduction to Educational Administration. (3 3 0) Introduction to educational leadership and the role of the building-level administrator. Topics include organizational structure (state and local); the impact of the Texas Administrative Code on schools, with emphasis on leadership roles, behaviors and responsibilities. Includes 45 internship hours with a mentor. Fall, summer I.

EDAD 6304 Educational Law (3 3 0) Prerequisite: 6303. Federal and state laws, regulations, and court cases applied to local school district administration and operation. Fall, summer II.

EDAD 6305 Educational Administration and Technology (3 3 0) Visionary leadership for integration of technology into the school-wide instructional process to enhance student achievement. Technology-related issues and considerations for school administrators including ethics, policies, infrastructure, financing and educator preparation will be addressed. Fall, summer II.

EDAD 6306 School Business Management and Finance. (3 3 0) Historical and modern theories and laws on public financial support of education as well as practical application in the school setting. Course will cover both campus and central office finance topics. Campus specific area will cover budgeting, accounting and activity funds. Superintendent topics include Texas school finance and tax rate adoption. Fall, spring, summer I.

EDAD 6308 Service Learning in Educational Leadership. Course is designed to promote experiential learning, cultural understanding, educational research and leadership experience through service learning. Students will identify, analyze, develop and implement a plan to address a socially significant need in an educational community (locally, nationally and internationally). Course may provide an optional faculty-led travel component designed to accomplish learning objectives of the course. Students participating in the travel option will be charged additional course fee for travel costs. Course fee variable.

EDAD 6311 Educational Leadership and Group Dynamics. (3 3 0) Prerequisite: 6303. Experiential course experience. Communication, personality styles, crisis management, conflict and team building. Comprehensive group activities and initiatives. Course may provide an optional faculty-led travel component designed to accomplish learning objectives of the course. Students participating in the travel option will be charged additional course fee.
Course Descriptions

fee not to exceed the actual cost of travel, including but not limited to transportation, lodging and food. Fall, summer II. Course fee variable.

EDAD 6312 Performance Competencies in Educational Administration. (3 3 0) Prerequisite: instructor approval. This is the capstone course aligned with the State Board of Educator Certification principal competencies. Students will successfully identify, understand, recognize and apply the principal TEES (Texas Examination of Educator Standards) competencies to authentic actions of school leaders in relation to the State of Texas Principal Certification Exam. Spring, summer II.

EDAD 6330 Special Populations. (3 3 0) Survey of diverse programs associated with the role of the building principal. Programs reviewed include special education, state and national reading initiatives, federal programs, gifted and talented, and others. Discussion includes the impact of these programs on student success and the connection back to various policies and documents. Fall, summer I.

EDAD 6352 Personnel Administration and Supervision. (3 3 0) In-depth examination of educational leaders as human resource managers. Emphasis is placed on the application and selection process, interview practices, induction, professional development, employment benefits, evaluation and trends in the field of human resource management. Spring, summer II.

EDAD 6353 Instructional Leadership Development and Teacher Evaluation. (3 3 0) Prerequisite: two years teaching experience. Instructional Leadership Development (ILD) and the Professional Development Appraisal System (PDAS) as designed for Texas school administrators. Spring, summer II. Course fee $10.

EDAD 6394 Educational Administration Internship. (3 0) Prerequisite: completion of 12 hours of educational leadership. Supervised practicum in public, private and parochial elementary or secondary schools. Students complete administrative tasks in predetermined settings, conducted with administrative mentors and University supervisor. Successful completion of course will include 135 hours of field experiences. Students will demonstrate proficiency through a variety of activities aligned to state competencies. Fall, spring, summer I, summer II.

EDAD 6395 Problems in Administration. (3 0) Prerequisite: approval of department head. Individual study and research on specific topics related to school administration. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EDAD 6397 Problems in Administration. (3 0) Prerequisite: approval of department head. Continuation of 6395. May be repeated once when topics vary.

EDAD 6413 The Superintendency: Instructional Leadership. (4 0) Examination of superintendent’s role as a district-level instructional leader in implementation of the total school program for all students and how the role of superintendent supports and facilitates change for student success. Includes 54 hours of internship experiences with a mentor. Fall. Course fee $40.

EDAD 6420 The superintendency: School and Community Leadership. (4 0) Addresses leadership skills required by the superintendent in communicating the school district vision to all stakeholders. Topics include school district culture and climate, mission, goals, and objectives, communication, and understanding and navigating the political dynamic associated with superintendency. Includes 54 hours of internship experiences with a mentor. Spring. Course fee $40.

EDAD 6422 The Superintendency: Administrative Leadership. (4 0) Management components of the superintendency including budgeting and finance, securing, allocating, managing and investing school funds, maintaining and funding the physical plant, and managing administrative functions required for efficient operation of a school district. Includes 54 hours of internship experiences with a mentor. Summer. Course fee $40.

EDC1—Education Curriculum and Instruction

(Offered through the Department of Education.)

EDCI 8310 Introduction to Educational Research. (3 3 0) Prerequisite: admission into Ed.D. program. Introduction to historical, descriptive, experimental and survey research as they relate to solving problems within the field of education. Fall.

EDCI 8312 Foundations of Quantitative Research. (3 3 0) Prerequisite: 8310. Introduction to traditions and methods of conducting quantitative study. Spring.

EDCI 8313 Quantitative Methods in Educational Research. (3 3 0) Prerequisite: 8312. Understanding the methods and application of conducting quantitative research. Fall.

EDCI 8316 Qualitative Research Approaches and Methods. (3 3 0) Prerequisite: 8310. Introduction to the approaches and methods of conducting qualitative study. Spring.

EDCI 8317 Qualitative Grounded Theory. (3 3 0) Prerequisite: 8316. Understanding the approaches and methods of conducting qualitative grounded theory. Summer I.

EDCI 8320 Education in a Diverse Society. (3 3 0) Prerequisite: admission into Ed.D. program. Examination of issues surrounding multiculturalism/globalization and their significant impact upon education. Examination of the complexities of interconnectedness including transnational movement of people, the spread of global religions and objectives, and measures of school performance. Exploration of perspectives on ways in which education is influenced by globalization. Fall.

EDCI 8322 Intercultural Communication and Diversity Management. (3 3 0) Prerequisite: 8320. Development of a theoretically informed understanding of the cultural nature of communication and the dynamics of interaction between persons from diverse cultures; how identities and group histories relate to inter-group conflict and collaboration; skills necessary to use diversity as an asset in fostering cooperation in educational, community and professional settings. Spring.

EDCI 8324 Evidence-Based Inquiry. (3 3 0) Prerequisite: 8324. Practical applications of educational research in regional or state school settings. Fall.

EDCI 8326 Language Policy and Planning in Education. (3 3 0) Prerequisite: 8320. Purpose of course is to develop a theoretically informed understanding of language planning and to equip students with necessary tools to implement successful systems of language planning in the school setting. Spring.

EDCI 8328 Engaged Scholarship in Global Contexts. (3 3 0) Prerequisite: 8316. Engaging in educational research and scholarship within the context of a required faculty-led field experience conducted in an international setting. Course fee not to exceed the actual cost of field experience. Summer I.

EDCI 8329 Directed Study and Research in Mexico. (3 3 0) Prerequisite: completion of 45 SCH doctoral course work (program years 1–3); instructor consent. Directed study and research related to Mexican culture, society and education resulting in the production of a scholarly deliverable. Synthesis of research, cultural and specialization core courses in an international setting. Participation in field experience in Mexico is
**Course Descriptions**

EDCI 8330  **Foundational Knowledge in Language and Literacy.** (3 3 0) Prerequisite: M.Ed. in reading or related field. Introduction to historical and current research in language and literacy. Summer I.

EDCI 8332  **Theoretical Models and Processes of Reading.** (3 3 0) Prerequisite: 8330. Co-requisite: 8333. In-depth examination of theoretical models for reading instruction including cognitive, psycholinguistics and socio-cultural processes. Fall.

EDCI 8333  **Application of Theoretical Models/Processes of Reading.** (3 3 0) Prerequisite: 8330. Co-requisite: 8332. Companion course to 8332 in which a scholarly deliverable will be created. Students will develop a curriculum improvement plan based on campus or school district needs. This plan must be submitted and presented to the school administration for review. Fall.

EDCI 8334  **Theory and Process of Teaching Writing.** (3 3 0) Prerequisite: 8332. Co-requisite: 8335. Current theory and process of teaching writing, with emphasis on writing workshop essentials and practical application for building a community of learners. Spring.

EDCI 8335  **Applications of the Theory and Process of Teaching Writing.** (3 3 0) Prerequisite: 8332. Co-requisite: 8334. Companion course to 8334 in which two scholarly deliverables will be created. Students will develop an extensive case study of a struggling reader and develop a proposal for submission to a state, regional or national conference. Fall.

EDCI 8336  **Literacy Assessment and Instruction for Diverse Needs.** (3 3 0) Prerequisite: 8334. Co-requisite: 8337. Examination and analyzing of literacy assessment and instructional practices for diverse populations including those at different developmental stages and those from different cultural and linguistic backgrounds. Fall.

EDCI 8337  **Case Studies in Literacy Assessment and Instruction for Diverse Needs.** (3 3 0) Prerequisite: 8334. Co-requisite: 8336. Companion course for 8336 in which a scholarly deliverable will be created. Students will develop an extensive case study of a struggling reader and develop a proposal for submission to a state, regional or national conference. Fall.

EDCI 8338  **Issues and Trends in Language and Literacy.** (3 3 0) Prerequisite: 8336. Co-requisite: 8339. In-depth examination of current issues and trends in language and literacy that impact educational policy, curriculum development and classroom instruction. Spring.

EDCI 8339  **Action Plans in Language and Literacy.** (3 3 0) Prerequisite: 8336. Co-requisite: 8338. Companion course to 8338 in which scholarly deliverables will be created. Students will develop a professional action plan for change and submit a manuscript for publication to a peer-reviewed journal. Spring.

EDCI 8340  **Advanced Educational Administration Theory.** (3 3 0) Prerequisite: M.Ed. in educational leadership or related field. In-depth study of educational administration theory including historical, philosophical and sociological perspectives in preparation of doctoral studies in school administration. Summer I.

EDCI 8342  **Organizational Management Theory in Educational Administration.** (3 3 0) Prerequisite: 8340. Co-requisite: 8343. Examination of organizational management theories to include systems theories, human behaviors, which interact with the systems, and the impact of communication on organizational management. Fall.

EDCI 8343  **Case Studies: Organizational Management and Educational Administration.** (3 3 0) Prerequisite: 8340. Co-requisite: 8342. Companion course to 8342. A scholarly deliverable will be created. Students will develop a case study of organizational management and submit it for publication to a peer-reviewed journal. The case study must be accepted for publication in order to successfully complete this course. Fall.

EDCI 8344  **Policy and Politics in Educational Administration.** (3 3 0) Prerequisite: 8342. Co-requisite: 8345. Examination of political and policy implications on education.


EDCI 8346  **Curriculum, Instruction Assessment Theory in Educational Administration.** (3 3 0) Prerequisite: 8344. Co-requisite: 8347. Course examines the concept of alignment between curriculum, instruction and assessment and the impact on student learning. Models of instruction are examined in addition to a variety of curriculum and assessments. Administrators are considered instructional leaders; therefore, this course identifies primary tenets that help facilitate quality instruction with the ultimate goal of student success. Fall.

EDCI 8347  **Analysis of Cultural Impacts in Educational Administration.** (3 3 0) Prerequisite 8344. Co-requisite: 8346. Companion course to 8346. A scholarly deliverable will be created. Students will conduct analysis of the alignment of curriculum, instruction and assessment following institutional guidelines and submit the study for publication to a peer-reviewed journal. The research study must be accepted for publication in order to complete this course successfully. Fall.

EDCI 8348  **Organizational Change in Educational Administration.** (3 3 0) Prerequisite 8346. Co-requisite: 8349. Implementing and evaluating organizational change in public education. Spring.


EDCI 8350  **Curriculum Development, Implementation and Evaluation.** (3 3 0) Prerequisite: master of education in curriculum and instruction or equivalent. Curriculum and instruction with an overview of curriculum development, implementation and evaluation. Various ideological and philosophical theories of curriculum are emphasized so that students are able to analyze the intellectual, social and moral dimensions of the school curriculum. Summer I.

EDCI 8352  **Curriculum History, Reforms and Innovations.** (3 3 0) Prerequisite: 8350. Co-requisite: 8355. In-depth coverage of early American education, the creation of a public school system, the development of secondary schools and various educational reforms from the early 1900s to the new millennium. Effects of reform movements are examined in terms of their goals, methods of development and implementation. Fall.

EDCI 8353  **Research on Curriculum History, Reforms and Innovations.** (3 3 0) Prerequisite: 8350. Co-requisite: 8352. Companion course to 8352. Primary purposes of this course concern how doctoral students will begin their own research on curriculum history and issues related to educational reforms. Fall.

EDCI 8354  **Curriculum for Diverse Learners.** (3 3 0) Prerequisite: 8352. Co-requisite: 8355. Examination of curriculum research and evaluation of existing curricula and pedagogy for the purpose of designing and developing policy and curricula for diverse learners. Spring.
Course Descriptions

EDCI 8355 Research in Curriculum for Diverse Learners. (3 3 0) Prerequisite: 8352. Co-requisite: 8354. Course requires students to conduct an action research study on a germane topic of student interest related to curriculum for diverse learners. Respective study will culminate in either a report to the respective school board, administration or faculty, a formal research article for possible publication, a grant proposal and submission, or a presentation at a conference or a professional development seminar. Spring.

EDCI 8356 Assessment Issues in Education. (3 3 0) Prerequisite: 8354. Co-requisite: 8357. In-depth coverage of assessment in education. Students in the doctoral program will examine assessment issues at the school/classroom, local district, state and national levels. Students will research basic requirements of assessing for understanding, and they will explore the relationship between standards, instruction and assessment. Fall.

EDCI 8357 Research on Assessment. (3 3 0) Prerequisite: 8354. Co-requisite: 8356. In-depth opportunity for doctoral students to research and analyze assessment issues. Fall.

EDCI 8358 Educational Policy and Curriculum, Cognition and Pedagogy. (3 3 0) Prerequisite: 8356. Co-requisite: 8359. Spring.

EDCI 8359 Research in Educational Policy, Curriculum, and Pedagogy. (3 3 0) Prerequisite: 8356. Co-requisite: 8358. Research in 8358 provides doctoral students opportunities to conduct research on curriculum processes for possible publication. Teachers, school administrators and policy makers develop curriculum at different levels and for differing purposes; understanding the complex relationship between curriculum and pedagogical practices is essential for educational reform and efficacious applications of best practices. Spring.

EDEC—Early Childhood
(Offered through the Department of Education.)

EDEC 4383 Early Childhood Education. (3 3 0) Physical, psychological, sociological, and emotional behavior domains of human growth and development with emphasis on developmentally appropriate practice and how it relates to the young child. Fall, spring, summer I.

EDEC 4384 Curriculum and the Young Child. (3 3 0) Prerequisite: 5383. Curriculum and methodology related to early childhood programs and developmentally appropriate practice considered in-depth. Fall, spring.

EDEC 6095 Problems in Early Childhood Education. (3-3 0 0) Specific problems relating to early childhood education. To be taken only after prearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I.

EDEL—Elementary Education
(Offered through the Department of Education.)

EDEL 4340 Student Teaching—Elementary. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester; admission and retention in teacher education; required grade point averages; elementary—lack no more than two courses in interdisciplinary course work and one course in subject concentration; all-level—lack no more than two courses in teaching field; lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Students are required to enroll in a minimum of two student-teaching courses for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching at the elementary level. Successful completion will be noted on the student’s transcript by a grade of “S,” indicating three semester hours credit with no grade points. Fall, spring. Course fee $40.

EDEL 4341 Student Teaching—Elementary. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester; admission and retention in teacher education; required grade point averages; elementary—lack no more than two courses in interdisciplinary course work and one course in subject concentration; all-level—lack no more than two courses in teaching field; lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Students are required to enroll in a minimum of two student teaching courses for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching at the elementary level. Successful completion will be noted on the student’s transcript by a grade of “S,” indicating three semester hours credit with no grade points. Fall, spring. Course fee $40.

EDEL 4344 Student Teaching—English as a Second Language/Bilingual. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester; admission and retention in teacher education; required grade point averages; minimum of nine semester hours of English as a Second Language, enrollment in EDEL 4340. Students completing elementary certification with English as a Second Language endorsement are required to enroll in EDEL 4340 and 444 for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching in English as a Second Language at the elementary level. Successful completion will be noted on the student’s transcript by a grade of “S,” indicating three semester hours credit with no grade points. Fall, spring. Course fee $40.
EDEL 4370 Language Arts Methods. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and full admission into Teacher Education Program. Investigation of language arts curriculum in elementary and middle school with emphasis on content and methodology in reading, listening, speaking, writing, viewing and visual representation. Appropriate technology integration and strategies for English Language Learners within language arts. Field experiences required. Fall, spring. Course fee $10.

EDEL 4371 Mathematics Methods. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and full admission into Teacher Education Program. Investigation of mathematics topics, reasoning strategies and related teaching techniques pertaining to mathematics elementary and middle school math curriculum per TEKS, including strategies for English Language Learners. Field experiences required. Fall, spring, summer. Course fee $10.

EDEL 4372 Elementary/Middle School Language Arts and Social Studies. (3 3 0) Prerequisite: EPSY 3341, full admission to Teacher Education Program. Investigation of language arts and social studies components of elementary and middle school curriculum. Content, curriculum, methods and resources in elementary and middle school, including appropriate technology integration and emphasis on strategies for English Language Learners. Summer section available only for those who qualify for teacher aide exemption program. Fall, spring, summer. Course fee $10.

EDEL 4373 Elementary/Middle School Mathematics and Science. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and full admission into Teacher Education Program. Investigation of mathematics and science curriculum in elementary and middle school with emphasis on content and methodology, including appropriate technology integration and emphasis on strategies for English Language Learners. Summer section available only for those who qualify for teacher aide exemption program. Summer. Course fee $20.

EDEL 4374 Social Sciences Methods. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and full admission into Teacher Education Program. Investigation of the social studies component of elementary and middle school curriculum. Major areas of study include content and development of curricula, methods and resources used in planning and presentation of classroom experiences, including strategies for English Language Learners. Field experiences required. Fall, spring, summer. Course fee $10.

EDEL 4381 Science Methods. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and full admission into Teacher Education Program. Investigation of science curriculum in elementary and middle school with emphasis on constructive hands-on inquiry methods, authentic assessment, national and state standards and strategies for English Language Learners using selected topics in earth science, physical science and life science. Field experiences required. Fall, spring. Course fee $10.

EDEL 4390 Learning and Teaching Methodology I. (3 3 0) Prerequisite: EPSY 3341, full admission to Teacher Education Program. Knowledge and practice of effective learning and teaching practices in grades EC-8. Needs assessment will determine context for content applications of strategies. Field experiences integrated with a professional learning community component are required. Fall, spring.

EDEL 4391 Learning and Teaching Methodology II. (3 3 0) Prerequisite: EPSY 3341, full admission to Teacher Education Program. Knowledge and practice of effective learning and teaching practices in grades EC-8. A needs assessment will determine the context for content applications of strategies. Field experiences integrated with a professional learning community component are required. Fall, spring.

EDEL 6334 Integrated Language Arts/Social Studies Methods. (3 3 0) Prerequisite: conditional admission into an alternative certification program. Theories and practices of integrating elementary and middle school language arts and social studies, including methodology, resources, technology integration and strategies for English Language Learners. Summer.

EDEL 6335 Integrated Mathematics/Science Methods. (3 3 0) Prerequisite: conditional admission into an alternative certification program. Theories and practices of integrating elementary and middle school mathematics and science curricula, including methodology, resources, technology integration and strategies for English Language Learners. Summer.

EDEL 6395 Problems in Education. (3 0 0) Prerequisite: approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EDEL 6396 Problems in Education. (3 0 0) Prerequisite: approval of department head. May be repeated once when topics vary. Fall, spring.

EDPD—Professional Development (Offered through the Department of Education.)

EDPD 3340 Educational Foundations. (3 3 0) Prerequisite: 54 hours, pass TSI, minimum 2.5 GPA. Course for prospective teachers introducing the principles of teaching and fulfilling professional roles and responsibilities. Topics include student diversity, classroom environment, effective communication, school improvement, parental involvement and legal/ethical issues in education. Course is aligned with Texas educator standards and helps to prepare students for the TExES PPR. Field experiences integrated with a professional learning community component are required. Fall, spring, summer I.

EDPD 4321 Professional Learning Communities for Preservice Teachers. (3 3 0) Prerequisite: EDPD 3341; admission to Teacher Preparation Program. In-depth coverage of a full range of teacher responsibilities, including academic content, instructional methods, professional learning community theory and practice, benchmark assessment and research, data analysis, technology integration, classroom management, Texas curricula, and ELL and ESL knowledge. Fall, spring.

EDPD 4340 Classroom Management. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester, admission and retention in teacher education, required grade point averages, elementary—lack no more than two courses in interdisciplinary course work and one course in subject concentration, secondary—lack no more than one course in each teaching field, all-level—lack no more than two courses in teaching field, lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Application of principles of classroom management/discipline at all levels; understanding and application of learning theories, instructional methodology, human relations, and leadership skills. Emphasis on the relationship between classroom environment and student behavior. Should be taken concurrently with Student Teaching. Fall, spring, winter intersession.

EDPD 4341 Classroom Management in Agriscience. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341 and admission to and retention in teacher education. Development of skills relevant to classroom and laboratory management unique to the agriscience classroom; understanding and application of learning theories, instructional methodology, human relations and leadership skills. Should be taken concurrently with student teaching. Spring.
Course Descriptions

EDPD 4363  Bilingual Teaching Methods.  (3 3 0) Methodology for teaching content areas for learners who have limited English proficiency. Summer II. Course fee $20.

EDPD 4378  Bilingual Language Development.  (3 3 0) Prerequisite: 60 semester hours. First- and second-language acquisition, development of the second language. Emphasis on implications for teaching. Course will offer optional travel opportunity at student's expense. Spring, summer I. Course fee $20.

EDPD 4388  English as a Second Language Teaching Methods.  (3 3 0) Intensive study of specific methodology in teaching English as a second language to Spanish speakers and to pupils whose first language is another language. Summer II.

EDPD 5363  Bilingual Teaching Methods.  (3 3 0) Methodology for teaching content areas for learners who have limited English proficiency. Summer II. Course fee $20.

EDPD 5378  Bilingual Language Development.  (3 3 0) First- and second-language acquisition and development of the second language. Emphasis on implications for teaching. Summer I. Course fee $20.

EDPD 5388  Teaching English as a Second Language Teaching Methods.  (3 3 0) Intensive study of specific methodology in teaching English as a second language to Spanish speakers and to pupils whose first language is another language. Summer II. Course fee $20.

EDPD 6092  Current Issues in Education  (1-3 1-3 0) In-depth investigation of current research, issues and methodology in secondary education. Course may be repeated once for credit when topics vary. Fall, spring, summer I, summer II.

EDPD 6301  Thesis.  (3 0 0) Prerequisite: 6303. Fall, spring, summer I, summer II.

EDPD 6302  Thesis.  (3 0 0) Prerequisite: 6301. Fall, spring, summer I, summer II.

EDPD 6303  Education Research.  (3 3 0) Comparison of qualitative and quantitative research techniques. Utilize components of literature review, data collection and analysis to conduct a publishable action research manuscript that addresses an educational problem/question. Course may provide an optional faculty-led travel component designed to accomplish learning objectives of the course. Students participating in the travel option will be charged an additional course fee not to exceed the actual cost of travel, including but not limited to transportation, lodging and food. Fall, spring, summer I. Course fee variable.

EDPD 6304  Multicultural Education.  (3 3 0) In-depth study of our pluralistic society and strategies for implementation of multicultural concepts for creating awareness, appreciation, acceptance and action toward the need to reach unity within diversity in a global context. Course may provide an optional faculty-led travel component designed to accomplish learning objectives of the course. Students participating in the travel option will be charged a course fee not to exceed the actual cost of travel, including but not limited to transportation, lodging and food. Spring, summer II. Course fee variable.

EDPD 6305  Curriculum Theory and Analysis.  (3 3 0) Introduction to various curriculum theories and their applications and functions in the school context. Curriculum design and assessment also is examined in terms of how to improve student achievement and motivation. Fall.

EDPD 6306  Educational Data Analysis and Presentation.  (3 3 0) Prerequisite: 6303. Practical application of microcomputer-based statistical software for organization, analysis and interpretation of data in the public school and general research settings. Principles and practices of data analysis and presentation will be discussed and applied using microcomputer data analysis and multi-media presentation of results. Course fee $30.

EDPD 6307  Curriculum History, Reforms and Innovations.  (3 3 0) In-depth coverage of early American education, creation of a public school system, development of secondary schools and various educational reforms from the early 1900s to the new millennium. Effects of reform movements are examined in terms of their goals, methods of implementation and lasting influences. Spring.

EDPD 6309  Curriculum from an International Perspective.  (3 3 0) Similarities and differences in curriculum development and pedagogical practices of various nations. Educational goals, selection of content and courses, methods of assessment and differing applications of instruction for diverse groups are studied to provide an international perspective of public education and curriculum development. Course may have a travel option, which will require an additional course fee not to exceed actual cost of travel, including but not limited to transportation, lodging and food. Summer I.

EDPD 6310  Instructional Strategies.  (3 3 0) In-depth investigations into various methods of teaching strategies for all subject areas. Emphasis on inquiry methods of teaching. Spring, summer II.

EDPD 6311  Introduction to Higher Education.  (3 3 0) Detailed examination of purposes, programs, people, organizations, control and resources of the community college. Examination of curricular functions of the American community college: occupational education, remedial education, community services, liberal arts and general education. Fall.

EDPD 6312  Teaching in Higher Education.  (3 3 0) Exploration of the nature of college teaching and teaching-learning process, including a review of major issues and problems. Aspects and conditions of adulthood, determining teaching strategies and techniques to facilitate effective learning and possible institutional adaptation to adult students. General methods of teaching which focus on the community college curriculum, instructional planning and instructional skills. Spring.

EDPD 6320  Curriculum Seminar.  (3 3 0) Various educational issues such as curriculum analysis, design, implementation and evaluation are studied. In addition, educational reform programs are analyzed in terms of their politics and impact on student achievement. Fall, spring, summer.

EDPD 6329  Human Development.  (3 3 0) Systematic analysis of various human behavioral domains concerned with teaching and learning. Summer online.

EDPD 6331  Foundations and Psychological Principles of Education.  (3 3 0) Prerequisite: full admission into the alternative certification program including eligibility for probationary certificate recommendation; consent required. Intensive study of professional development competencies and proficiencies related to social, historical, philosophical and psychological foundations of education. Spring, summer I.

EDPD 6332  Theories and Practices in Classroom Management.  (3 3 0) Prerequisite: conditional admission into an alternative certification program. Theories, research and applications of classroom management. Summer.

EDPD 6365  Educational Innovations.  (3 3 0) Educational innovations from current research and practice concerning elementary and secondary education. May be repeated once when topics vary. Course fee $30.

EDPD 6385  International Studies.  (3 3 0) Thorough examination of a contemporary international topic in education. Course may provide an optional faculty-led travel component designed to accomplish learning objectives of the course. Students participating in the travel option will be charged...
an additional course fee not to exceed the actual cost of travel, including but not limited to transportation, lodging and food. May be repeated when topics vary. Spring, summer I. Course fee variable.

EDPD 6390 Internship in Higher Education I. (3 0 0) Prerequisite: 6311, 6312. Supervised internship in higher education. Students engage in 80 hours of experiences with the intent to gain understanding of various facets across the higher education environment. Summer. Course fee $30.

EDPD 6391 Internship in Higher Education II. (3 0 0) Prerequisite: 6311, 6312, 6390. Second supervised internship in higher education. Experience will vary according to student environment and opportunities but will expose student to a variety of opportunities as listed in the course syllabus by the professor of record. Students engage in 80 hours of experiences. Spring. Course fee $30.

EDPD 6398 Internship I. (3 0 0) Prerequisite: departmental permission, admission to post-baccalaureate/alternative certification program, employment by an accredited school district. Students are required to enroll in two internships for a minimum required credit of six semester hours. The intern will be required to perform as teacher of record in an accredited school at the appropriate level under supervision of a mentor and a University supervisor. Successful completion will be noted on the student's record by the grade of "S," indicating three hours credit with no grade points. Fall, spring.

EDPD 6399 Internship II. (3 0 0) Prerequisite: departmental permission, admission to post-baccalaureate/alternative certification program, employment by an accredited school district. Students are required to enroll in two internships for a minimum required credit of six semester hours. The intern will be required to perform as teacher of record in an accredited school at the appropriate level under supervision of a mentor and a University supervisor. Successful completion will be noted on the student's record by the grade of "S," indicating three hours credit with no grade points. Fall, spring.

EDRD—Reading

(Offered through the Department of Education.)

EDRD 0002 Developmental Reading. (1-3 1-3 0) Students who score 16 or below on the Reading Section of the ACT (900 or below, SAT Composite) are assigned to this course. Improvement of reading and study skills, including vocabulary, comprehension and speed of reading for University students at all levels. May not be counted toward a degree or grade points. Fall, spring, summer I, II.

EDRD 3301 Teaching Reading Through Children’s Literature. (3 3 0) Techniques and methods of teaching reading through use of children’s literature. Emphasis on genres, author and illustrator studies, multicultural and international publications, and historical and contemporary publishing trends. Criteria for building an equitable and balanced collection for home, classroom and library. Fall, spring, summer I, II.

EDRD 3302 Reading Skills in the Elementary School. (3 3 0) Surveys of current theories of reading and developmental reading instruction, including emergent literacy, word identification, comprehension and study skills, and models of teaching reading. Fall, spring, summer.

EDRD 4095 Problems in Reading Education. (1-3 0 0) Actual problems relating to reading education. To be taken only after rearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I, II.

EDRD 4301 Emergent Literacy in Diverse Cultures. (3 3 0) Prerequisite: 3301, 3302. Diverse aspects of language and culture which influence the teaching-learning process. Emphasis on techniques and strategies for teaching English to speakers of other languages of diverse backgrounds and abilities; content and materials/resources needed to understand and teach transitional literacy development to linguistically and culturally diverse students. Fall, spring, summer I. Courses in summer or intersession may include an optional travel component at the expense of the student.

EDRD 4302 Evaluation of Reading Performance. (3 3 0) Prerequisite: 3302 or 4306; admission to teacher education. Basic principles of evaluation applied to reading performance with survey of day-to-day procedures and materials which classroom teachers can use in determining and meeting reading needs of children. Fall, spring, summer I.

EDRD 4303 Field Experience in Teaching Reading. (3 1 4) Prerequisite: 3302 and 4302. Literature, basal and individualized reading approaches. Provide diagnostic materials and work with school-age children in a tutorial role with directed experiences to meet an individual child's reading needs. Field experiences required. Fall, spring, course fee $20.

EDRD 4304 Reading Skills in the Content Field. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341 and admission to and retention in WTAMU Teacher Education Program, pass TSI. Help the content teacher gain a more complete understanding of reading instruction. Relation of reading ability to academic achievement, procedures for teaching reading skills needed in content area reading and reading difficulties encountered by elementary students. Fall, spring, summer I.

EDRD 4306 Teaching Reading in Middle School. (3 3 0) Prerequisite: 3301, admission to Teacher Education Program, consent required. Designed to develop and maintain literacy skills in middle school grades. Emphasis on a solid understanding of reading, writing and study strategies needed by all middle school learners. Fall, spring.

EDRD 4386 Secondary Reading in the Content Area. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341 and admission to and retention in WTAMU Teacher Education Program, pass TSI. Development of reading skills and abilities in the middle school and secondary content area classroom. Emphasis on cognitive processes, questioning strategies, study skills and comprehension of expository text. Demonstrate knowledge of the Texas Essential Knowledge and Skills and relate recent research to instruction implications in the classroom. Fall, spring, summer I.

EDRD 5302 Evaluation of Reading Performance. (3 3 0) Prerequisite: 6331 or 3302; admission to post-baccalaureate certification program. Basic principles of evaluation applied to reading performance with survey of day-to-day procedures and materials which classroom teachers can use in determining and meeting reading needs of children. Fall, spring, summer I.

EDRD 5306 Teaching Reading in Middle School. (3 3 0) Prerequisite: admission into the alternative certification program, consent required. Designed to develop and maintain literacy skills in middle school grades. Emphasis on a solid understanding of reading, writing and study strategies needed by all middle school learners. Fall, spring.

EDRD 5381 Reading Recovery I. (3 3 0) Prerequisite: admittance to the Reading Recovery Program. Introduction of the Reading Recovery teacher-in-training to Reading Recovery: theoretical foundations, purposes and procedures. Classroom instruction will be coordinated with individual instruction of at-risk students in an integrated field experience. Fall, spring.

EDRD 5386 Secondary Reading in the Content Area. (3 3 0) Prerequisite: admission into the alternative certification program.
EDRD 6095 Problems in Reading Education. (1-3 0 0) Actual problems related to reading education. To be taken only after prearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I, II.

EDRD 6331 Reading Skills Instruction: Research, Principles and Practices. (3 3 0) Prerequisite: conditional admission into an alternative certification program. Principles and practices of teaching reading in the elementary and middle school classroom. Emphasis on emergent literacy, decoding strategies, vocabulary development, comprehension, assessment of reading difficulties, study skills and content area integration. Summer.

EDRD 6332 Reading in Content Areas. (3 3 0) Prerequisite: conditional admission into the alternative certification program. Investigation of current content area reading programs with emphasis on characteristics of effective content area teaching: establishing a strong structure of understanding expository text; acquisition of vocabulary, comprehension and study strategies as they relate to content area learning and teaching, including the role of technology as a learning and teaching tool. Summer.

EDRD 6340 Foundations in Reading. (3 3 0) Theoretical models of the reading process, historical perspectives on reading instruction and language learning. Provides an understanding of the construction of reading theory and its relationship to instructional practices. Survey of research and theory in behaviorism, constructivism, psycholinguistics, and sociolinguists as influences on current reading practices; integration of instructional technology. Fall of even years.

EDRD 6341 Diagnosis and Remediation. (3 3 0) Prerequisite: six hours of graduate or undergraduate reading courses. Advanced study of informal and formal assessments, including state-mandated instruments, with emphasis on administration, interpretation and evaluation of results obtained. Procedures for diagnosis and methods and materials for corrective techniques. Includes clinical practice. Summer II of even years. Course fee $30.

EDRD 6344 Multicultural Child and Adolescent Literature. (3 3 0) Exploration of various genres of literature written for elementary and secondary students. Equity issues of gender, age, race, ethnicity, exceptionality and language diversity will be explored in child and adolescent literature. Attention to award-winning literature, social change and curriculum revision, research and instructional strategies designed to enrich all content areas. Emphasis on literature-based reading programs, and empowerment of authors and illustrators of diverse language and cultural backgrounds. Fall of odd years.

EDRD 6345 Emergent Literacy in Family and Cultural Context. (3 3 0) Emergent literacy in context of family, language community and culture. Family literacy issues and values influencing early oral language, reading, drawing-writing development. Environmental print awareness, home-school connection and developmentally appropriate practice. Survey of qualitative research in psycholinguistics, sociolinguistics and early childhood education. Integration of instructional technology. Spring of even years.

EDRD 6346 Language and Literacy in the Classroom. (3 3 0) Implementation of reading and writing processes in the elementary and secondary classroom. Emphasis on a language-centered view of teaching and learning, and models of effective instructional approaches. Focuses on current interdisciplinary influences, qualitative and naturalistic research, portfolio development, integration of instructional technology and authentic assessment. Includes clinical experience. Summer II of even years. Course fee $30.

EDRD 6348 Organization and Administration of Reading Programs. (3 3 0) Survey of current research, trends and issues, federal and state initiatives, legislation and resources related to development, supervision and administration of reading programs, pre-K through adult learners. Includes clinical experience. Spring of odd years.

EDSE—Secondary Education

(Offered through the Department of Education.)

EDSE 4095 Problems in Secondary Education. (1-3 0 0) Study and/or research on an identified topic in secondary education. Requires approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EDSE 4320 Teaching in Secondary School. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, admission to and retention in teacher education. Intensive study of teaching methods, instructional planning and instructional skills, including strategies for English language learners. To be taken the semester prior to student teaching. Field experience required. Fall, spring, summer.

EDSE 4321 Teaching in Agriscience. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, admission to and retention in teacher education. Intensive study of teaching methods, instructional planning and instructional skills utilized in the teaching of agricultural science in secondary schools. Must be taken prior to student teaching. Field experience required. Fall.

EDSE 4328 Teaching of School Music. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, admission to and retention in teacher education. Intensive study of teaching vocal and instrumental music in secondary school. To be taken semester of student teaching. Usually offered only during fall semesters. Field experiences required. Fall.

EDSE 4340 Student Teaching—Secondary. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester, admission and retention in teacher education, required grade point averages, secondary—lack no more than one course in each teaching field, all-level—lack no more than two courses in teaching field, lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Students are required to enroll in a minimum of two student teaching courses for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching in their teaching field at the secondary level. Successful completion will be noted on the student's transcript by a grade of "S," indicating three semester hours credit with no grade points. Fall, spring, Course fee $40.

EDSE 4341 Student Teaching—Secondary. (3 3 0) Prerequisite: professional education courses required prior to student teaching semester, admission and retention in teacher education, required grade point averages, secondary—lack no more than one course in each teaching field, all-level—lack no more than two courses in teaching field, lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Students are required to enroll in a minimum of two student teaching courses for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching in their teaching field at the secondary level. Successful completion will be noted on the student's transcript by a...
EDSP—Generic Special Education
(Offered through the Department of Education.)

EDSP 4095 Problems in Special Education. (1-3 0 0) Actual problems relating to special education. To be taken only after prearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EDSP 4343 Student Teaching—Generic Special. Prerequisite: professional education courses required prior to student teaching semester; admission and retention in teacher education; required grade point averages; elementary—lack no more than two courses in interdisciplinary core work and one course in generic special education course work; secondary—lack no more than one course in generic special education course work; lack no more than 15 semester hours for completion of degree/deficiency plan program (excluding student teacher courses). Students completing secondary certification enroll in EDSE 4340 and EDSP 4343. Students completing elementary certification with generic special education subject concentration are required to enroll in EDEL 3430 and EDSP 4343 for a minimum required credit of six semester hours. Students will successfully complete six weeks of student teaching at the elementary generic special-education level. Successful completion will be noted on the student’s transcript by a grade of “S,” indicating three semester hours credit with no grade points. Fall, spring. Course fee $40.

EDSP 4351 Exceptionality in Children. (3 3 0) In-depth study of individuals with special needs, including understanding individuals with disabilities and evaluating their needs, with an emphasis on student learning and development, and on professional roles and responsibilities of special educators. Field-based course. Spring.

EDSP 4352 Teaching Individuals with Intellectual Disabilities. (3 3 0) Educational delivery options, classroom organization, behavior management, curriculum and instructional aids and materials useful in education of the learner with intellectual disabilities. Field-based course. Fall.

EDSP 4354 Learning and Behavior Disorders. (3 3 0) Introduction to learning disabilities and emotional disturbances. Field-based course. Fall.

EDSP 4355 Individual Assessment Techniques. (3 0) Prerequisite: EDSP 4351 and 4354. Techniques and procedures for testing exceptional learners, interpretation assessment procedures, and the application for writing individual educational programs. Field-based course. Summer I. Course fee $20.

EDSP 4356 Curriculum Adaptation and Prescriptions. (3 3 0) Techniques for adapting curriculum and instructional materials, task analysis, remedial strategies, educational prescriptions, and individual educational programs for the student with learning and behavioral disorders. Field-based course. Spring.

EDSP 4357 Educational Procedures for Adolescents. (3 3 0) Prerequisite: EDSP 4351, 4352 and 4354. Applied behavior analysis, behavior therapy and management techniques with emphasis on environmental manipulation and management of surface behaviors. Field-based course. Spring.

EDSP 4358 Theories of Multiple Disabilities. (3 3 0) Adaption of instruction and physical environment for those whose language, motor, sensory or medical impairments necessitate specialized intervention to meet educational, physical and psychological needs. Field-based course. Fall.

EDSP 4359 Behavior Management of Exceptional Children. (3 3 0) Prerequisite: EDSP 4351, 4352 and 4354. Applied behavior analysis, behavior therapy and management techniques with emphasis on environmental manipulation and management of surface behaviors. Field-based course. Spring.

EDSP 4369 Special Education Methods. (3 3 0) Prerequisite: EDPD 3340, EPSY 3341, EDT 3343, and admission into Teacher Education Program. Field-based course designed for special education majors to master instructional strategies, technologies, collaboration techniques and communication skills for use with students who have mild, moderate and severe/multiple disabilities in appropriate environments.

EDSP 6095 Problems in Special Education. (1-3 0 0) Actual problems related to special education. To be taken only after prearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EDSP 6352 Instructional Programming for Students with Intellectual Disabilities. (3 3 0) Students will be required to perform a functional assessment for students with intellectual disabilities. Service delivery options, classroom management, adaptive equipment and differentiated curriculum related to individuals with moderate intellectual disabilities in traditional and inclusive settings. Spring. Course fee $30.

EDSP 6354 Theories of Learning Disabilities and Emotional/Behavioral Disorders. (3 3 0) Prerequisite: EDSP 4351, 4352 and 4354. Advanced study of characteristics, etiology, and research related to cognitive, language, motor and social/emotional aspects of emotional behavioral disorders and learning disabilities. Fall.

EDSP 6356 Advanced Remediation Techniques. (3 3 0) Specific remediation techniques for language-disabled and learning-disabled children. Spring.

EDSP 6357 Teaching Secondary Students with Mild Disabilities. (3 3 0) Understanding and competence in teaching secondary students with learning disabilities. Summer I.

EDSP 6358 Seminar in Students with Multiple Impairments. (3 3 0) Prerequisite: EDSP 4351, 4352 and 4354. Advanced study of adaptations required in the instructional and physical environment for students whose language, motor, sensory or medical impairments require specialized intervention to meet educational needs. Spring, summer I.

EDSP 6359 Management of Classroom Behaviors—Exceptional Learners. (3 3 0) Strategies for managing student behaviors. Concepts related to use of behavior-change strategies and single-subject designs. A behavior-change project will be designed and implemented. Fall.

EDSP 6360 Assistive Technology. (3 3 0) Prerequisite: EDSP 6357. Advanced study of high-tech and low-tech assistive devices used by students with physical, sensory and/or mental disabilities. Keyboard alternatives and emulators, construction of keyboard and communication overlays, switch construction, toy adaptation, environmental controls, and other
EDSP 6361 Survey of Exceptional Learners. (3 3 0) Prerequisite: conditional admission into the alternative certification program. Survey of areas of exceptionality in children and adolescents, including learning disabilities, emotional and behavioral disorders, cognitive impairments, and physical and health impairments. Summer.

EDSP 6362 Transition: From Schools to Adult Communities. (3 3 0) Advanced study in providing appropriate transitional services to individuals with disabilities. Students will learn to assess needs, prepare transition plans, identify services, access services and evaluate outcomes. Postschool activities, including postsecondary education, employment, independent living and community participation for people with disabilities will be studied. Fall.

EDSP 6363 Programming for Students with Cognitive Disabilities. (3 3 0) Prerequisite: conditional admission into the alternative certification program. Advanced study of instructional programming for students with cognitive disabilities and/or multiple impairments. Service delivery options, assistive technology and individualized curriculum related to programming from early childhood through transition into adulthood in traditional and inclusive settings. Summer.

EDSP 6364 Legal Issues in Special Education. (3 3 0) Special education in a legal context, including regulation through federal and state legislation, judicial decision and administrative process. Authority and legal responsibility of the special educator and the administration of the school district. Spring.

EDSP 6365 Understanding Students with Learning Disabilities/Emotional Disturbances. (3 3 0) Prerequisite: conditional admission into the alternative certification program. Advanced study of characteristics, etiology and research related to cognitive, language, motor and social/emotional aspects of emotional disorders and learning disabilities. Summer.

EDSP 6366 Advanced Curriculum Adaptation Techniques for Exceptional Learners. (3 3 0) Prerequisite: conditional admission into the alternative certification program. Curriculum adaptation and remedial techniques for special-needs students. Summer.

EDSP 6367 Interpretation of Assessment Data for Instruction. (3 3 0) Prerequisite: EPSY 6322, 6374. Competence in interpretation of assessment results from cognitive and achievement batteries and planning educational programs. Once per year. Course fee $30.

EDSP 6377 Practicum in Diagnosis of Exceptional Students. (3 0 0) Prerequisite: EDPD 6301, EPSY 6322, 6374 and instructor consent. Supervised experience in administration, scoring and interpretation of individually administered educational diagnostic and intelligence tests. Spring. Course fee $30.

EDSP 6389 Teaching Gifted and Talented. (3 3 0) In-depth study of pedagogical requirements to teaching children who are gifted, talented and creative.

EDT—Instructional Design and Technology
(Offered through the Department of Education.)

EDT 3343 Educational Technology. (3 3 0) Prerequisite: demonstrated computer competency or equivalent and minimum of 60 semester hours. Overview and use of computer-based teacher productivity tools and applications. Includes alignment to state standards; theoretical basis for technology use; application to student learning styles; and copyright, fair use and Internet use in education. Fall, spring, summer, intersession.

EDT 6300 Introduction to Instructional Technology. (3 3 0) Designed for post-baccalaureate and graduate students not enrolled in the Instructional Design and Technology Degree Program who need to take a graduate-level, technology-related course. Includes both theoretical and practical applications of instructional technologies in an educational setting. Fall, spring, summer.

EDT 6305 Introduction to Computer Productivity Tools. (3 3 0) Introduction to spreadsheet, word processing, presentation and database functionality within the most current Microsoft Office Suite. Fall.

EDT 6310 Theory of Technology-Assisted Instructional Design. (3 3 0) Designed for those needing a structured approach to designing and delivering technology-assisted instructional materials supported by research literature. Includes analysis, design, development, implementation and evaluation. Various learning models and strategies will be explored in relation to computerized delivery methods, with a focus on the MindTools (Jonassen, et al) approach. This is a theory course, and no software will be covered. Fall.

EDT 6350 Digital Graphics and Interactive Design. (3 3 0) Designed for educators and business professionals seeking to maximize the effectiveness of their online and print-based graphics and publications as learning objects. Includes the psychology of graphics, graphics and memory load, planning graphics that support learning transfer and defining the visual context. Software used will include Adobe Fireworks CS4 and advanced Microsoft Office features specific to the graphic design of publications. Spring. Course fee $20.

EDT 6355 Audio and Visual Systems for Educators. (3 3 0) Designed for education and business professionals who need to create video/audio, edit video/audio and incorporate video/audio into their learning materials. Includes storyboarding, scripting, hardware, software and the human side of working with video/audio subjects. Spring. Course fee $20.

EDT 6371 Computer Technology and Reading Instruction. (3 3 0) Designed to expand graduate student’s ability to integrate instructional technologies throughout language arts curriculum in an educationally sound manner. Hands-on, projects-based course includes creation of language experience stories, online and print-based storybooks, alternative language arts assessments, instructional games and more. Intersession. Course fee $10.

EDT 6372 Computer Technology, Mathematics and Science Instruction. (3 3 0) Designed to expand graduate student’s ability to integrate instructional technologies through mathematics and science curricula in an educationally sound manner. Hands-on, projects-based course includes creation of learning activities, interactive games, alternative assessments and more. May intersession. Course fee $10.

EDT 6375 Survey of Web Resources in Educational Software. (3 3 0) Designed to assist the K-12 teacher to find, evaluate and use the best freely distributed and commercially
available software in the content areas. Emphasis on evaluating software against the criteria of good instructional design and in relation to a variety of target audiences. Spring.

**EDT 6380** Designing Effective Internet Sites for Learning. (3 3 0) Designed for business and education professionals who need to create websites that function as effective learning tools. Uses Adobe Dreamweaver CS4. Includes graphic design theory as it applies to web pages, Dreamweaver basics, site management, linking, cascading stylesheet, web typography and tables. Spring. Course fee $20.

**EDT 6382** Advanced Web Design. (3 3 0) Prerequisite: 6350 and 6380. Designed for anyone wishing to create professional quality interactive websites. Includes application of coded behaviors, advanced image editing, use of templates and library items, automating repetitive tasks in web design, 508 accessibility compliance, embedded media objects, web frames Fireworks/Dreamweaver integration and second-tier troubleshooting. Spring.

**EDT 6384** Advanced Business Productivity Applications. (3 3 0) Prerequisite: 6305, 6310. Designed for students who aspire to serve in an instructional design role in corporate and non-profit enterprise. Includes database normalization techniques with Microsoft Access, mail merge and advanced styling with Microsoft Word, multimedia extensions of Microsoft PowerPoint, and “what if” analysis and simple statistics in Microsoft Excel and Microsoft Visio. Spring.

**EDT 6385** IDT Project: Instructional Design and Technology Project. (3 3 0) Prerequisite: 30 graduate hours or permission of instructor. Project-based capstone graduate experience. Includes design, development, implementation and assessment of instructional design and technology project under the guidance of faculty. May be repeated once for credit with instructor consent Fall, spring, summer. Course fee $20.

**EDT 6392** Special Topics. (3 3 0) Prerequisite: 6310 or approval of department head. Topics of special graduate interest in the field of instructional technology. May be repeated once for credit when topics vary. Fall, spring.

**EDT 6394** Individual Problems in Instructional Design and Technology. (3 3 0) Prerequisite: approval of department head. Directed individual study and research on a specific topic within the discipline of instructional technology. May be repeated once with approval of department head. Fall, spring. Course fee $20.

**EDT 6395** Internship in Instructional Design and Technology. (3 3 0) Supervised practicum in an IDT setting. Successful completion will include 120 hours of field experiences and will be noted in student’s record as a grade of “S,” indicating hours credit with no grade points. Students will demonstrate proficiency in instructional design and technology through creation of a portfolio. May be repeated once with approval of department head. Fall, spring. Course fee $30.

**EMA—Emergency Management Administration**

(Offered through the Department of Political Science and Criminal Justice.)

**EMA 3310** Risk Management. (3 3 0) Evaluation of buildings, structures, and hazards as it relates to fire safety and protection. Organizations, current trends and possible solutions for problems. Relationships between fire losses, insurance, loss ratios and state regulations.

**EMA 4340** Applied Economics for Emergency Managers. (3 3 0) Survey of macroeconomic and microeconomic principles and their application to responsibilities and duties of emergency managers. Spring.

**EMA 4350** Emergency Management Directed Research. (3 3 0) Prerequisite: consent of instructor or EMA program academic adviser. This capstone course brings learning experiences in the program together to address real-life issues and problems through a major research project. Students select from predefined topical issues, submit a plan for completing the project and present the final project to a directed study committee.

**ENGL—English**

(Offered through the Department of English, Philosophy and Modern Languages.)

**ENGL 0302** Basic English. (1-3 1,3 0) Practice in reading and writing with emphasis on grammatical principles, sentence construction and paragraph development. Students who score below 18 on the English section of the ACT (or 440, SAT verbal) are assigned to this course which must be successfully completed before registering in ENGL 1301. May not be counted toward baccalaureate degree requirements. Fall, spring. Course fee $10; ESLI course fee $100.

**ENGL 1301** Introduction to Academic Writing and Argumentation. (3 3 0) Introduction to academic writing, rhetoric, rhetorical grammar, critical reading, plagiarism, academic integrity and the writing process. Fall, spring, summer.

**ENGL 1302** Research and Rhetoric. (3 3 0) Prerequisite: 1301. Course builds on topics introduced in WTAMU’s ENGL 1301—fundamentals of rhetoric, rhetorical grammar, plagiarism and academic integrity—and explores claim types, the research process and documentation. Fall, spring, summer.

**ENGL 2074** Individual Study. (1-3 0 0) Individual study designed to meet needs and interests of the student.

**ENGL 2311** Introduction to Professional and Technical Communication. (3 3 0) Prerequisite: 1301. Introduction to rhetorical techniques associated with workplace correspondence. Students prepare materials in the general areas of correspondence, short reports, instructions and descriptions. Summer, fall.

**ENGL 2321** British Literature. (3 3 0) Prerequisite: 1302 or 2311. Selected significant works of British literature arranged around a common theme.

**ENGL 2326** American Literature. (3 3 0) Prerequisite: 1302 or 2311. Selected significant works of American literature arranged around a common theme(s), period or culture.

**ENGL 2331** World Literature. (3 3 0) Prerequisite: 1302 or 2311. Selected significant works of world literature arranged around a common theme.

**ENGL 2341** Introduction to Literature. (3 3 0) Prerequisite: 1302 or 2311. Reading and discussion of representative works from major genres with the aim of providing competence.
in critical reading and analysis, knowledge of formal characteristics and appreciation of literary texts.

ENGL 2342 Introduction to Film and Media Studies. (3 3 0) Prerequisite: 1301, 1302. Concepts, theories, and methods of film and media through analysis of image and sound, aesthetics, historical concepts, genres, authorship, and issues of class, gender, race and ethnicity, with emphasis on writing, analysis, and research on film and media. Focus on mainstream cinema, documentary and contemporary television.

ENGL 2343 Literature and Ideas. (3 3 0) Prerequisite: 1302 or 2311. Interdisciplinary course designed to show how literature and other fields of knowledge interact.

ENGL 2372 Style and Information Design. (3 3 0) Prerequisite: 1301 and 1302 or 1301 and 2311 or equivalent; demonstrated computer competency. Introduction to style and design of technical, professional and scientific documents. Course will address questions of audience, the writing process, sentence-level issues, collaboration and style guides used throughout the disciplines. Spring.

NOTE: All English courses listed below require six hours of English credit as prerequisite.

ENGL 3094 Individual Study (1-3 0 0) Individual study designed to meet needs and interests of the student.

ENGL 3301 Creative Writing: Special Topics. (3 3 0) Workshop in the art of writing creatively; topic and genre may vary. May be repeated once for credit.

ENGL 3302 Creative Writing: Prose (3 3 0) Workshop in the art of writing prose. May be repeated once for credit.

ENGL 3303 Creative Writing: Drama. (3 3 0) Workshop in the art of playwriting. May be repeated once for credit.

ENGL 3304 Advanced Professional Documentation. (3 3 0) Prerequisite: 1301 and either 1302 or 2311. Explores in detail the documents produced by technical writers on a regular basis, including standard operating procedures, proposals, requests for work, requirements documents, security plans, contingency plans, memoranda of understanding, etc. Major assignments include a recommendation report, a proposal and a disaster recovery plan. Spring.

ENGL 3305 Professional Document Design and Editing. (3 3 0) Prerequisite: 1301 and either 1302 or 2311. Advanced look at the theory and practice of document design. Students will consider issues such as page layout, use of space and negative space, font selection, page balancing and focal points. Attention also will be given to document editing and collaborative writing. Major assignments will include production of designs for a number of document types, such as fliers, proposals, announcements, résumés and business reports. Fall, spring.

ENGL 3306 Creative Writing: Poetry. (3 3 0) Workshop in the art of writing poetry. May be repeated once for credit.

ENGL 3310 Semantics. (3 3 0) Derivations and growth of language. Fall.

ENGL 3311 Introduction to Language Structure. (3 3 0) Using advances made in linguistics, explores how English makes meaning through use of semantics, syntax, morphology and phonology. Emphasis on literary language as it affects children ages 6 to 18. Spring, summer.

ENGL 3312 History of the English Language. (3 3 0) Growth and development of the English language from Anglo-Saxon to modern English. Fall.

ENGL 3321 English Romanticism. (3 3 0) Survey of Romantic Movement in Britain. Emphasis on Wordsworth, Coleridge, Blake, Shelley, Keats and Byron. Every second or third fall.

ENGL 3323 Modern Literature. (3 3 0) Modernism and/or contemporaneous movements that focus on British and American writings from 1900–1945.

ENGL 3341 Studies in Drama. (3 3 0) Related works examining major lines of development; topics will vary. May be repeated once for credit.

ENGL 3342 Film Studies. (3 3 0) Introduction to and development of the art of analyzing film. Analysis of the challenges and difficulties of turning literary works into film. Comparison of analyzing novels and films. May be repeated once for credit.

ENGL 3350 The Bible as Literature. (3 3 0) Literary nature of the Bible and of its influence on Western writing. Every second or third spring.

ENGL 3351 Survey of English Literature to 1800. (3 3 0) Survey of English literature from its origin through the Age of Enlightenment. Majors authors include the Beowulf poet, Chaucer, Shakespeare and Milton. Fall of odd years.

ENGL 3352 Survey of English Literature Since 1800. (3 3 0) Survey of English literature of the 19th and 20th centuries. Emphasis on major literary movements of Realism and Romanticism. Spring of even years.

ENGL 3360 Survey of American Literature to 1865. (3 3 0) American literature from its beginnings through Whitman. Spring.

ENGL 3361 Survey of American Literature after 1865. (3 3 0) American literature from the advent of realism to the present. Fall.

ENGL 3362 Literature of the Southwest. (3 3 0) Introduction to works distinctively Southwestern in tone and subject with emphasis on 20th-century essays, short stories and novels. Every second or third spring.

ENGL 3368 Introduction to Literary Analysis. (3 3 0) Introduction to fundamentals of literary analysis, critical vocabulary and close reading of a wide range of literature across a variety of periods and genres.

ENGL 3381 Literature for Children and Young Adults. (3 3 0) General survey of literature which is suitable for children and/or young adults, sources of children’s and young-adult literature, standards for selection and evaluation of children’s and young-adult literature. Fall, spring.

ENGL 3382 Introduction to Comparative Literature. (3 3 0) Introduction to the discipline of comparative literature. Students will read a combination of international and interdisciplinary literary texts, as well as some critical theory.

ENGL 3383 Masterpieces of World Literature. (3 3 0) Introduction to significant international literatures and their contexts. Topics may include postcolonial literatures, world literatures in translation, surveys of non-Anglo national literatures, world literatures as resistance.

ENGL 4301 Advanced Composition. (3 3 0) Traditional and recent theories of composition with emphasis on practical and pedagogical techniques of improving expository writing. Every second or third fall.

ENGL 4304 Web Development and Design for Technical Communicators. (3 3 0) Prerequisite: 1301 and either 1302 or 2311. Introduction to the ways that websites convey information and the process by which they are developed. Students plan, design and implement a website focused upon a specific target audience. No prior experience in building webpages will be required. Fall.
ENGL 4393 Honors. (3 0 0) Prerequisite: senior standing and approval of department head. Completion of a senior thesis or research project by a candidate for graduation with special honors in the department. Course must be taken in addition to the 123-hour minimum degree requirement.

ENGL 5310 Advanced Grammar. (3 3 0) Emphasis on recent developments in grammatical theory. Spring.

ENGL 5311 Language Acquisition. (3 3 0) How users of English make meaning through language. Emphasizes phonology, morphology, semantics and syntax. Fall.

ENGL 5352 Shakespeare—Early Plays. (3 3 0) Development of Shakespeare as a dramatist. Most fall semesters.

ENGL 5353 Shakespeare—Later Plays. (3 3 0) Analysis of Shakespeare’s mature dramatic works. Most Spring semesters.

ENGL 6094 Individual Study. (1-3 0-3 0) Prerequisite: 24 semester hours of English. Intensive reading and research in language and literature. Must be approved by supervising professor before registration. May be repeated with approval of department head.

ENGL 6301 Thesis. (3 0 0) Prerequisite: 24 semester hours of English.

ENGL 6302 Thesis. (3 0 0) Prerequisite: 24 semester hours of English.

ENGL 6310 Studies in Language Structure and Development. (3 0-3 0) Prerequisite: 24 semester hours of English. Selected studies in principles of language, historical linguistics, grammatical and semantic systems. Readings, research, lectures, conferences with staff. May be repeated twice.

ENGL 6330 Studies in Literary Genres. (3 0-3 0) Prerequisite: 24 semester hours of English. Selected studies in literary genres. Readings, research, lectures, conferences with staff. May be repeated twice.

ENGL 6331 Hemingway and Faulkner. (3 0 0) Prerequisite: 24 semester hours of English. Representative works covering the entire careers of two of the most influential forces in recent American fiction.

ENGL 6350 Studies in English Literature. (3 3 0) Prerequisite: 24 semester hours of English. Selected topics for study and research. May be repeated when topics vary.

ENGL 6351 Elizabethan Literature. (3 0 0) Prerequisite: 24 semester hours of English. Seminar in major Renaissance writers.

ENGL 6352 17th-Century Literature. (3 3 0) Prerequisite: 24 semester hours of English. Seminar in 17th-century prose and poetry.

ENGL 6353 18th-Century Literature. (3 3 0) Prerequisite: 24 semester hours of English. Seminar in selected writers of the 18th century.

ENGL 6354 Studies in English Romantic Literature. (3 3 0) Prerequisite: 24 semester hours of English. Seminar in literature of the English Romantic Movement; lectures, papers, parallel reading.

ENGL 6360 Studies in American Literature. (3 0 0) Prerequisite: 24 semester hours of English. Selected topics for study and research. May be repeated when subjects vary.

ENGL 6380 Composition Pedagogy and Theory. (3 0 0) Introduction and practice with professional resources that support teaching of writing in higher education. Fall.

ENGL 6381 Literary Theory. (3 0 0) Prerequisite: 24 semester hours of English. Review of traditional literary theory and close examination of modern literary theory.

ENGL 6392 Special Topics in English. (3 0 0) Prerequisite: 24 semester hours of English. Topics in area of special graduate interest. May be repeated for credit when topics change.
Course Descriptions

ENGR—Engineering
(Offered through the Department of Engineering and Computer Science.)

ENGR 1171 Engineering Ethics. (3 0 0) Professional ethics, social and environmental responsibilities of engineers. Role of communication, considerations of risk, safety, and liability in engineering design and practice.


ENGR 1375 Principles of DC and AC Circuits. (3 2 2) Principles of DC and AC circuits. Test and measurement of electric circuits and components. Fall, spring. Course fee $25.

ENGR 2301 Engineering Statics. (3 3 0) Prerequisite: 1201 and MATH 2413. Bodies in equilibrium, including Newtonian mechanics, gravitational forces, reference systems.

ENGR 2302 Engineering Dynamics. (3 3 0) Prerequisite: 2301. Theory and principles of rigid body kinematics, including forces, acceleration, work and energy, and impulse and momentum, in rectilinear and curvilinear systems.

ENGR 2372 Special Topics in Engineering. (3 3 0) Current topics or topics of special interest in engineering. May be repeated for a maximum of six hours if subject matter varies.

ENGR 3202 Fundamentals of Engineering Econ. (2 2 0) Prerequisite: MATH 1314 or 1316 or 1324 or 2412 or 2413. Introduction to concepts of economic analysis applied to engineering problems. Topics include cost and design comparison, time value of money, comparison of alternatives, depreciation and tax implications, economic evaluation of projects, risk and uncertainty, replacement analysis and capital financing.

ENGR 3305 Modern Engineering Tools. (3 2 2) Prerequisite: CS 1315, ENGR 1304, 2301. Current software applications used in engineering professions. Tools will cover structural mechanics, fluid mechanics, heat transfer and solid modeling. Software may vary with current industrial technology. Fall. Course fee $50.

ENGR 4301 Solar Engineering. (3 3 0) Prerequisite: PHYS 3303 or ET 3303 or ET 4350. Design and analysis of solar technologies as applied to engineering systems.

ENGR 4302 Wind Turbine Engineering. (3 3 0) Prerequisite: 1201 and 1375, MATH 2413. Wind turbine engineering design; aerodynamic and performance modeling, structural dynamics, system engineering.

ENGR 4311 Green Building Design. (3 3 0) Prerequisite: 1201, 1375, MATH 2413. Application of energy balance, fluid flow concepts and materials behavior to the design of green buildings. Emphasis on energy efficiency, natural ventilation, water efficiency and materials efficiency.

ENVR—Environmental Science
(Offered through the Department of Life, Earth and Environmental Sciences.)

ENVR 3092 Special Topics. (1-6 0-6 0-12) Prerequisite: consent of instructor. Consideration in recent advances in environmental sciences. May be repeated for a maximum of six hours credit. Course fee $15.

ENVR 4095 Problems. (1-6 0-6 0-12) Prerequisite: permission of department head. Independent studies in environmental science not covered by regular courses. Fall, spring, summer I, summer II.

ENVR 4098 Internship in Environmental Science. (1-3 0 0) Prerequisite: 60 hours of core courses. Two to six weeks internship at a plant, business or agency to observe and participate in daily operations, under supervision of cooperating personnel involved in environmental aspects of the place. Fall, spring, summer I, summer II.

ENVR 4301 Preparation of Environmental Impact Statements. (3 3 0) Prerequisite: 60 hours of core courses. Preparation, review, evaluation and interpretation of environmental impact statements and environmental documents. Fall of even years.

ENVR 4302 Environmental Law. (3 3 0) Prerequisite: adviser’s approval. Fundamental study of legal aspects and responsibilities of businesses, industries and agencies. Spring.

ENVR 4305 Introduction to Geographic Information Systems. (3 2 2) The combination of mapping and databases to provide combinations of spatial information and modeling capabilities in a multi-disciplinary format. Introduction of basic concepts and data sources, including global positioning systems and basic output products. Spring. Course fee $17.

ENVR 4306 Hazardous Waste Site Assessment. (3 2 2) Course provides the student with OSHA 1910.120 certification to work on hazardous waste sites as well as advanced skills in site assessment, sampling protocols, and the selection and use of safety equipment. May intersession. Course fee $35.

ENVR 4310 Global Agriculture and the Environment. (3 3 0) Prerequisite: PSES 3411 or BIOL 3418 or consent of instructor. Discussion of agriculture systems and practices in relation to how they affect environmental quality from local to global scales. Same as AGRI 4310. Fall.

ENVR 4350 Computer Applications in Hydrogeology. (3 2 2) Prerequisite: GEOL 3350. Solving hydrogeology problems using real data and utilizing commercially available software. Examples of problems include direction and velocity of groundwater flow, contaminant transport, and volume and depletion calculations of confined and unconfined aquifers. Course fee $15.

ENVR 4404 Environmental Sampling and Interpretation. (4 3 2) Hands-on experience in sampling, data validation and interpretation of air, water, soil and biota parameters using current EPA and state protocols. Planning, chain-of-custody, quality assurance and sampling technique. Spring. Course fee $15.

ENVR 4430 Introduction to Dendrochronology. (4 3 2) Dendrochronology or tree-ring science; principles and applications to archaeology, environmental studies, ecology and climatology. Same as BIOL 4430. Course fee $15.

ENVR 5310 Global Agriculture and the Environment. (3 3 0) Prerequisite: PSES 3411 or BIOL 3418 or consent of instructor. Discussion of agriculture systems and practices in relation to how they affect environmental quality from local to global scales. Same as AGRI 5310. Fall.
ENVR 5350 Computer Applications in Hydrogeology. (3 2 2) Prerequisite: GEOL 3350. Solving hydrogeology problems using real data and utilizing commercially available software. Problems solved include direction and velocity of groundwater flow, contaminant transport, and volume and depletion calculations of confined and unconfined aquifers. Course fee $15.

ENVR 5430 Introduction to Dendrochronology. (4 3 2) Dendrochronology or tree-ring science; principles and application to archaeology, environmental studies, ecology and climatology. Same as BIOL 5430. Course fee $15.

ENVR 6092 Special Topics. (1-6 0-6 0-12) Recent advances in environmental sciences. May be repeated for a maximum of six hours credit.

ENVR 6098 Graduate Internship in Environmental Science. (1-3 0 0) Prerequisite: permission of department head. Two- to six-week internship at a plant, business or agency to observe and participate in daily operations under supervision of cooperating personnel involved in environmental aspects of the operation. A comprehensive report will be required. Fall, spring, summer I, summer II.

ENVR 6111 Seminar. (1 1 0) Prerequisite: admission to the M.S. degree in environmental science. Current topics and concerns of environmental science. Fall of odd years.

ENVR 6301 Thesis. (3 0 0) Fall, spring, summer I, summer II.

ENVR 6302 Thesis. (3 0 0) Fall, spring, summer I, summer II.

ENVR 6303 Research Methods in Environmental Science. (3 3 0) Prerequisite: BIOL 4416, 4310, MATH 2413 or equivalent. Sampling design and statistical methods for environmental scientists.

ENVR 6304 Ecological Risk Assessment. (3 3 0) Overview of current and proposed science and policy of ecological risk assessment methodologies used to assess and predict ecological effects and to support the risk management decision-making process for protection and recovery of the environment at waste-spill sites and for permitted facilities. Fall of even years. Course fee $5.

ENVR 6305 Geographic Information Systems. (3 2 2) Prerequisite: demonstrated computer competency. Use of computers to generate maps and associated data bases. Analysis and applications of Geographic Information Systems. Same as ET 6305. Spring of even years. Spring. Course fee $15.

ENVR 6320 Environmental Regulations. (3 3 0) Prerequisite: approval of adviser. Legal application and responsibilities of environmental regulations as they apply to businesses, industries and agencies. Fall of odd years.

ENVR 6344 Agricultural Waste Management. (3 3 0) Issues and solutions for managing agricultural wastes. Manure characteristics, treatment methods, environmental regulations, odors, air quality, composting and land applications. Spring of even years. Course fee $10.

ENVR 6350 Applied Hydrogeology. (3 2 2) Prerequisite: GEOL 3350. Quantitative techniques used in surface hydrology and underground aquifers. Spring of even years. Course fee $10.

ENVR 6395 Research Problems in Environmental Science. (3 0 0) Prerequisite: permission of instructor and department head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal course work. May be repeated once with approval of department head. Fall, spring, summer I, summer II. Course fee $30.

ENVR 6509 Human Ecology. (3 3 4) Prerequisite: BIOL 4510 or 4513. Critical evaluation of the impact of human activities on the environment. Same as BIOL 6509. Fall of odd years. Course fee $15.

EPSY—Educational Psychology

EPSY 3341 Educational Psychology. (3 0 0) Prerequisite: EDPD 3340, minimum 2.5 GPA, admission into WTAMU Teacher Education Program. Course for pre-service teachers about psychology of teaching and learning. Theories of cognitive, social, emotional, physical and moral development, including student diversity, engagement, planning, technology and assessment. Course is aligned with Texas educator standards and helps to prepare student for the TExES PPR. Field experiences integrated with a professional learning community component are required. Fall, spring, summer I, summer II.

EPSY 3350 Children with Special Needs. (3 3 0) Overview of characteristics of children with special needs, including children with disabilities, gifted/talented and/or from culturally diverse backgrounds. Modifications and adaptations of programs to meet individual needs. Fall, spring, summer II.

EPSY 4095 Problems in Education Psychology. (1-3 0 0) Actual problems relating to education psychology. To be taken only after prearrangement with a faculty member and approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II.

EPSY 6305 Theories of Counseling and Professional Orientation. (3 3 0) Major theories of counseling, legal and ethical practices in professional counseling. Prerequisite to 6375 or 6328. Fall, spring, summer I.

EPSY 6306 Principles and Practices of Counseling Services. (3 3 0) Principles and practices of guidance and counseling services in schools with emphasis on delivery of services to students and consultation skills for working with staff. Spring.

EPSY 6308 Professional Orientation and Ethics. (3 3 0) Objectives of professional counseling organizations, codes of ethics, legal aspects of practice and development of professional identity. Spring, summer I.

EPSY 6310 Educational Psychology. (3 3 0) Psychological assessment of human behavior related to teaching and learning.

EPSY 6322 Individual Mental Testing I. (3 0 0) Prerequisite: instructor consent. Administration, scoring and interpretation of various Wechsler Scales and other assessment instruments. Fall.

EPSY 6324 Counseling Techniques with Children, Youth and Parents. (3 0 0) Techniques and procedures for working with children, youth and their parents. Consultation techniques included. Spring, summer I.

EPSY 6326 Basic Play Therapy. (3 3 0) Prerequisite: 6324. Designed to enhance/increase counselor's understanding of the child's world as perceived by the child, the relationship between the child's world and behavior. Major theories of play therapy and utilization of play media to facilitate the child's self-exploration, self-expression, self-understanding and personal growth.

EPSY 6327 Vocational and Educational Information. (3 0 0) Theories of vocational choice. Competence in selection, organization and evaluation of materials to be utilized in counseling students. Fall, summer II.

EPSY 6328 Group Counseling. (3 0 0) Prerequisite: EPSY 6305. Dynamics of counseling applied to the group setting. Experimental learning in a simulated group process. Strongly recommended that 6305 be completed prior to enrollment in this course. Fall, spring, summer I.
EPSY 6330  Multicultural and Gender Issues in Counseling. (3 3 0) Historical-political-social factors, gender-role socialization and how these forces influence psychological development of all people. Emphasis on how this knowledge and awareness can positively influence problem assessment/conceptualization, treatment and therapy outcomes with African-American, Asian, Latino, Native American, homosexual, transgendered and other clients. Fall, summer II.

EPSY 6350  Exceptional Children in the Mainstream of Society. (3 3 0) Prerequisite: conditional admission into Teacher Education Program if pursuing initial certification. Overview of characteristics and special needs of exceptional children who are disabled, gifted/talented and/or from culturally diverse backgrounds. Focus on needs of exceptional children and possible characteristics, implications and ecological elements that may impact the child. Spring, summer.

EPSY 6367  Counseling and Guidance of Gifted and Talented Students. (3 3 0) Counseling exceptional individuals with emphasis on needs of gifted and talented children and youth, and current research related to exceptional individuals and their families.

EPSY 6371  Psychopharmacology and Substance Abuse Treatment. (3 3 0) Impact of psychotropic medications on clients and how these therapies influence counseling interventions. Methods counselors should employ when intervening with clients who are recovering from drug/alcohol abuse and dependence. Fall.

EPSY 6372  Assessment and Diagnosis in Professional Counseling. (3 2 2) Prerequisite: EPSY 6305 and PSYC 5360 or 6360. Formal and non-formal assessment techniques, including interviewing, testing, interpreting and communicating assessment information. Spring.

EPSY 6373  Intervention Strategies in Marriage and Family Therapy. (3 3 0) Prerequisite: 6305. Research on applied intervention techniques: couples and families facing premarital issues, infidelity, divorce, domestic violence, child abuse and other critical issues. Fall, summer I.

EPSY 6374  Individual Mental Testing II. (3 3 0) Prerequisite: instructor consent. Administration, scoring and interpretation of Woodcock Johnson and other assessment instruments. Spring.

EPSY 6375  Techniques of Counseling. (3 3 0) Prerequisite: 6305 and formal admission to counseling or graduate psychology program. Identification and implementation of techniques involved in the counseling process. Techniques of theoretical approaches, outcome research and ethical methods of implementation. Fall, spring.

EPSY 6376  Sexuality for Marriages and Family. (3 3 0) Advanced information regarding couple therapy and relational treatment of sexual dysfunction. Emphasis on relationship processes that impact sexual functioning and sexual identity. Concepts of intimacy and sexuality will be differentiated and discussed in detail. Students are encouraged to be open to a learning environment that is built upon critical thinking, self-disclosure and collegiality. Fall.

EPSY 6381  Seminar in Counseling. (3 3 0) Prerequisite: approval of advisor. Intensive studies in areas pertinent to professional activities of counselors. May be repeated as topics vary.

EPSY 6382  Theory and Practice of Counselor Supervision. (3 2 2) Prerequisite: 6399. The role of supervision in counseling, including theory of counselor development and field work in supervision. Fall.

EPSY 6395  Problems in Guidance and Counseling. (3 0 0) Prerequisite: approval of department head. Specific problems in guidance and counseling. Fall, spring.

EPSY 6398  Internship in Counseling. (3 0 0) Prerequisite: 6327 and approval of instructor. Opportunity for students to perform, under supervision, a variety of activities that regularly employed counselors typically perform. After completing both sections, students should have received 600 hours of experience and training in individual counseling, group counseling and assessment. May be repeated once for credit. Fall, spring, summer I.

EPSY 6399  Practicum in Counseling. (3 2 2) Prerequisite: approval of instructor, approval of the program coordinator, formal admission to program and a minimum of 27 semester hours in counseling/psychology, including 6375. Course is a competency-based supervised experience in individual and group counseling through the counseling lab on campus. Off-campus experience will be accepted for school counselors, and enrollment for the summer will be limited to those in school counseling program. May be repeated once for credit. Fall, spring, summer I.

ET—Engineering Technology
(Offered through the Department of Engineering and Computer Science.)

ET 2371  Materials and Fabrication/Metals and Ceramics. (3 2 2) Properties and fabrication of ferrous and non-ferrous metals and ceramics used in manufacturing. Fall. Course fee $25.

ET 2372  Materials and Fabrication/Plastics and Composites. (3 2 2) Properties and fabrication of plastics and composites used in manufacturing. Spring. Course fee $25.

ET 2375  Electronic Devices and Circuits. (3 2 2) Prerequisite: ENGR 1375. Theory, operation and characteristics of semiconductor devices and circuits, including diodes, bipolar transistors, field effect transistors and commonly used integrated circuits. Course fee $25.

ET 3301  Fundamentals of Manufacturing Technology. (3 3 0) Prerequisite: 2371. Overview of current technologies used in manufacturing automation systems and production planning and control; FMS, robotics, CNC, CAD/CAM/CIM, PCs, machine vision, lasers, JIT, bar coding, voice activation of computers. Content includes the impact of these technologies on first-line employee supervision with emphasis on personality development and interaction for increased productivity.

ET 3302  Wind Energy and Wind Turbines. (3 3 0) Introduction to wind characteristics, wind turbine types, design of wind turbines, experimental results and economics. Same as PHYS 3302.

ET 3303  Solar Energy: Residence and Rural Systems. (3 3 0) Alternative energy (solar, wind, biomass) for residence and rural application. Cross-listed with PHYS 3303.


ET 3330  Fluid Power/Power Transmission. (3 2 2) Prerequisite: ENGR 1201. Fluid mechanics and mechanical transmission applications.

ET 3350  Fundamentals of Flight. (3 3 0) Aircraft systems and instruments, meteorology, communications and navigation. Completion of this course prepares a person to take the FAA written exam for a private pilot license.

ET 3360  Plant Design and Layout. (3 3 0) Prerequisite: ENGR 1304. Locating, designing and laying out manufacturing facilities.

ET 4301  Machining Fundamentals. (3 2 2) Prerequisite: 2371. Foundry and machining applications as they apply to the manufacturing of metal products. Course fee $25.

ET 4311  Industrial Design and Ergonomics. (3 3 0) Prerequisite: ENGR 1304. Applying design and ergonomic principles.
in the production, marketing and operation of industrial equipment and consumer products.

**ET 4314 Industrial Quality Assurance.** (3 3 0) Quality control management function involving detection and elimination of conditions that cause poor quality and analysis and refinements of systems.

**ET 4325 Computer-Aided Drafting and Design.** (3 2 2) Prerequisite: ENGR 1304 or consent of instructor. Use of industrial CAD programs as a tool in the design process; includes 3-D modeling. Course fee $25.

**ET 4330 Numerical Control and Computer-Aided Manufacturing.** (3 2 2) Prerequisite: 3301. Includes basic concepts in computer-aided manufacturing with emphasis on a system approach to manufacturing activities; use of numerical control machine tools and other computer-based software as applied to different industries, including robotics. Course fee $25.

**ET 4340 Principles of Industrial Distribution.** (3 3 0) Principles, organization, strategies and methods of industrial distribution. Emphasis on specific marketing techniques of industrial products and required engineering principles.

**ET 4350 Renewable Energy.** (3 3 0) Survey of renewable energy systems; solar, wind, geothermal, bioenergy, micro and mini hydro, and ocean plus institutional and economic aspects.

**ET 4351 Bioenergy.** (3 3 0) General course for information: teachers, general knowledge for policy makers, those interested in new field of renewable energy and general knowledge that will enable the student to train users of bioenergy.

**ET 4352 Geothermal Energy.** (3 3 0) Introductory course on the field of geothermal energy, which includes general knowledge for policy makers, those interested in geothermal energy and a general knowledge that will enable students to train users of geothermal energy.


**ET 4380 Design Implementation.** (3 0 0) Prerequisite: senior standing. A special interest project will be selected and developed through the necessary design/research steps to completion. An oral presentation before a faculty committee will be required to finalize the course. Fall, spring, summer I.

**ET 4395 Research and Problems.** (3 0 0) Selected individual research or problem in engineering technology. Completion of a more extensive research or problem than encountered in normal class work. May be repeated once. Fall, spring, summer I, summer II.

**ET 4398 Industrial Internship.** (3 0 0) Supervised industrial work experience related to student's educational objectives. Fall, spring, summer I, summer II.

**ET 6095 Individual Problems.** (1-6 0 0) Prerequisite: approval of department head. Completion of limited investigations not covered by any other course and/or research by student into topics of interest dealing with engineering technology. Fall, spring, summer I, summer II.

**ET 6301 Thesis.** (3 0 0) Fall, spring, summer I, summer II.

**ET 6302 Thesis.** (3 0 0) Fall, spring, summer I, summer II.

**ET 6305 Geographic Information Systems.** (3 2 2) Prerequisite: approval of instructor. Use of computers to generate maps and associated data bases. Analysis and applications of Geographic Information Systems. Same as ENVR 6305. Spring.

**ET 6321 Industrial Supervision and Management.** (3 3 0) Instructions related to the first-line supervision of employees in an industrial setting. Communication, personality interaction, discipline and other management issues which affect the work environment.

**ET 6322 Industrial Automation and Cybernetics.** (3 3 0) Development and evolution of automation and cybernetic principles and their influence on modern industrial processes.

**ET 6323 Advanced Industrial Processes.** (3 3 0) Advanced study of conventional and non-conventional industrial processing methods used in modern manufacturing. Flexible manufacturing systems, JIT, CNC, CIM and current research and application of non-conventional processing techniques.

**ET 6324 Design for Research and Development.** (3 3 0) Methods of analyzing and solving engineering problems and systems through application of scientific and mathematical principles.

**ET 6326 Quality Assurance.** (3 3 0) Organization and management techniques for product assurance, inspection, principles and practices, control charts and reliability testing.

**ET 6327 Ergonomics.** (3 3 0) Human factors engineering as it applies to people as they interact with equipment, work places and their environment. Emphasis on designs that reduce potential for human error.

**ET 6328 Robotics Implementation.** (3 3 0) Comprehensive study of industrial robots, applications, fundamentals of design, physical mechanisms and programming techniques.

**ET 6350 Renewable Energy Systems.** (3 3 0) Overview of renewable energy systems; solar, wind, geothermal, bioenergy, micro and mini hydro, and ocean plus institutional and economic aspects.

**ET 6370 Evaluation and Control of the Occupational Environment.** (3 3 0) Detection and evaluation of chemical, physical and biological occupational hazards affecting health and safety. Emphasis on Williams-Steiger Occupational Safety and Health Act (OSHA).

**ET 6375 Industrial CAAD Systems.** (3 3 0) Prerequisite: approval of instructor. Current computer-aided design and 3-D modeling systems. Focus on their applications and integration into engineering design processes. Summer I.

**ET 6392 Seminar in Engineering Technology.** (3 3 0 or 3 0 0) Study and research on specific topics within the engineering technology discipline. Offered as both an organized class and as independent instruction. May be repeated once. Fall, spring, summer I.

**ET 6396 Readings and Research.** (3 0 0) Prerequisite: approval of department head. Directed individual and group readings in technical areas appropriate to one's field of study not otherwise covered in available courses. May be repeated once. Fall, spring, summer I, summer II.
Course Descriptions

FIN—Finance (FIN)

(Offered through the Department of Accounting, Economics and Finance.)

FIN 1307 Introduction to Personal Finance (BUSI 1307) (3 3 0)
Problems related to financing family and individual needs. Topics include budgeting, banking, real estate, saving, investing, insurance and personal taxes. Open to business and non-business majors.

FIN 2374 Real Estate Fundamental and Practices (3 3 0)
Economic and social impact of real estate, real estate market, titles to property, contracts, deeds and conveyances, mortgages and deeds of trust, leases, liens, home ownership, tax factors in real estate, sources of funds and title closing.

FIN 3310 Real Estate Appraisals (3 3 0) Various approaches to valuation; market, cost and income; appraisal process, capitalization of income, gross-rent multipliers, replacement-cost method and the market-compensation method.

FIN 3311 Real Estate Finance (3 3 0) Legal nature of real estate mortgages, kinds of mortgages, second liens, real estate bonds, land contracts, lease-back, savings and loan associations, bank finance, mortgage banking, loan applications, title analysis, financing forms, FHA and conventional loans.

FIN 3320 Business Finance (3 3 0) Prerequisite: ACCT 2301, 2302. Organization, financing and management of a business organization. Topics covering financial instruments, optimum capitalization mixes, leverage, capital budgeting and cost of capital are developed.

FIN 3335 Processes of Risk Management (3 3 0) Prerequisite: 3320. Comprehensive overview of financial, legal and operational aspects of commercial risk management and insurance process as practiced in business and industrial settings.

FIN 3350 Personal Financial Planning (3 3 0) Prerequisite: 3320 or consent of instructor. Strategies and methods of effective financial planning for the practitioner. Cash and credit management procedures; risk management; retirement, estate and investment planning techniques.

FIN 3352 Sports Finance and Business. (3 3 0) Prerequisite: 3320. Basic theory in finance and accounting applied to managerial control of sport organizations. Includes forms of ownership, taxation, financial analysis, feasibility studies and economic impact studies.

FIN 4096 Supervised Readings in Finance. (1-6 0-6 0) Prerequisite: 12 semester hours of advanced work in a business major, junior standing, approval of department head. Current problems in finance through reading business periodicals, government publications and books which have had a profound influence in the financial world.

FIN 4311 Corporate Governance and Ethics. (3 3 0) Comprehensive overview of current issues in corporate governance and ethics. Topics include theory of the firm, corporate governance and the role of law, board composition and control, executive compensation, corporate citizenship and accountability, ethical decision making, corporate fraud and international governance.

FIN 4315 Contemporary Issues in Tax Planning and Finance. (3 3 0) Prerequisite: ACCT 2302. Introduction to income-tax law and how that law interfaces with business, investment, personal activities and decisions.

FIN 4320 Investments (3 3 0) Prerequisite: 3320 or consent of instructor. Emphasizing the commitment of funds to various security forms such as common stocks, bonds, warrants, convertible bonds, liquid assets and other securities. Industry analysis also is required.

FIN 4321 Portfolio Management (3 3 0) Prerequisite: 4320. Methods of modern portfolio analysis and management. Topics include selection of assets, investment styles, portfolio performance evaluation, efficient markets, diversification, international investing and risk analysis. Students will design and implement investment strategies. May be repeated once for credit with consent of instructor.

FIN 4323 International Finance (3 3 0) Prerequisite: 3320 or consent of instructor. Financial management concepts and practices unique to multi-national firms with cases and lectures on risk analysis, financing methods, long-range planning and other topics. Emphasis on pragmatic handling of topical problems in international finance.

FIN 4324 Management of Financial Services (3 3 0) Prerequisite: 3320 or equivalent. Management of financial intermediaries of both depository and non-depository form. Consideration of institutional objectives; environmental, legal and regulatory constraints; changing trends in the development and provision of financial services to both commercial and individual sectors. Course fee $20.

FIN 4326 Financial Management (3 3 0) Prerequisite: 3320. Responsibility of the chief financial officer of the firm with regard to short-term, intermediate-term and long-term financial planning. Decision-making function within realities of the financial world.

FIN 4328 Futures and Options (3 3 0) Theory and practical trading application for agricultural, financial and petroleum futures and options markets. Same as AGBE 4328.

FIN 4398 Internship in Finance (3 3 0) Prerequisite: junior standing, approval of department head. On-the-job experience in a phase of the finance profession. Must be first-time experience on a full-time basis.

FIN 5311 Corporate Governance and Ethics. (3 3 0) Comprehensive overview of current issues in corporate governance and ethics. Topics include theory of the firm, corporate governance and the role of law, board composition and control, executive compensation, corporate citizenship and accountability, ethical decision making, corporate fraud and international governance.

FIN 5315 Contemporary Issues in Tax Planning and Finance. (3 3 0) Prerequisite: ACCT 2302. Introduction to income-tax law and how that law interfaces with business, investment, personal activities and decisions.

FIN 5320 Investments (3 3 0) Prerequisite: 6300 or consent of instructor. Emphasizing commitment of funds to various security forms such as common stocks, bonds, warrants, convertible bonds, liquid assets and other securities. Industry analysis is required.

FIN 5321 Portfolio Management (3 3 0) Prerequisite: 4320. Methods of modern portfolio analysis and management. Selection of assets, investment styles, portfolio performance evaluation, efficient markets, diversification, international investing and risk analysis. Students will design and implement investment strategies. May be repeated once with permission of instructor.

FIN 5323 International Finance (3 3 0) Prerequisite: 6300 or consent of instructor. Financial management concepts and practices unique to multi-national firms. Cases and lectures on risk analysis, financing methods, long-range planning and other topics. Emphasis on pragmatic handling of topical problems in international finance.

FIN 5324 Management of Financial Services (3 3 0) Prerequisite: 3320 or equivalent, and ECON 4312. Management of financial intermediaries of both depository and non-depository form. Consideration of institutional objectives; environmental, legal and regulatory constraints; changing trends in the development and provision of
financial services to both commercial and individual sectors.

**FIN 5326 Financial Management** (3 3 0) Prerequisite: 6300 or 3320. Responsibility of the chief financial officer of the firm with regard to short-term, intermediate-term and long-term financial planning. The decision-making function within realities of the financial world.

**FIN 5328 Futures and Options** (3 3 0) Theory and practical trading application for agricultural, financial and petroleum futures and options markets. Same as AGBE 5328.

**FIN 6096 Supervised Readings in Finance** (1-3 0-3 0) Prerequisite: graduate standing and approval of department head. Current problems in finance through reading business periodicals, government publications and books which have had a profound influence on the financial world. Course fee $10.

**FIN 6300 Managerial Finance** (3 3 0) Prerequisite: ACCT 6300 or equivalent, graduate standing. Review of instruments used in financing business. Institutions that allocate funds to money and capital markets and the financial manager's role which includes capital investment and cost of capital decisions.

**FIN 6320 Seminar in Finance** (3 3 0) Prerequisite: 6300 or equivalent and ACCT 6305. Case problems that deal with financing current operations, financing long-run needs and dividend policies. Cost of capital, valuation, mergers and risk.

**FIN 6322 Security Analysis** (3 3 0) Prerequisite: 6300 or equivalent. Fundamental approach to security analysis. Financial statements restated and analyzed with the primary goal to include a measurement of intrinsic values.

**FIN 6326 Seminar in Finance Theory** (3 3 0) Prerequisite: 6300 or equivalent. Theory underlying financial activities of the firm. Financial engineering, optimization models, economic value creation, risk management and other current topics.

**FIN 6330 Money and Capital Markets** (3 3 0) Evaluation of foreign and domestic financial markets. Interest-rate determination, money markets, capital markets, mortgage markets, derivative markets, mergers, insurance and international investing.

**FIN 6350 Seminar in Financial Planning** (3 3 0) Financial planning strategies for effective decision-making for individuals and practitioners. Topics include cash and credit management, tax strategies, risk management, durable and housing purchases, retirement and estate planning, investment techniques and client assessment.

**FIN 6370 Financial Management of Biotechnology and Health Care** (3 3 0) Prerequisite: 3320 or 6300 or consent of instructor. Analysis of financial strategies for biotechnology and health-care organizations. Topics include financial environment of biotechnology and health-care institutions, financial statement analysis, project management, resource allocation, profitability valuation, cash flow analysis, venture capital financing and performance evaluation.

**FIN 6392 Special Topics** (3 3 0) Prerequisite: 12 hours of finance. Topics of special graduate interest. May be repeated for credit when topics change.

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**FREN—French**

(Offered through the Department of English, Philosophy and Modern Languages.)

**FREN 1411 Elementary French I** (4 3 2) Intensive practice in understanding, speaking, reading and writing French. Fall. Course fee $10.

**FREN 1412 Elementary French II** (4 3 2) Prerequisite: 1411 or equivalent. Continuation of 1411. Functional French. Spring. Course fee $10.

**FREN 3094 Individual Study** (1-3 0-0) Individual study designed to meet needs and interests of the student.

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**GEOG—Geography**

(Offered through the Department of History.)

**GEOG 1302 People in Places** (3 3 0) Analysis of the world’s culture regions. Population characteristics, settlement patterns, economic activity and politico-geographic problems. Course fee $5.

**GEOG 2310 Map Reading** (3 3 0) Prerequisite: 1302. Introduction to reading and interpreting maps. The relationship between physical environment and human activities, boundaries, transportation, settlement types, land use and place names may be considered. Topics include cartographic projections, decision-making in cartography, uses and limitations of GIS. Spring of odd years.

**GEOG 2320 Contemporary World Geographies** (3 3 0) Prerequisite: 1302. Global patterns of social, cultural, economic and political difference, as well as the processes creating them. Topics may include colonialism/ imperialism, (anti-) development, human rights, environmental concerns, feminist geography and geography of race. Spring of even years.

**GEOG 3302 United States and Canada** (3 3 0) Cultural and physical geography of the United States and Canada emphasizing population, agriculture, mining and manufacturing.

**GEOG 3308 Environment and Man** (3 3 0) Efficient utilization and development of resources with topical consideration of water, energy, minerals, soils, forests, grassland and wildlife, and the relationship between population and resource use and management. Case studies emphasize Texas and the Texas Panhandle area. Same as GESC 3308.

**GEOG 3313 Meteorology** (3 3 0) Systematic study of weather elements and control of atmosphere. World regional study of climate. Same as GESC 3313.

**GEOG 3340 Geographies of Islam** (3 3 0) Foundations of Islam, early diffusion, regional variation in Muslim practices, women in Islam, Islam and the “War on Terror,” and other topics. Third-year course. Spring of even years.

**GEOG 3350 World Regional Geography** (3 3 0) Analysis of physical and human geography of the world, its regions and subregions, with emphasis on globalization, contemporary issues and inter- and intra-regional relationships.

**GEOG 4095 Problems in Geography** (1-6 0 0) Independent study of a selected geographic problem. May be repeated when topic varies for a total of six credit hours.

**GEOG 4305 Introduction to Geographic Information Systems** (3 2 2) Research tool combining mapping and databases to provide combinations of spatial information and modeling capabilities in a multi-disciplinary format. Introduction of basic concepts of geographic information systems (GIS), GIS data sources, including global positioning systems and basic output products. Same as ENVR 4305. Course fee $17.

**GEOG 4331 Texas** (3 3 0) Physical, demographic, social and economic geography of Texas.
GEOG 4390  Senior Seminar. (3 3 0) Prerequisite: 1302, 2310, 2320, 12 additional hours of geography course work. Capstone experience for geographic education. Students select a geographic topic to research in detail. A written research paper and presentation to WTAMU’s geography community are required. Spring.

GEOG 4392  Special Topics in Geography. (3 3 0) Advanced study of issues and problems in geography. Topics will vary by semester. May be repeated once for credit when topics vary.

GEOL—Geology
(Offered through the Department of Life, Earth and Environmental Sciences.)

GEOL 1401  Earth Science I. (4 3 2) Solar system, stars, earth-sun relations and earth materials, processes, landscapes, structures, resources and history with selected laboratory exercises and experiments to demonstrate earth science principles. Students may not receive degree credit for both GEOL 1401 and 1403. Fall, spring. Course fee $15.

GEOL 1402  Earth Science II. (4 3 2) Introductory study of atmosphere, oceans, weather and climate, vegetation and soils with selected laboratory exercises and experiments to demonstrate earth science principles. Fall, spring. Course fee $15.

GEOL 1403  Physical Geology. (4 3 2) Natural environment of man, including materials, structure and processes of the earth with selected exercises and experiments to demonstrate principles of physical geology. Students may not receive degree credit for both GEOL 1401 and 1403. Fall. Course fee $15.

GEOL 1404  Historical Geology. (4 3 2) History of the earth and its life with selected exercises and experiments to demonstrate principles of historical geology. Spring. Course fee $15.

GEOL 2471  Mineralogy. (4 3 2) Prerequisite: 1403 or concurrent enrollment. CHEM 1411 or concurrent enrollment. Classification, composition, structure, origin, occurrence, properties, identification and uses of minerals. Fall of even years. Course fee $20.

GEOL 2475  Petrology. (4 3 2) Prerequisite: 2471. Introduction to origins, characteristics and associations of igneous, sedimentary and metamorphic rocks. Spring of odd years. Course fee $20.

GEOL 3092  Special Topics. (1-3 0-3 0-6) Prerequisite: consent of instructor. Consideration of recent advances in geology. May be repeated for a maximum of six hours credit. Course fee $15.

GEOL 3311  Structural Geology. (3 2 2) Prerequisite: 1403, 1404 or consent of instructor. Descriptive and interpretive study of rock structure. Spring of odd years. Course fee $15.

GEOL 3312  Geomorphology. (3 3 0) Prerequisite: 1403, 1404 or consent of instructor. Descriptive and interpretive study of land forms. Fall of even years.

GEOL 3325  Environmental Geology. (3 3 0) Prerequisite: 1403, 1404. Characteristics and limitations of earth materials. Geologic processes, cycles and associated geologic hazards. Land use and environmental planning. Fall.

GEOL 3350  Hydrogeology. (3 2 2) Prerequisite: 1403, 1404; CHEM 1411; MATH 1314, 1316; or consent of instructor. Principles of run-off and stream transport, basin analysis, groundwater flow and water chemistry. Fall. Course fee $15.

GEOL 3406  Paleontology. (4 3 2) Prerequisite: 1404 or BIOL 1413 or permission of instructor. Origin, classification, morphology, evolution, paleoecology, geographic distribution and geologic occurrences of fossil animals. Field collecting. Identification and museum preparation of fossils in the laboratory. Same as BIOL 3406. Spring of even years. Course fee $15.

GEOL 3409  Problems in Geology. (1-6 0 0) Prerequisite: instructor’s permission. Library, field and laboratory research on geologic problems. Fall, spring.

GEOL 4305  Field Methods. (3 2 2) Prerequisite: 1403, 1404. Introduction to geologic mapping techniques and geologic reconnaissance. Introduction in uses of Brunton compass, hand level, aerial photography and topographic maps. Taught during six weekends and an eight-day field trip during spring break. Spring of even years. Course fee $40.

GEOL 4350  Computer Applications in Hydrogeology. (3 2 2) Solving hydrogeological problems using real data and utilizing commercially available software. Examples of problems include direction and velocity of groundwater flow, contaminant transport, and volume and depletion calculations of confined and unconfined aquifers. Same as ENVR 4350. Course fee $15.

GERM—German
(Offered through the Department of English, Philosophy and Modern Languages.)

GERM 1411  Elementary German I. (4 3 2) Grammar, reading and conversation. Fall. Course fee $10.

GERM 1412  Elementary German II. (4 3 2) Prerequisite: 1411 or equivalent. Continuation of 1411. Spring. Course fee $10.

GERM 3094  Individual Study. (1-3 0 0) Individual study designed to meet needs and interests of the student.

GESC—Geoscience
(Offered through the Department of Life, Earth and Environmental Sciences.)

GESC 3303  Oceanography. (3 3 0) Prerequisite: six to eight hours of introductory lab science, including a three- or four-hour course in geology or earth science, or permission of instructor. History of oceanography; origin and distribution of oceans; geology of the sea floor and coastal land forms; physical and chemical characteristics of seawater; currents, waves and tides; coastal waters; biology of marine environments; marine resources and pollution. Spring of odd years.

GESC 3308  Environment and Man. (3 3 0) Efficient utilization and development of resources with topical consideration of water, energy, minerals, soil, forest, grasslands and wildlife, and the relationship between population and resource use and management. Case studies emphasize Texas and the Texas Panhandle area. Same as GEOG 3308. Fall.

GESC 3310  Minerals and Rocks. (3 2 2) Prerequisite: GEOG 1403, GEOL 1401 or NSCI 2371 or consent of instructor. Origin, occurrence, distribution and identification of common minerals and rocks. Laboratory and field studies included. Fall of odd years. Course fee $15.

GESC 3313  Meteorology. (3 3 0) Systematic study of weather elements and control of atmosphere. World regional study of climate. Same as GEOG 3313.

GESC 4095  Problems in Earth Science. (1-3 0-3 0-6) Library, field and laboratory research of an earth science problem. Fall, spring.
**Course Descriptions**

**HIST—History**

(Offered through the Department of History.)

**HIST 1301** America, 1492–1877. (3-3-0) Survey in American history; discovery, exploration and colonization; establishment of independence and the new nation, and problems of new government in securing respect at home and abroad; expansion; economic and social development; nationalism versus sectionalism; Civil War and Reconstruction. Fall, spring. Course fee $5.

**HIST 1302** America Since 1877. (3-3-0) Settlement of the last West; economic revolution; social, economic and political consequences of industrialism; emergence of the United States as a world power; development of American culture. Fall, spring. Course fee $5.

**HIST 1303** U.S. Women's History to 1877. (3-3-0) Survey of U.S. Women's history from 1492 to 1877. Students may not receive credit for HIST 1301 and 1303. Fall.

**HIST 1304** U.S. Women's History since 1877. (3-3-0) Survey of U.S. women's history from 1877 to the present. Students may not receive credit for both HIST 1302 and 1304. Spring.

**HIST 2301** Texas History Survey. (3-3-0) Survey of Texas history, from prehistoric times to the present. Fall.

**HIST 2302** Historical Writing and Historiography. (3-3-0) Development of skills in writing specifically for the discipline of history. How historians have written about history over time. History majors are strongly encouraged to take this course the first semester of their sophomore year. Fall.

**HIST 2311** Western Civilization. (3-3-0) Chief political, social and intellectual developments of Western civilization from the decline of the Roman empire to the present. Fall, spring.

**HIST 2321** Comparative World History to 1500. (3-3-0) Survey of global history beginning with the development of civilization and ending in 1500. Spring of even years.

**HIST 2322** Comparative World History since 1500. (3-3-0) Survey of global history from a balanced point of view, beginning with the age of western expansion in the 16th century and ending with our contemporary world.

**HIST 2323** Eastern Civilization. (3-3-0) Survey course designed to acquaint students with a broad outline of the philosophies, religions and histories of China, Korea and Japan from antiquity to the present. Emphasis on interaction between these cultures, as well as essential historical continuity. Every third semester.

**HIST 2370** Greco-Roman History to A.D. 300. (3-3-0) Origins, development and significance of Greco-Roman civilization to A.D. 300. Institutions, society, economy, and culture/religion for providing a gateway to advanced courses in European history and a foundation for comparison with other world civilizations.

**HIST 2371** Modern East Asia, 1600 to Present. (3-3-0) Survey of East Asian history from 1600 to the present, focusing on China, Japan and Korea. Topics include the transition from early modern society and institutions (Qing Dynasty in China and Tokugawa shogunate in Japan), impact of the West on East Asia, transformation of East Asian society and politics through reforms and revolutions, the rise of Japanese imperialism and the remaking of East Asia in the late 20th century.

**HIST 2372** Contemporary World in Perspective. (3-3-0) Contemporary world situations in their historical perspective. Fall, spring. Course fee $5.

**HIST 2373** Colonial Latin America. (3-3-0) Political, cultural and economic history of Latin America from the region's pre-Columbian origins to the 19th century independence movements, with emphasis on the implications of contact between European and American civilizations.

**HIST 2381** African-American History. (3-3-0) Historical, economic, social and cultural development of African-Americans. Fall.

**HIST 3301** Historical Methods. (3-3-0) Prerequisite: six semester hours of history. Basic skills necessary for study of history: historical research, historical writing and critical reading. History majors are encouraged to take this course before they begin other advanced work (3000–4000 level).

**HIST 3302** Introduction to Public History. (3-3-0) Prerequisite: six semester hours of history. Introduction to the meaning and uses of public history in archival, museum, historic preservation and cultural management settings. Fall.

**HIST 3303** Introduction to Museums. (3-3-0) Overview of the kinds of museums, their various missions, and their characteristics and potentials as research, education, and institutions responsible for collections of natural and cultural objects. Spring.

**HIST 3304** Local History. (3-3-0) Prerequisite: 3302. Skills and methods for researching on the local level, especially county records and federal government documents. Spring.

**HIST 3305** Oral History: Theory and Practice. (3-3-0) Introduction of the collection, interpretation, preservation and practice of oral history. Spring.

**HIST 3308** Museum Collection Management. (3-2-1) Prerequisite: 3303 or consent of instructor. Basic management techniques to care for history, science (including paleontology, archaeology, anthropology and natural history) and art collections in museums. Fall of even years.

**HIST 3310** Early American to 1763. (3-3-0) European conquest and colonization of the New World with focus on British North America. Intercultural interaction between natives and newcomers. Political, social, cultural and economic development of the early modern Atlantic world.

**HIST 3311** United States, 1789–1860. (3-3-0) Social, economic and political developments in the United States from establishment of government under the Constitution to the Civil War.

**HIST 3312** United States, 1877–1914. (3-3-0) Political, economic and social developments in the United States from the post Reconstruction era to World War I, including the Gilded Age society, the Last Frontier, the Industrial Revolution, the Farmers' Revolt, Urbanization and Progressivism movement.

**HIST 3313** United States, 1914–1945. (3-3-0) Major events and issues in American history from World War I through World War II, growth of the United States as a world leader, development of an urban society, the Great Depression and New Deal.

**HIST 3314** United States Since 1945. (3-3-0) United States in post World War II period, Cold War, Korea and Vietnam and economic, political and social problems of American society since 1945.

**HIST 3316** Mexican American History. (3-3-0) Culture, social, political and economic development of Mexican Americans from 1848 to the present.

**HIST 3318** Native American History. (3-3-0) Cultural, social, political and economic development of Native Americans of North America.

**HIST 3320** U.S. Women's History. (3-3-0) History of women in the United States from colonial times to the present.

**HIST 3332** Medieval World, 300–1350. (3-3-0) Prerequisite: six hours of history. Political, cultural, social and economic history of western and central Europe from 300–1350.
Course Descriptions

HIST 3333 Early Modern Europe, 1250–1789. (3-0) Political, cultural, social and economic history of Western Europe from the aftermath of the Black Death to the eve of the French Revolution.

HIST 3334 Modern Europe, 1789–1900. (3-0) Revolution and nationalism in Europe; Revolutionary and Napoleonic Wars; Vienna settlement and reaction; Revolutions of 1848; Socialism and socialist thought; comparative nationalisms.

HIST 3336 Contemporary Europe, 1900 to Present. (3-0) Place of Europe in the world in the 20th century; nationalism, fascism, totalitarianism; origins and consequences of the First World War; the interwar years; origins and consequences of the Second World War and the Cold War; the revolutions of 1989; comparative East-West Europe; the European Union.

HIST 3361 Modern Latin America. (3-3-0) Political, cultural and economic history of Latin America since independence, with emphasis on the relationship between the region's internal dynamics and those of the Americas and the world.

HIST 4088 Internship in Public History. (3-6-0) Prerequisite: 3302. Practical application of skills in a service-learning environment for students interested in public history.

HIST 4096 Readings. (1-3-0) Prerequisite: minimum of three advanced hours work in area the student will be doing readings; consent of instructor under whom the student will be working and consent of department head. Intensive readings in history selected to meet needs and interest of the student. Students may enroll for one, two or three hours credit. May be repeated for a maximum of six hours when topics vary.

HIST 4098 Museum Internship. (3-6-0) Prerequisite: consent of instructor and 15 hours of history. Field work in professional museum setting under supervision as prescribed and arranged by instructor. Students may earn no more than six semester credit hours for museum internships.

HIST 4301 Senior Seminar in History. (3-0) Prerequisite: 2372 recommended. 21 semester hours of history or consent of department head. Senior-level required course for all history majors and 15 hours of history. Field work in professional museum setting under supervision as prescribed and arranged by instructor. Students may earn no more than six semester credit hours for museum internships.

HIST 4303 Film and History. (3-0) The use of film as a source of studying diverse historical topics. Emphasis on cinema's role in preserving and popularizing history, as well as the extent to which film documents not only the events chronicled but the historical context in which the film was produced. Will count as U.S. or non-U.S. history, depending on topic. Course fee $10.

HIST 4310 Age of the American Revolution. (3-0) American people on the eve of and during the American Revolution, formation of several states and Confederation and making of the U.S. Constitution.

HIST 4312 The Old South. (3-3-0) Economic, political and social development of the American South to 1865. Colonization of the South, slavery and plantation system, rise of sectionalism and the Civil War.

HIST 4313 The Civil War and Reconstruction, 1860–1876. (3-3-0) Secession crisis; military strategies on the war fronts; political, economic and social developments on the home fronts; diplomacy of the war; Union victorious and the South under Reconstruction.

HIST 4315 Hispanic Frontier in North America, 1513–1821. (3-0) Exploration, colonization and development of the Southwest under Spanish rule.

HIST 4316 Advanced Texas History. (3-0) Anglo-American colonization, Revolution and Republic; annexation, statehood and Civil War; Reconstruction; end of Texas frontier; 19th-century politics and reform; oil, industrialization, urbanization and ethnicity of 20th-century Texas.

HIST 4317 The New American West, 1877–Present. (3-0) Course will cover the major social, political and economic changes that have occurred in the post-frontier American west. Focus upon communalities and conflicts within the region.

HIST 4319 U.S. Environmental History: 1607–Present. (3-0) Course examines human interactions with the American environment, focusing upon how perceptions of the “proper” relationship between humanity and nature have shifted over time, and the political, social and cultural agendas that have driven these transformations.

HIST 4321 Civil Rights Movements in the United States. (3-0) Civil rights limitations faced by various groups in American history and the struggle of these groups to better their circumstances.

HIST 4330 History of Christianity to 1564. (3-0) Prerequisite: six hours of history. Doctrinal, cultural, political and social history of Christianity from first century A.D. to the end of the Council of Trent in 1564, which marked the end of the first phase of Reformation.

HIST 4332 East European History, Culture and Society. (3-0) Introduction to Eastern Europe (Poland, Czech Republic, Slovakia, Hungary, Romania, Bulgaria, former Yugoslavia, former Soviet Union) using film, literature and original documents. Focus on themes of nationalism, ethnic conflict, state-building and center-periphery relations. Investigation of how depictions of the past reflect identity and refer to present circumstances in Eastern Europe.

HIST 4333 Modern Russia: Peter the Great to Present. (3-0) Imperial Russia, the Soviet Union and the Russian Federation; modernization of Russia; Imperial expansion; Bolshevik Revolution; Cold War; collapse of communism; cycle of reform and reaction; culture and politics; development of institutions in Russia and the Soviet Union; nationalism and ethnic minorities. HIST 2311 or 2372 recommended.

HIST 4335 Origins and Conduct of World War I. (3-0) Prerequisite: six semester hours of history. Origins, conduct and significance of World War I.

HIST 4337 Nazi Germany. (3-0) Germany from 1918–1945 with emphasis on the rise of Adolf Hitler, Nazi Revolution, World War II and fall of the Third Reich in 1945.

HIST 4350 Modern China, 1800 to Present. (3-0) In-depth study of modern Chinese history from 1800 to the present. Topics include China's response to the West, political and social change after 1919, rise of communism in China and globalization and development since the 1980s.

HIST 4352 Modern Japan, 1868 to Present. (3-0) Japan's history since the Meiji Restoration, trends in Japanese modernization, Imperial Japan, World War II, the Occupation, the “miracle economy” and current issues.

HIST 4354 World War II in Asia. (3-0) Investigation of origins, strategies and conduct of World War II in Asia. Considers elements of Japan's prewar culture that encouraged the rise of militarism; the Japanese invasion of China; the attack on Pearl Harbor; Japanese, Chinese and American strategies during the war; strategic bombing, the use of atomic weapons; the Allied occupation of Japan; and
HIST 4357 Age of the Samurai. (3 3 0) Investigation of major political, cultural, religious and military events in medieval Japan, 1185–1868. Topics include elements of Japanese society which allowed for the rise of military dominance, evolution and maintenance of military institutions, Bushido ethic, Mongol invasions, warlord era, end of samurai dominance and influence of the samurai era on modern Japan.

HIST 4358 Huns, Turks, Mongols: History of the Steppe. (3 3 0) Survey of history and institutions of the Eurasian steppes, and examination of the varying impact of steppe ethnicities upon the civilizations of China, India, Persia, Islam and the West. Once every five semesters.

HIST 4360 History of Mexico. (3 3 0) Political, economic, social and cultural development of Mexico from pre-Columbian times to present. Emphasis on development in the 20th century.

HIST 4372 Topics in Museum Studies. (3 3 0) Prerequisite: 3302 or consent of instructor. Seminar in various aspects of museum studies, such as introduction to museology, history, philosophy, organization, and administration of general history, science, technology and art museums. May be repeated twice if topics are different. Fall.

HIST 4382 Topics in Public History. (3 3 0) Prerequisite: 3302. Lectures and readings on a topic related to public history to be determined by the instructor and by student interest. Fall.

HIST 4392 Special Topics in History. (3 3 0) Topics in areas of special interest. May be repeated once for credit when topics change.

HIST 4393 Honors Practicum in History. (3 0 0) Prerequisite: senior status and honors standing. Designed to provide advanced honors history students with opportunity for original research and/or field research and/or internship in history. Students work closely with professor in preparation and presentation of work to a scholarly/professional audience.

HIST 5315 Hispanic Frontier in North America, 1513-1821. (3 3 0) Exploration, colonization and development of the Southwest under Spanish rule.

HIST 5316 Advanced Texas History. (3 3 0) Anglo-American colonization, Revolution and Republic annexation, statehood and Civil War; Reconstruction; end of Texas frontier; 19th-century politics and reform; oil industrialization, urbanization and ethnicity of 20th-century Texas.

HIST 5330 History of Christianity to 1564. (3 3 0) Doctrinal, cultural, political and social history of Christianity from first-century A.D. to the end of the Council of Trent in 1564, which marked the end of the first phase of the Reformation.

HIST 5333 Modern Russia: Peter the Great to Present. (3 3 0) Imperial Russia, the Soviet Union and the Russian Federation; modernization of Russia; Imperial expansion; Bolshevik Revolution; Cold War; collapse of communism; cycle of reform and reaction; culture and politics; development of institutions in Russia and the Soviet Union; nationalities and ethnic minorities. HIST 2311 or 2372 recommended.

HIST 5335 Origins and Conduct of World War I. (3 3 0) Origins, conduct and significance of World War I.

HIST 5337 Nazi Germany. (3 3 0) Germany from 1918–1945, emphasis on the rise of Adolph Hitler, Nazi Revolution, World War II and fall of the Third Reich in 1945.

HIST 5350 Modern China, 1800 to Present. (3 3 0) In-depth study of modern Chinese history from 1800 to the present. Topics include China’s response to the West, political and social change after 1919, rise of communism in China and globalization and development since the 1980s.
research on issues in women and gender history. May be repeated once for credit if topic changes. Fall of odd years.

**HIST 6316 Seminar in Texas History.** (3 0 0) Topics in Texas history. May be repeated once if topic changes. Fall of even years.

**HIST 6320 Seminar in the Spanish Borderlands.** (3 3 0) Prerequisite: 3301 or 5301 or equivalent. Lectures, readings and directed research on the Spanish Empire in North America with emphasis on present-day U.S. Southwest and Texas, 1492–1821. Spring of even years.

**HIST 6330 Seminar in European History Before 1648.** (3 3 0) Topics in European history before 1648 of definite scope will be developed and investigated. May be repeated once.

**HIST 6331 Seminar in European History Since 1648.** (3 3 0) Topics in European history since 1648 of definite scope will be developed and investigated. May be repeated once.

**HIST 6345 Seminar in East Asian History.** (3 3 0) Topics in East Asian history of definite scope will be developed and investigated. May be repeated once.

**HIST 6350 Seminar in Latin American History.** (3 3 0) Topics in Latin American history of definite scope will be developed and investigated. May be repeated once.

**HIST 6360 Seminar in Comparative World History.** (3 3 0) Topics in world history will be developed and researched around comparative themes of defined scope. May be repeated once with approval of department head if course content changes significantly.

**HIST 6372 Topics in Archival Studies.** (3 0 0) Prerequisite: 6303 or consent of instructor. Seminar in various aspects of archival studies, such as introduction to archives, archives and records practices, preservation of archival and library materials, and other related topics. May be repeated twice if topics are different. Fall.

**HIST 6380 Empire and Imperialism.** (3 3 0) Topics to address one or more of the following: history of specific empires; concept of empire, nations and regions affected by imperialism; and causes and consequences of imperialism. Course will be taught in areas of expertise as represented by faculty and may be repeated once. Offered in even years.

**HIST 6382 Topics in Public History.** (3 0 0) Prerequisite: 6303 or consent of instructor. Seminar on a topic related to public history to be determined by the instructor and student interest. May be repeated twice if topics are different. Fall.

**HIST 6391 Topics in Museum Studies.** (3 0 0) Prerequisite: 6303 or consent of instructor. Seminar in various aspects of museum studies, such as introduction to museology, history, philosophy, organization, and administration of general history, science, technology and art museums. May be repeated twice if topics are different. Fall.

**HIST 6392 Seminar in Special Topics.** (3 3 0) Topics developed around a specific theme chosen by the instructor. With consent of department head, may be repeated once for credit.

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**HNRS—Honors**

**HNRS 2073 Honors Colloquia.** (0 0 0) Required each semester for all honors students. Attendance at a colloquium each semester is required. Fall, spring.

**HNRS 2371 Honors I Perspectives.** (3 3 0) Prerequisite: admission to Honors Program. Lectures, research and application of the process of writing a research paper and preparation for a research poster presentation related to the student's major or area of interest. Introduction to campus resources and services as well as understanding the tools needed to achieve college success. Understanding of different cultures and perspectives and how community service and awareness of current events is essential to becoming a well-rounded citizen in a global environment. Fall.

**HNRS 2373 Honors Seminar.** (3 0 3) Interdisciplinary, team-taught course. Topics vary by semester. May included embedded travel component. Open only to Honors Program students. May be repeated once for credit. Course fee variable. Fall, spring.

**HNRS 3373 Honors Seminar.** (3 0 3) Requires approval of Honors director. Interdisciplinary, team-taught course. Topics vary by semester. May included embedded travel component. Open only to Honors Program students. May be repeated once for credit. Course fee variable. Fall, spring.

**HNRS 4393 Honors Capstone Course.** (3 0 0) Prerequisite: Senior status and honors standing. Facilitates completion of the Atrebury Honors capstone/thesis as an independent study while student completes a thesis, research study, internship or other approved experience. Fall, spring, summer I, summer II.

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**HUMA—Humanities**

(Cooperative offering through the Department of Music. Online only.)

**HUMA 1315 Art, Dance, Music, Theatre Interaction.** (3 3 0) Selected topics from visual and performing arts and how, through their diversity, they interact, promoting an understanding of creativity. Fall, spring, summer I.

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**IDS—Interdisciplinary Studies**

(Offered through the Department of English, Philosophy and Modern Languages.)

**IDS 1071 Elementary Group Dynamics.** (1-3 13 0-2) Broad interdisciplinary introduction (with contributions from psychology, anthropology, linguistics, mass communications and speech communication) to a communication model effective for problem solving in group situations. Course will develop communication and problem-solving skills through the context of college success. With this communication focus, students will develop a set of problem-solving skills and experiences to ensure academic and professional success. Fall, spring.

**IDS 3098 Cooperative Education.** (1-3 0 0) Supervised, paid work experience related to student's educational objectives.

**IDS 3301 Women's Studies I: Introduction.** (3 3 0) Survey of women's issues from an interdisciplinary perspective.

**IDS 3302 Women's Studies II: The World of Women.** (3 3 0) Studies in the role of women in history, society, the behavioral sciences, the health care field, literature and the arts. May be repeated once with permission of major adviser and dean.

**IDS 3330 Foundations of Leadership.** (3 3 0) Explores and develops the theory component of leadership studies to the practical process of leadership. Designed to serve as an initial examination of issues and concepts in the study of leadership. Topics include contemporary and historical
**JAPN—Japanese**

(Offers through the Department of English, Philosophy and Modern Languages.)

**JAPN 1411 Elementary Japanese I.** (3 3 0) Development of fundamental skills in speaking, listening, grammar, reading and writing. Fall. Course fee $10.

**JAPN 1412 Elementary Japanese II.** (4 3 2) Prerequisite: 1411 or equivalent. Development of fundamental skills in speaking, listening, grammar, reading and writing. Spring. Fall. Course fee $10.

**JAPN 3094 Individual Study.** (3 4 0 0) Prerequisite: 1411, 1412. Individual study designed to meet needs and interests of the student. Fall.

**IDS—Leadership**

**IDS 3340 Ethics and Leadership.** (3 3 0) Includes the role of values in determining the moral obligations of leaders and followers in decision making in a changing world of competing values. Emphasizes the application of ethical principles for self-development and organizational effectiveness.

**IDS 3370 Introduction to Western American Studies.** (3 3 0) Prerequisite: instructor approval. Introduction to issues and methodologies in Western American studies. Includes study of regional literature, historical and scientific materials. Fall.

**IDS 3392 Topics in International Studies.** (3 3 0) Topics of current interest from an international interdisciplinary perspective. May be repeated once for credit when subject matter varies.

**IDS 3394 Leadership Independent Study.** (3 0 0) Prerequisite: consent of instructor. Individual study designed to meet needs and interests of the student.

**IDS 3396 Leadership Readings and Case Studies.** (3 3 0) Topics address a wide variety of issues in leadership. Seminar class allows for optimum discussion of case studies. Self-assessments allow students to understand and evaluate themselves within the leadership process.

**IDS 3398 Group Leadership.** (3 0 0) Prerequisite: consent of instructor. Students will advance communication skills, use leadership skills/theories and training/development theories, and enhance leadership and group communication skills to make a positive impact upon the Branding new student orientation and its participants. Students will gain practical experience through developing, implementing and evaluating the orientation program.

**IDS 3399 Teen Leadership.** (3 0 0) Prerequisite: consent of instructor. Students serve as trainers for the Teen Leadership Amarillo/Canyon program. Skills-based course relies on experiential learning to develop understanding of leadership theory and of training and development of theory.

**IDS 5301 Women’s Studies I: Introduction.** (3 3 0) Survey of women’s issues from an interdisciplinary perspective.

**IDS 5302 Women’s Studies II: The World of Women.** (3 3 0) Role of women in history, society, the behavioral sciences, the health care field, literature and the arts. May be repeated once with permission of major adviser and dean.

**IDS 5330 Foundations of Leadership.** (3 3 0) Explores and develops the theory component of leadership studies to the practical process of leadership. Designed to serve as an initial examination of issues and concepts in the study of leadership. Topics include contemporary and historical leadership concepts, credibility, leadership definitions, risk taking, vision, collaboration, values and commitment.

**MATH—Mathematics**

(Offers through the Department of Mathematics, Chemistry and Physics.)

**MATH 0302 Beginning Algebra.** (3 2 2) Prerequisite: test score guidelines for placement—62 or below on Accuplacer Elementary Level Algebra. Real numbers, equations, inequalities, problem solving, basic graphing, exponents and polynomials at a beginning-algebra level. Course fee $10.

**MATH 1314 College Algebra.** (3 3 0) Prerequisite: 0303 or score of 85 or higher on Accuplacer Elementary Level Algebra. Relations, functions, equations and inequalities, exponential functions with applications of integrals. Fall, spring. Course fee $10.

**MATH 1316 Plane Trigonometry.** (3 3 0) Prerequisite: or concurrent enrollment in 1314 or 1324. Trigonometric functions, identities, trigonometric equations, logarithms and inverse trigonometric functions. Fall, spring.

**MATH 1324 Mathematics for Business and Economics I.** (3 3 0) Prerequisite: 0303 or score of 85 or higher on Accuplacer Elementary Level Algebra. Linear and quadratic equations and inequalities, systems of equations, functions and graphs, mathematics of finance, probability, exponents and logarithms. Fall, spring. Course fee $10.

**MATH 1325 Mathematics for Business and Economics II.** (3 3 0) Prerequisite: 1314 or 1324. Derivatives, curve sketching and optimization, techniques of derivatives, logarithmic and exponential functions with applications, techniques and applications of integrals. Fall, spring. Course fee $10.

**MATH 1332 Mathematics for Liberal Arts.** (3 3 0) Prerequisite: 0303 or score of 85 or higher on Accuplacer Elementary Level Algebra. Practical applications of mathematics with a goal of mathematical literacy. Emphasis on problems...
solving and critical-thinking skills with topics that include mathematics of finance, compound interest, annuities and amortizations; counting principles with application to probability; statistical reasoning, modeling using linear, quadratic and exponential regression; advanced applications of geometry and algebraic models; voting methods. Course fee $10.

**MATH 1350 Fundamentals of Math I.** (3 3 0) Prerequisite: 1314, 1324 or 1332. Elementary concepts of sets, functions, numeration systems, number theory and properties of natural numbers, integers, rational and real number systems with emphasis on problem solving and critical thinking. Designed primarily for elementary and middle school teacher certification. Fall, spring.

**MATH 1351 Fundamentals of Math II.** (3 3 0) Prerequisite: 1350. Elementary concepts of geometry, probability and statistics, as well as applications of algebraic properties of real numbers to concepts of measurement with emphasis on problem solving and critical thinking. Designed primarily for elementary and middle school teacher certification. Fall, spring.

**MATH 2321 Discrete Structures I.** (3 3 0) Prerequisite: 2414 or 2412. Introduction of the foundations of discrete mathematics as they apply to computer science, focusing on providing a solid theoretical foundation for further work. Topics include functions, relations, sets, simple proof techniques, Boolean algebra, propositional logic, digital logic, elementary number theory and the fundamentals of counting. Same as CS 2321. Spring.

**MATH 2322 Discrete Structures II.** (3 3 0) Prerequisite: CS or MATH 2321. Continuation of the discussion of discrete mathematics introduced in CS or MATH 2321. Topics include predicate logic, recurrence relations, graphs, trees, matrices, computational complexity, elementary computability and discrete probability. Same as CS 2322. Spring.

**MATH 2412 Pre-Calculus Math.** (4 4 0) Prerequisite: ACT score of 24 or SAT 560 or above on math section or MATH 1314. Coverage of algebraic and trigonometric concepts necessary for calculus. Fall, spring. Course fee $10.

**MATH 2413 Calculus I.** (4 4 0) Prerequisite: 1316, 2412, or ACT score of 27 or SAT 620 or above on math section. Limits, continuity, differentiation of algebraic and trigonometric functions, applications of derivative, differentials, indefinite and definite integrals. Fall, spring.

**MATH 2414 Calculus II.** (4 4 0) Prerequisite: 2413. Differentiation and integration of transcendental functions, techniques of integration and applications, infinite series, power series. Fall, spring.

**MATH 3305 Elementary/Middle School Mathematics and Technology.** (3 3 0) Prerequisite: 1351. Application and use of technology especially computers and calculators in elementary and middle school mathematics. Emphasis on informal geometry, pre-algebra, algebra, number theory, statistics and probability. Designed primarily for elementary and middle school teacher certification. Fall, spring.

**MATH 3306 Secondary Mathematics and Technology.** (3 3 0) Prerequisite: 2413. Application and use of technology especially computers and graphing calculators in secondary mathematics. Emphasis on algebra, trigonometry, analytic geometry, probability, statistics, geometric constructions and basic calculus. Designed primarily for middle school and secondary teacher certification. Fall.

**MATH 3311 Linear Algebra.** (3 3 0) Prerequisite: 2414. Matrix operations, vector spaces, linear transformations and the algebra of polynomials. Fall.

**MATH 3321 Probability.** (3 3 0) Prerequisite: 2414. Permutations, combinations, discrete probability, discrete and continuous distributions. Spring of even years.

**MATH 3325 Introduction to Proofs.** (3 3 0) Prerequisite: 2413. Introduction to higher mathematics through use of proofs. Includes theory of sets, relations, functions, and elementary properties of the real number system developed rigorously with propositional and predicted logic. Further topics from number theory, algebra, real analysis and topology. Fall.

**MATH 3331 Secondary Principles in Geometry.** (3 2 2) Prerequisite: high school geometry, 1316 or 2412. Designed primarily for middle school and secondary teacher certification in mathematics with emphasis on geometry as an axiomatic system. Inductive and deductive reasoning, nature of mathematical definitions, methods of problem solving and mathematical argument/proof emphasized. Fall, spring.

**MATH 3340 Calculus III.** (3 3 0) Prerequisite: 2414. Partial derivatives, functions of several variables, multiple integration, vector analysis, line integrals. Spring.

**MATH 3342 Differential Equations I.** [MATH 2320] (3 3 0) Prerequisite: 2414. Techniques of solving first-order and nth-order linear differential equations, applications of first- and second-order differential equations and Laplace transforms. Fall.

**MATH 3343 Differential Equations II.** (3 3 0) Prerequisite: 3342. Power series solutions, systems of linear differential equations, numerical methods, Fourier series, boundary value problems and basic partial differential equations. Spring.

**MATH 3360 Statistical Methods.** [MATH 2342] (3 3 0) Prerequisite: 1314. Descriptive statistics, combinatorics, probability, statistical inference, regression and analysis of variance. Fall.

**MATH 4310 Modern Algebra.** (3 3 0) Prerequisite: 3325. Introduction to theoretical properties of formal systems such as groups, rings and fields. Spring.

**MATH 4340 Complex Variables I.** (3 3 0) Prerequisite or concurrent enrollment in 3342. Complex numbers, analytic functions, elementary functions, complex series and integration. Fall of odd years.

**MATH 4341 Advanced Calculus.** (3 3 0) Prerequisite: 3325. Functions and relations, limits of functions and sequences, continuity and uniform continuity, differentiability and the Riemann integral. Spring.

**MATH 4361 Engineering Statistics.** (3 3 0) Prerequisite: 3325. Probability, sampling distributions, decision functions, estimation and testing, analysis of variance and regression. Spring of odd years.

**MATH 4362 Introduction to Numerical Analysis.** (3 3 0) Prerequisite: 2414 and knowledge of a programming language. Analysis of convergence and errors; derivation and applications of numerical techniques; numerical differentiation and integration; solution of linear systems. Material will be supplemented by computer solutions. Fall of even years.

**MATH 4390 Understanding Mathematical Principles.** (3 3 0) Prerequisite: 1351, 2413, 3305 or 3306, 3331 or consent of instructor. Advanced problem solving for middle school mathematics teacher certification. Critical thinking and reasoning skills emphasized. Fall.

**MATH 4395 Problems.** (3 0-3 0) May be repeated for a total of six semester hours when subject varies.

**MATH 5360 Statistical Methods.** (3 3 0) Descriptive and inferential statistics, probability and combinations. Fall.
MATH 5390 Understanding Mathematical Principles. (3 3 0) Prerequisite: 1351, 2413, 3305 or 3306, 3331 and consent of instructor. Advanced problem solving for middle school mathematics teacher certification. Critical-thinking and reasoning skills are emphasized. Fall.

MATH 6095 Special Problems. (1-6 1-6 0) May be repeated for a maximum of six hours if subject matter varies.

MATH 6301 Thesis. (3 0 0)
MATH 6302 Thesis. (3 0 0)

MATH 6310 Algebraic Structures I. (3 3 0) Prerequisite: 4310. Algebraic structure, substructure, and quotient structure of groups and rings. Fall of even years.

MATH 6311 Algebraic Structures II. (3 3 0) Prerequisite: 6310. Finite and infinite fields, extension fields, vector spaces and linear algebra. Spring of odd years.

MATH 6330 Ordinary Differential Equations. (3 3 0) Prerequisite: 3342, 3311. Autonomous systems, asymptotic behavior, existence theory, initial-value problems, boundary-value problems. Fall of even years.

MATH 6331 Partial Differential Equations. (3 3 0) Prerequisite: 6330. First-order equations, classification of types of equations, initial-value problems, boundary-value problems, finite difference methods. Spring of odd years.

MATH 6340 Complex Analysis I. (3 3 0) Prerequisite: 3340, 4341. Complex numbers, point set, sequences, mappings, elementary functions, differentiation and integration. Fall of even years.

MATH 6341 Complex Analysis II. (3 3 0) Prerequisite: 6340. Complex integration, singularities, Maximum Modulus theorem, spaces of analytic functions, simple connectedness and analytic continuation. Spring of odd years.

MATH 6350 Real Analysis I. (3 3 0) Prerequisite: 4341. Countability; theory of sequences, series and limits of functions; metric spaces and the topology of metric spaces. Fall of odd years.

MATH 6351 Real Analysis II. (3 3 0) Prerequisite: 3340. Theory of Riemann integration, improper integrals, sequences and series of functions; measure theory and theory of Lebesgue integration. Spring of even years.

MATH 6360 Mathematical Statistics I. (3 3 0) Prerequisite: 3340. Probability, random variables, distribution theory, statistics and sampling distribution. Fall of odd years.

MATH 6361 Mathematical Statistics II. (3 3 0) Prerequisite: 2413; 3311 or 3321. Inferential statistics with point and interval estimation of parameters; hypothesis testing using parametric and nonparametric methods. Spring of even years.

MATH 6362 Biomathematical Modeling. (3 3 0) Prerequisite: 2413, 2414. Quantitative and qualitative behavior of deterministic biological models, steady states, stability and parameter variation with analysis of discrete, continuous, spatially distributed biological models. Spring of odd years.

MATH 6370 Numerical Analysis I. (3 3 0) Prerequisite: 3340. Error analysis, polynomial approximation, interpolation, numerical summation and numerical solution of algebraic equations. Fall of odd years. Course fee $10.

MATH 6371 Numerical Analysis II. (3 3 0) Prerequisite: 3342, 6370. Numerical solution of initial-value and boundary-value problems, including error analysis and stability. Numerical solution of partial differential equations. Spring of even years. Course fee $10.

MATH 6390 Seminar in Secondary Math Teachers I. (3 3 0) Prerequisite: consent of instructor. Designed for teachers who currently hold 4–8 and/or 8–12 teaching certification in mathematics to increase the level of conceptual understanding of mathematical topics. May be repeated once with different content.

MATH 6391 Seminar for Secondary Math Teachers II. (3 3 0) Prerequisite: consent of instructor. Designed for teachers who currently hold 4–8 and/or 8–12 teaching certification in mathematics to improve and develop highly effective instructional strategies based on MATH 6390 topics. May be repeated once with different content.

MATH 6398 Mentoring/Leadership. (3 3 0) Prerequisite: teacher certification in mathematics. Mentoring, coaching, exhibiting leadership, professional development, and develop instructional strategies based on data and supported by research. Opportunities to understand historical development of mathematics ideas, interrelationship between society and mathematics, structure of mathematics, and evolving nature of mathematics and mathematical knowledge.

MCOM—Mass Communication

(Offered through the Department of Communication.)

MCOM 1307 Introduction to Mass Communication. (3 3 0) Structure, characteristics, functions and support of mass communication in modern society, including radio, television, newspapers, magazines, film, and related areas of advertising and public relations. Fall, spring, summer. Course fee $5.

MCOM 1319 Digital Photography. [ARTS 2357] (3 3 0) Introduction to digital photography, exploring uses of the digital camera, as well as print, negative and slide scanning. Appropriate software applications and ethical concerns of image manipulation. Spring, May intersession. Same as ARTS 1319. Course fee $30.

MCOM 1336 Basic Video Production. (3 3 0) Techniques employed in TV production, instruction in broadcast-equipment operation and types of TV programs produced. Fall. Course fee $30.

MCOM 2171 KWTS Practicum. [COMM 2120, 2220, 2324] (1 0 0) Participation in live, on-the-air broadcasting on campus radio station KWTS-FM. A maximum of three semester hours may count toward the major. Fall, spring. Course fee $10.


MCOM 2315 Writing for the Media. (3 1 4) Adaptation of journalistic writing to print, broadcasting and online news media practices and requirements. Fall of odd years. Course fee $20.

MCOM 2327 Advertising Principles. (3 3 0) Fundamentals of advertising, study of media, copy and layout techniques, and psychology of sales campaigns. Fall. Course fee $10.

MCOM 2375 Multi-Platform Publishing. (3 1 4) Prerequisite: demonstrated computer competency. Media design theories and application for newspapers, magazines and desktop publishing with emphasis on how to organize, design and produce a newsletter. Spring. Course fee $20.

MCOM 3094 Individual Problems. (1-3 0 0) Individual study designed to meet needs and interests of the student. May be repeated. Fall, spring, summer.

MCOM 3099 Mass Communications Practicum. (1-3 0 0) Advanced individual work in mass communications related to needs and interests of the student. May be repeated. Fall, spring.

MCOM 3301 Feature Writing. (3 1 4) Types, styles and markets with much writing for publications. Magazine writing; publication requirements. Fall of odd years.
MCOM 3302 Journalism Research. (3 3 0) Prerequisite: 2311. Methods of information gathering for journalists and mass communicators using various sources, such as interviews, libraries, government documents, computerized data bases, online sources and business documents, and evaluation of research materials. Spring of even years. Course fee $10.

MCOM 3305 New Media. (3 3 0) Prerequisite: 1307. Mass communication as a growth industry. New technologies, corporate mergers, and state and federal changes of industry. Course fee $10.

MCOM 3306 Advanced Audio Production. (3 3 0) Prerequisite: 2303. Audio production of commercial music integrating producing and engineering techniques. In-depth look at the recording industry. Multi-tract/digital equipment will be the primary tool of instruction. Spring of even years. Course fee $45.

MCOM 3307 Public Relations Campaigns. (3 3 0) Prerequisite: 3350. Students act in agency capacity for national, state and local campaigns. During the semester, students will direct public relations campaigns for clients. Fall. Course fee $25.

MCOM 3312 Advertising Techniques. (3 3 0) Fundamentals of advertising copywriting for print, radio and television campaigns. Fall. Course fee $20.

MCOM 3313 Public Relations Copywriting. (3 3 0) Fundamentals of public relations copywriting with emphasis in background, position, media, advertising and crisis writing. Spring. Course fee $20.

MCOM 3314 Public Relations and Advertising Research. (3 3 0) In-depth analysis of advertising and public relations research techniques that delivers market information suitable for both public relations and advertising planning and implementation. Includes statistical analysis, survey, focus groups and other commonly used public relations and advertising methodologies. Fall. Course fee $20.

MCOM 3322 TV News Production. (3 3 0) Prerequisite: 1336. Intermediate techniques in TV production. Spring. Course fee $30.

MCOM 3327 Mass Media Law. (3 3 0) Federal, state and local government regulation of mass media industries from development through present-day media regulations. Emphasis on print and broadcast/cable media and advertising. Spring; May intercession.

MCOM 3331 Media History. (3 3 0) History and development of American journalism from the earliest colonial period to present with attention to English background and development of principles of press freedom and law. Literature of journalism. Fall of even years.


MCOM 3350 Public Relations and Publicity. (3 3 0) Theory and principles of public relations. Public attitudes, public relations activities and the public relations process. Development of a public-relations program. Publicity emphasized throughout. Fall, spring.

MCOM 3375 Mass Media Sales. (3 3 0) Theory and production of commercial advertising sales in radio, television, print, cable and other news-communication technologies. Spring. Course fee $10.

MCOM 3379 Media Management. (3 3 0) Theories of management applied to mass media organizations. Management's role in directing mass media activities and examination of applicable rules and regulations specific to mass media. Spring.

MCOM 3392 Special Topics. (3 3 0) Special media-related topics germane to a rapidly changing mass media environment. May be repeated once.

MCOM 4302 Mass Communication Ethics. (3 3 0) Ethical standards for reporters and broadcasters. Evaluation of past, current and hypothetical ethical problems facing the industry. Fall.

MCOM 4310 Media Design. (3 3 0) Development, analysis and implementation of new media (Internet, audio, visual and print). Focus on developing media, regulation and delivery. Spring. Course fee $30.

MCOM 4322 Advanced Video Production. (3 3 0) Prerequisite: 1336. Instruction in advanced television and directing programs. Creative aspects of TV production. Fall of even years. Course fee $45.

MCOM 4331 Broadcast Announcing. (3 3 0) Techniques of effective radio and TV announcing. Practice in types of announcing. Every third fall. Course fee $15.

MCOM 4350 Senior Project. (3 3 0) Prerequisite: senior standing. Professional conduct and standards of the industry, individual assessment of skills and potential employment opportunities. Final closure to the student's academic career. Fall, spring, summer.

MCOM 4398 Media Internship. (3 0 0) One semester of prearranged work in operational activities in a designated enterprise cooperating with the mass communications program. Students will obtain professional work experience and will be responsible for periodic reports and appraisals as required by the instructor. No class hours are to be met; conferences are arranged. May be repeated once with permission of department head and program director. Fall, spring, summer.

MCOM 6305 Research Project in Mass Communication. (3 0 0) Students will engage in an application-based research project in mass communication or media studies. The project should identify and analyze a perceived problem in any area of mass communication and conclude with recommendations for applied changes or solutions. Same as COMM 6305. Fall, spring, summer.

MCOM 6330 Mass Communication Seminar. (3 3 0) Interdisciplinary team-taught course by speech communication and mass communication graduate faculty. Topics may vary by semester. Emphasis on providing master's degree students with knowledge of important issues in the field of mass communication. May be repeated once for credit when topic varies. Same as COMM 6330. Fall.

MCOM 6340 Seminar in Public Communication. (3 3 0) Methods of disseminating information in society. Survey of human relations theory, public relations and community relations. Same as COMM 6340.
MENG 6381 Seminar in Quantitative Research Methods. (3 3 0) Prerequisite: 6380 or consent of instructor. Methodology, organization and participation in quantitative/statistical communication research. Same as COMM 6381. Spring.

MENG 6383 Internship in Mass Communication. (3 0 0) Practicum in mass communication. Students will identify an approved agency which has agreed to a proposed project. Students will investigate, research, design and complete a mass communication project. Same as COMM 6383. Fall, spring, summer.

**MENG—Mechanical Engineering**

(Offered through the Department of Engineering and Computer Science.)

MENG 3311 Nuclear Issues. (3 3 0) Historical perspective of the development of nuclear technology. Discussions of contemporary nuclear issues. Such issues may include the nuclear arms race, treaty negotiations, status of nuclear waste, siting, storage and transportation of nuclear materials.

MENG 3312 Radiation Safety and Biology. (3 3 0) Prerequisite: MATH 2412 or consent of instructor. Types of radiation and their various behaviors. Risks and benefits of radiation. Approaches to radiation safety. Effects of radiation on humans, modes of transportation, inhalation and injection.

MENG 3320 Engineering Thermodynamics. (3 3 0) Prerequisite: PHYS 2426, MATH 2414. Properties of pure substances, equations of state for fluids and solids, work, heat, first law of thermodynamics, second law of thermodynamics, entropy, second law analysis, gas/vapor power and refrigeration cycles as it deals with energy and energy transformation in application to a wide range of mechanical systems. Fall

MENG 3340 Mechanics of Materials I. (3 3 0) Prerequisite: ENGR 2301 and MATH 2414. Applications of conservation principles and stress, strain (2-D); deformation relationships for continuous media to structural members; axially loaded members; thin-walled pressure vessels; torsional and flexural members; shear; moment; deflection of members; combined loadings; Mohr's Circle (2-D); stability of columns; nonsymmetrical bending; shear center; indeterminate members. Students will be taught to use custom-made software to solve beam bending and deflection problems.

MENG 3350 Mechanics of Materials II. (3 3 0) Prerequisite: 3340. Properties and behavior of engineering materials under typical of service conditions. Multiaxial yield criteria; brittle and ductile fracture; introduction to fracture mechanics; prediction of fatigue life, creep deformation and rupture life of engineering components. Component design and modification where yielding, fracture, fatigue and creep deformation impose limitations. Fall.

MENG 4090 Mechanical Engineering Laboratory Investigations. (1-6 0 0) Laboratory assignments to complement past experiences, exploration of additional areas not otherwise covered in the curriculum. Oral and written reports will be required. May be repeated for up to six hours of credit. Fall. Course fee $35.

MENG 4095 Problems in Mechanical Engineering. (1-6 0 0) Selected individual problems in mechanical engineering to be focused on a specific area that is not typically encountered in normal course work. May be repeated for a maximum of six credit hours.

MENG 4097 Mechanical Engineering Research. (1-6 0 0) Selected individual research topics in mechanical engineering to accommodate more substantial research than can be encountered in normal course work. May be repeated for a maximum of six hours.

MENG 4304 Fundamentals of Fluid Mechanics. (3 2 0) Prerequisite: MATH 2414. Fluid properties; conservation of energy and momentum; incompressible flow in pipes; Bernoulli equation; standard symbols: components and control of hydraulic systems and pneumatic systems. Students will conduct hands-on experiments in small groups to enhance practical understanding of fluid principles. Course fee $12.

MENG 4307 Finite Element Methods. (3 3 0) Prerequisite: MATH 3342 and 3311. Theory and application of finite element method to structural and fluid mechanics problems.

MENG 4321 Engineering Risk and Decision Analysis. (3 3 0) Prerequisite: MATH 4361 or consent of instructor. Mathematical theory of the assessment of risk associated with engineering decisions and problems.

MENG 4340 Control Theory. (3 3 0) Prerequisite: MATH 3342. Control systems theory, control systems hardware, discrete time systems, and microprocessor based and digital control.

MENG 4341 Robotics. (3 3 0) Prerequisite: MATH 3342, PHYS 2426. Robot arm kinematics, robot arm dynamics, manipulator trajectory planning and motion control, robot sensing, robot vision, robot programming languages and robot intelligence. Fall.

MENG 4350 Machine Design. (3 3 0) Prerequisite: 3340. Fundamentals of machine components design, design considerations and methodology; static, dynamic and impact loads; fatigue, surface damage; threaded fasteners, power screws; rivets, welding, bonding; springs; sliding bearings; rolling bearings; spur, helical, bevel and worm gears; shafts; clutches and brakes; miscellaneous components; individual and team design projects. Spring.

MENG 4351 Electric Power Systems. (3 3 0) Prerequisite: MATH 2412 or higher. Theory and devices for electric power systems. Functionality and analysis of electric power grid.

MENG 4352 Thermal-Fluid System Design. (3 3 0) Prerequisite: 4360, ENGR 3320. Application of heat transfer and fluid flow concepts to the design of thermal-fluid systems. Emphasis on design calculations, component and system modeling; optimization, including economic considerations.

MENG 4360 Heat Transfer. (3 2 2) Prerequisite: 3320, 4304. MATH 3342. Conservation of energy principles applied to steady-state and transient problems of conduction, convection and radiation heat transfer in one, two and three dimensions. Students will conduct experiments in small groups to enhance practical understanding of heat transfer principles. Fall. Course fee $25.

MENG 4380 Mechanical Engineering Design. (3 2 2) Prerequisite: senior classification. A project will be selected by the student to work as part of a student team, subject to faculty approval. The project will integrate theory and application of the engineering curriculum and incorporate all aspects of the design/research process. Final oral and written reports are required. Capstone course intended to be taken in the final semester. Course fee $50.

MENG 4392 Special Topics in Mechanical Engineering. (3 3 0 0) Current topics or topics of special interest to mechanical engineering. May be repeated for a maximum of six hours if subject matter varies.

MENG 4398 Mechanical Engineering Internship. (3 0 0) On-the-job experience in a phase of the mechanical engineering profession. Fall, spring, summer.
MGT—Management
(Offered through the Department of Management, Marketing and General Business.)

MGT 2370 First-Line Management. (3 3 0) Focuses on developing effective first-line management. Emphasizes responsibilities and problems of basic first-line supervisors as they channel efforts of work-place employees in carrying out basic functional tasks within organizations.

MGT 3330 Principles of Management. (3 3 0) Analysis of theory and practice of management as related to functions of planning, organizing, staffing, directing and controlling. Fall, spring, summer. Course fee $10.

MGT 3332 New Venture Creation. (3 3 0) Prerequisite: 3330, MKT 3340, FIN 3320. Entrepreneurial process of starting a new business. Idea creation and evolution, development of a business plan, and gathering human, financial, physical and information resources necessary to start a new enterprise. Fall.

MGT 3333 Small Business Management. (3 3 0) Prerequisite: 3330, MKT 3340, FIN 3320. Unique challenges of managing a small, growing business. Emphasis on marketing, human resource acquisition and development, financial management and control, and growth strategies for the small business. Spring.

MGT 3335 Organizational Behavior. (3 3 0) Prerequisite: junior standing. Systematic study of attitudes and actions of people in organizations. Course is designed around the study of individuals, groups and organization environments, and the manner in which they affect and determine behavior in organizations. Fall, spring, summer.

MGT 3390 Project Management. (3 3 0) Prerequisite: IDM 2342 or equivalent. Management of projects and quantitative methods used in managerial supervision. Theoretical and practical applications of project planning, budgeting, scheduling, cost analysis, resource leveling and control, applications of Critical Path Method, Program Evaluation and Review Technique, and use of computer for project planning and management. Same as IDM 3390. Spring. Course fee $20.

MGT 4096 Supervised Readings in Management. (1-6 0 0) Prerequisite: 12 semester hours of advanced work in a business major, junior standing and permission of department head. Current problems in management through reading business periodicals, government publications and books which have had a profound influence on American management philosophy. Fall, spring.

MGT 4311 Business Ethics and Society. (3 3 0) Prerequisite: junior standing. Examination of the business environment, its influence on business decisions, results of business operations and the ethical nature of such decisions. Fall, spring.

MGT 4315 Strategic Management and Policy. (3 3 0) Prerequisite: FIN 3320, MGT 3330 and MKT 3340; senior standing. Capstone course utilizing cases as the means of integrating all aspects of business administration from the viewpoint of analyzing and formulating decisions under conditions of uncertainty relative to administrative policies of the firm. Fall, spring, summer. Course fee $50.

MGT 4330 Critical Issues in Human Resources Management. (3 3 0) Prerequisites: problems and philosophies in personnel management with emphasis on selecting, developing, maintaining, utilizing, evaluating and controlling personnel. Fall, spring. Course fee $20.

MGT 4333 Diversity and Cross-Cultural Management. (3 3 0) Prerequisite: junior standing. Examination of management issues related to changes in the makeup of the workplace, implications for managing diversity, as well as raising awareness of potential barriers, skills and strategies related to managing effectively in intercultural environments. Course fee $20.

MGT 4334 Compensation Administration. (3 3 0) Prerequisite: 3330. Procedures for collecting and analyzing job information; conducting job evaluation; conducting salary surveys; and establishing and maintaining a compensation structure, including benefits and services, performance evaluations, individual and group incentive systems and legislation affecting compensation. Spring.

MGT 4335 International Management. (3 3 0) Prerequisite: 3330, senior. Analysis of theory and practice of management as related to functions of planning, organizing, staffing, directing and controlling at the international level. Functional areas of international business as well as problems related to internationalization of the firm. Fall.

MGT 4336 Leadership Development. (3 3 0) Prerequisite: 3330, senior standing or consent of instructor. Exploration of the challenges to effective leadership and management that the contemporary manager faces in a rapidly changing environment. Focus on leadership styles and behaviors conducive to high performance in various organizational settings with a very diverse work force. Fall, spring. Course fee $20.

MGT 4343 Supply Chain Management. (3 3 0) Prerequisite: IDM 3330, 4331 or consent of instructor. Explores coordination and cooperation required between suppliers, manufacturers, distributors and retailers to bring a product to market. Integrates knowledge from operations management, management, marketing and information systems. Covers the five major costs of logistics—inventory, transportation, storage, packaging and information—and the trade-offs involved in managing these costs. Same as IDM 4343.

MGT 4370 Biotechnology and Health-Care Management. (3 3 0) Prerequisite: 3330 or consent of instructor. Prepares students for management positions in the health-care industry. Covers conditions and issues that make management in health care different from management in other industries. Focuses on management issues in biotechnology.

MGT 4398 Supervised Internship. (3 0 0) Prerequisite: junior standing and approval of department head. One semester of prearranged work in operational activities in a designated enterprise cooperating with the College of Business. Students will obtain comprehensive work experience in the area and be responsible for periodic reports and appraisals as required by the instructor. No class hours are to be met; conferences are arranged. Maximum of six credits, total, may be taken in MGT 4398, MGT 4398 and BUSI 4398. Fall, spring, summer.

MGT 5311 Business Ethics and Society. (3 3 0) Examination of business environment, its influence on business decisions, results of business operations and ethical nature of such decisions.

MGT 5330 Critical Issues in Human Resources Management. (3 3 0) Issues, problems and philosophies in personnel management with emphasis on selecting, developing, maintaining, utilizing, evaluating and controlling personnel. Fall, spring.

MGT 5333 Diversity and Cross-Cultural Management. (3 3 0) Examination of management issues related to changes in the makeup of the workplace, implications for managing diversity, as well as raising awareness of potential barriers, skills and strategies related to managing effectively in intercultural environments. Significant independent study and research.
Course Descriptions

MGT 6300 Business Management. (3 3 0) Prerequisite: graduate standing, consent of department head. Framework of basic knowledge to develop an operational theory of management. Analysis of basic functions of management planning, organizing, directing and controlling. Spring.

MGT 6318 Strategic Management. (3 3 0) Prerequisite: FIN 6320, MGT 6334, MKT 6340 or equivalent. Discussion of general management cases concerning analysis, appraisal, formulation, implementation, direction, and control of corporate policy and strategy. Fall, spring, summer. Course fee $40.

MGT 6320 Entrepreneurship. (3 3 0) Prerequisite: ACCT 6300, FIN 6300, MGT 6300, MGT 6320, or proficiency in these courses in an undergraduate program. Interdisciplinary course involving all requirements for starting a business: the idea, market assessment, how to raise funds, exploiting opportunities, legal organization, taxes, entrepreneurial characteristics necessary for success and creation of a business plan. Alternate springs.

MGT 6330 Seminar in International Management. (3 3 0) Prerequisite: 6300 or equivalent. Study and application of principles of management to international fields of business organization and cross-cultural operation. The degree of universality of management functions to all phases of business and development.

MGT 6332 Seminar in Organization Theory. (3 3 0) Analysis of theory and practice in designing organization structure. Topics include systems and contingency theories, strategic management, patterns of organization design, technology, size, innovation and change, and information systems and control.

MGT 6334 Seminar in Organizational Behavior. (3 3 0) In-depth explanation of individual and group behavior in organizations. Attributes and perception, satisfaction, motivation, leadership, conflict, stress and organization, change and development. Spring.

MGT 6336 Advanced Human Resources Management. (3 3 0) Prerequisite: 6300. Examination of principles and methodology of Human Resources Management with emphasis on functions of recruitment and selection; training and development, performance appraisal, compensation and labor relations. Fall.

MGT 6340 Seminar in Organizational Behavior. (3 3 0) Analysis of theory and practice in designing organization structure. Topics include systems and contingency theories, strategic management, patterns of organization design, technology, size, innovation and change, and information systems and control.

MKT—Marketing

MKT 3340 Principles of Marketing. (3 3 0) Prerequisite: MKT 2301. Description and analysis of our marketing system and investigation of basic responsibilities held by marketing executives in business organizations. Fall, spring, summer. Course fee $10.

MKT 3342 Consumer Behavior. (3 3 0) Buyer as a problem solver; buying decision processes; factors influencing behavior; principles, theories and models of behavioral research. Attention on behavioral science concepts related to consumer behavior; e.g., mass communication, reference groups, sociological, psychological and economic aspects. Fall, spring.

MKT 3346 Personal Selling and Sales Promotion. (3 3 0) Prerequisite: MKT 2301. Selling and negotiating and sales promotion as related to both the new enterprise and on-going firm. Promotional strategies especially appropriate for the smaller firm where uniqueness of promotional tools is more critical than in the larger firm that has a much larger promotional budget. Spring.

MKT 3348 Marketing Research. (3 3 0) Prerequisite: MKT 2301. Analysis of market research methods in the 21st century, including e-commerce, web applications, customer-generated content, blogs, search and social networking. Attention to digital lifestyle, consumer behavior issues, security and new business development. Spring.

MKT 3350 Evolutionary Marketing. (3 3 0) Fall, spring, summer. Application of general marketing principles to the marketing of sport and entertainment, including dimensions of product, pricing, promotion and location of these events. Investigation of consumer behavior, brand management, relationship marketing and sponsorships as they pertain to sports and entertainment. Spring.

MKT 3354 Hospitality and Tourism Marketing. (3 3 0) Application of general marketing principles to product, price, promotion and place to hospitality and tourism industries. Integration of consumer behavior, branding, the general economy, marketing research and market targeting as they pertain to these industries. Fall.

MKT 3356 Marketing Management and Planning. (3 3 0) Prerequisite: MKT 2301. Fall, spring, summer. Application of basic marketing principles to the marketing of sport and entertainment, including dimensions of product, pricing, promotion and location of these events. Investigation of consumer behavior, brand management, relationship marketing and sponsorships as they pertain to sports and entertainment. Spring.

MKT 4096 Supervised Readings in Marketing. (1-6 0 0) Prerequisite: 12 semester hours of advanced work in a business major, junior standing and permission of department head. Current problems in marketing through reading business periodicals, government publications and books which have had a profound influence on marketing philosophies. Fall, spring, summer.

MKT 4340 International Marketing. (3 3 0) Prerequisite: MKT 3340. Fall, spring, summer. Problems and procedures of marketing in foreign countries, including effects of cultural dynamics in assessing world markets. Emphasis on comparative differences in markets, marketing functions, legal, socioeconomic stages of industrial development, and cultural and political considerations of overseas markets. Spring.

MKT 4342 Principles of Advertising. (3 3 0) Prerequisite: MKT 3340. Nature, scope and contribution of advertising to the firm’s problems of demand stimulation. Attention on establishing objectives and budgets for promotional
Course Descriptions

activities and advertiser-agency relationships. Emphasis on technical aspects of advertising layout. Course content will culminate into a full-scale advertising campaign. Spring.

MKT 4344 Retail Marketing. (3 3 0) Prerequisite: 3340. Analysis of factors governing store operations: location, store layout, buying and selling, advertising and display, merchandise planning and control, personnel management, consumer relations, recent trends, and problems connected with retail buying and selling. Fall.

MKT 4346 Sales Management. (3 3 0) Prerequisite: 3340. Analysis of current behavioral concepts of personal selling, and study of principles and concepts involved in managing a sales force. Emphasis on organization of sales departments developing territories, motivating sales people and control over sales operations. Fall, spring.

MKT 4348 Marketing Strategy. (3 3 0) Prerequisite: 3340, senior standing. Actual marketing cases and problems: marketing costs, brand policy, channels of distribution, sales promotion, sales policies, price policies and operating control. Capstone course in the marketing curriculum. Spring.

MKT 4398 Supervised Internship. (3 0 0) Prerequisite: junior standing and approval of department head. One semester of prearranged work in operational activities in a designated enterprise cooperating with the College of Business. Students will obtain comprehensive work experience and be responsible for periodic reports and appraisals as required by the instructor. No class hours will be met; conferences are arranged. Maximum of six credits, total, may be taken in MKT 4398, MGT 4398 and BUSI 4398. Fall, spring, summer. Course fee $40.

MKT 5340 International Marketing. (3 3 0) Prerequisite: 3340 or equivalent. Additional research analysis not covered in the text will be required. Special study of current international monetary problems, human resource management, political and social problems of multi-national enterprises, political, social and economic constraints of foreign direct investment, and global operations/strategies.

MKT 6340 Seminar in Marketing. (3 3 0) Prerequisite: 6300 or equivalent. Business activities involved in moving goods from production to consumption; marketing functions and problems. Developing a philosophy of the role of marketing in the American economy. Fall, summer.

MKT 6350 Contemporary Issues in Marketing. (3 3 0) Prerequisite: 6340. Selected topics of current interest in the field, including marketing strategy, sports marketing and hospitality and tourism. Semester-long examination of the selected topic. May be repeated once with consent of instructor.

MKT 6352 Seminar in Evolutionary Marketing. (3 3 0) Prerequisite: 6300 or equivalent. Examination of marketing methods in the 21st century, including e-commerce, m-commerce, web applications, customer-generated content, blogs, search and social networking. Attention to digital lifestyle, consumer behavior issues, web advertising, security, branding and strategy.

MKT 6354 Research Methods for Marketing Intelligence. (3 3 0) Prerequisite: 6340, IDM 6305. Investigation of advanced techniques in marketing research. Emphasis on the marketing research process, including problem formulation, research design, survey research, questionnaire and sample design, data collection, data analysis and interpretation, and research report preparation. International marketing research, research ethics, literature review, reliability and validity. Various quantitative and software applications.

MKT 6370 Health-Care Marketing. (3 3 0) Prerequisite: 6300 or equivalent. Application of strategic marketing to biotechnology and health-care organizations. Topics include strategic planning, market research, segmentation and targeting, positioning, marketing mix tactical decisions, organization and budgeting, and public relations and fund raising.

MPS—Mathematics and Physical Science

(Offered through Department of Mathematics, Chemistry and Physics.)

MPS 4097 Math/Physical Science Research. (1-6 0 0) Selected individual research problems in chemistry, mathematics and/or physics.

MPS 4364 Mathematics/Science Activities for Instruction. (3 3 0) Concepts/activities to enhance the instruction in mathematics and science. Topics will vary, but all courses involve concentration in mathematics and physical sciences. May be repeated with different content.

MPS 4365 Science Activities for Secondary Teachers II. (3 3 0) Laboratory activities, demonstrations and simulations to enhance science background for secondary science teachers. Topics/activities will vary, but all courses involve concentration in physical sciences. May be repeated with different content.

MPS 4370 Senior Investigations. (3 3 0) Prerequisite: senior status and consent of instructor. Advanced work in the student's major area, including exposure to research, literature and senior presentation.

MPS 4393 Math/Physics Science/Engineering Honors. (3 3 0) Completion of a senior thesis or research project by a student who is a candidate for graduation with special honors in the department.

MPS 4398 Math/Physics Science Problems. (3 3 0) Selected individual problems. Completion of a problem more extensive than those encountered in normal courses.
Course Descriptions

MUEN—Music Ensemble
(Offered through the Department of Music.) Course fees variable.

MUEN 1026 Marching Band. [MUEN Major; FOSC] (1,2 0 2,5) Marching band for the length of football season and concert band for the remainder of the fall semester. Open to all University students. Required of all wind and percussion instrument majors (optional for keyboard majors) to fulfill major ensemble requirements in the fall semester. Fall.

MUEN 1027 Band. [MUEN Major; FOSC] (1,2 0 2,5) Students are divided into two performing ensembles—Symphonic Band is open to all University students by audition in October; Marching Band is open to all University students without audition. Required of all wind and percussion instrument majors (optional for keyboard majors) to fulfill major ensemble requirements in the spring semester. Spring, summer I. Course does not count as a major ensemble in the summer.

MUEN 1029 Orchestra. [MUEN Major; FOSC] (1,2 0 2,5) Open to all University students by audition. Required of all string instrument majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirements if the student plays a string instrument. Fall, spring.

MUEN 1041 Chorale. [MUEN Major; FOSC] (1,2 0 2,5) Open to all University students by audition. Either Chorale or Collegiate Choir is required of all voice majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirement. Fall, spring.

MUEN 1042 Collegiate Choir. [MUEN Major; FOSC] (1,2 0 2,5) Open to all University students by audition. Either Chorale or Collegiate Choir is required of all voice majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirement. Fall, spring.

MUEN 1143 Chorus. (1,0 2) Open to all University students who are not music majors. Music majors may enroll only during first summer session. No audition will be required. Fall, spring.

MUEN 2140 Chamber Music. [MUEN Instrumental Chamber] (1,0 0,2) Prerequisite: consent of instructor. Study and performance of chamber music for all media: voice, keyboard, woodwind, brass, string and percussion instruments. May be repeated. Fall, spring.

MUEN 2160 Chamber Music. [MUEN Vocal Chamber] (1,0 0,2) Prerequisite: consent of instructor. Study and performance of vocal chamber music. May be repeated. Fall, spring.

MUEN 3026 Marching Band. (1,2 0 2,5) Prerequisite: at least three semesters of 1026 or 1027. Marching band for the length of football season and concert band for the remainder of the fall semester. Open to all University students. Contact the Department of Music and Dance in July for details about early band.) Required of all wind and percussion instrument majors (optional for keyboard majors) to fulfill major ensemble requirements in the fall semester. Fall.

MUEN 3027 Band. (1,2 0 2,5) Prerequisite: at least three semesters of 1026 or 1027. Students are divided into two performing ensembles—Symphonic Band is open to all University students by audition in October; Concert Band is open to all University students without audition. Required of all wind and percussion instrument majors (optional for keyboard majors) to fulfill major ensemble requirements in the spring semester. Spring, summer I. Course does not count as a major ensemble in the summer.

MUEN 3029 Orchestra. (1,2 0 2,5) Prerequisite: at least three semesters of 1029 for string majors, or 1026 or 1027 for non-string
Course Descriptions

MUSI RCTL Music Recital. (1.2, 2, 5) Prerequisite: three semesters of 1241 or 1242. Open to all undergraduate music majors by audition. Either Chorale or Collegiate Choir is required of all voice majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirement. Fall, spring.

MUEN 3041 Chorale. (1.2, 0, 2, 5) Prerequisite: three semesters of 1241 or 1242. Open to all undergraduate music majors by audition. Either Chorale or Collegiate Choir is required of all voice majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirement. Fall, spring.

MUEN 3042 Collegiate Choir. (1.2, 0, 2, 5) Prerequisite: three semesters of 1241 or 1242. Open to all undergraduate music majors by audition. Either Chorale or Collegiate Choir is required of all voice majors to fulfill major ensemble requirements. Can be chosen by keyboard instrument majors to fulfill major ensemble requirement. Fall, spring.

MUSI 3143 Chorus. (1, 0, 5) Prerequisite: three semesters of 1143. Open to all undergraduate students who are not music majors. Music majors may enroll only during summer session I. No audition will be required. Fall, spring.

MUSI—Music
( Offered through the Department of Music.)

MUSI 1260 Applications in Italian Diction for Singers. (2, 0, 0) Prerequisite: three semesters of 1160 or 1161. Required of all string instrument majors to fulfill major ensemble requirements. May be chosen by keyboard instrument majors to fulfill major ensemble requirements if the student plays a string instrument. Fall, spring.

MUSI 1208 Literature I. [FOSC] (2, 2, 0) Should be taken concurrently with 1372. Introductory survey of music literature of the Baroque, Classic, Romantic, and Non-Western music. Fall.

MUSI 1209 Literature II. (2, 2, 0) Prerequisite: 1208 or consent of instructor. Should be taken concurrently with 1372. Introductory survey of music literature of the Baroque period, Impressionism, Post-Romanticism, 20th-century and Non-Western music. Spring.

MUSI 1373 Theory II. [MUSIC 1012 and 1017; FOSC] (3, 2) Prerequisite: 1372. Style analysis, seventh chords, binary and ternary forms, American popular music styles, exercises in composition and improvisation, continuation of aural dictation and sight-singing techniques. Spring. Course fee $5.

MUSI 1374 Elementary Music Theory. (3, 3, 0) Reading pitch in all clefs and rhythm in all meters. Sight singing, ear training, critical listening and interval dictation. Key signatures, scales, modes, triads, seventh chords and musical terms. Spring. Course fee $5.

MUSI 2075 Individual Problems. (1-3, 0, 0) Individual work in area of student’s interest.

MUSI 2171 Accompanying. (1, 0, 0) Prerequisite: consent of instructor. Accompanying techniques; practical application in vocal coaching, instrumental accompanying and chamber music. May be repeated once. Fall, spring. Course fee $5.

MUSI 2172 Introduction to Music Therapy. (1, 1, 0, 0) Introduction to history and development of the music therapy profession, basic underlying principles of music therapy and application of music therapy to selected client populations. Spring.

MUSI 2173 Therapy Orientation. (1, 1, 0, 0) Overview of the health care profession with emphasis on the field of music therapy. Role of music therapy and music therapist in the health care profession with exposure to other arts therapies. Professional ethics and standards of the clinical practice. Fall.

MUSI 2181 Piano Class II. (1, 1, 1) Prerequisite: 1182 or consent of instructor. Second-semester piano class for music majors. Build on fundamental keyboard skills (sight reading, harmonization, improvisation) and begin work in score reading and instrumental/vocal accompanying. Spring. Course fee $5.

MUSI 2182 Piano Class IV. (1, 1, 1) Prerequisite: 2181 or consent of instructor. Fourth-semester piano class for music majors. Designed to further improve keyboard proficiency in areas including technique, sight-reading, harmonization and piano literature. Score-reading, both orchestral and choral, and accompaniment will be emphasized. Spring. Course fee $5.

MUSI 2274 Practicum in Music Therapy. (2, 0, 0) Prerequisite: 2173. Experience in assessing, planning, conducting, measuring and evaluating music therapy treatment with a variety of client populations. Documentation of client progress; variety of clinical experiences may be offered; class presentation and additional clinical setting experience required. Therapy majors must have a minimum of three semesters of enrollment in this course. Fall, spring. Course fee $5.

MUSI 2371 Recreational Music. (3, 3, 0) Role and techniques of recreational music with use of informal instruments with attention to using music to assist exceptional children. One class period per week will be devoted to functional guitar instruction. Fall (music therapy); spring (all-level certification). Course fee $5.

MUSI 2372 Theory III. [MUSI 2111 and 2116; FOSC] (3, 2, 2) Prerequisite: 1373. Introduction to 18th-century counterpoint, variation technique and more complex harmonic structures of Classic and early Romantic periods;
Course Descriptions

MUSI 2373 Theory IV. (MUSI 2012 and 2017; FOSCJ 3 2 2) Prerequisite: 2372. Sonata and rondo forms; styles in 20th-century music and analysis systems; exercises in composition and improvisation; continuation of aural dictation and sight-singing techniques. Spring. Course fee $5.

MUSI 3037 Percussion Class. (1-2 0-1 2) Percussion instruments with emphasis on the snare drum, leading to a teaching knowledge. Spring. Course fee $5.

MUSI 3092 Special Topics. (1-3 0-3-0-6) Prerequisite: consent of instructor. Topics in areas of special interest. May be repeated for credit when topics change.

MUSI 3105 Baton Technique. (1 1 1) Prerequisite: consent of instructor. Elements of conducting. Study and application of use and development of basic beat patterns and fundamental gestures. Introduction to score reading. Fall. Course fee $5.

MUSI 3117 German Diction for Singers. (1 1,0 0) Prerequisite: 1161. Application of the International Phonetic Alphabet to German language and diction. Fall. Course fee $5.

MUSI 3119 French Diction for Singers. (1 1,0 0) Prerequisite: 1161. Application of the International Phonetic Alphabet to French language and diction. Spring. Course fee $5.

MUSI 3129 Secondary School Band Repertoire. (1 1 0) Prerequisite: may not enroll concurrently in 4327. For prospective band directors to acquaint students with UIL contest lists, evaluation of band literature and practical conducting experience in a simulated classroom environment. Spring. Course fee $5.

MUSI 3135 Voice Class. (1 1 1) Group instruction and practice in fundamentals of singing; breath control, tone production, consonant and vowel formations, etc. Individual song assignments as indicated by the student's problems, background and ability. May be repeated for credit. Fall. Course fee $5.

MUSI 3162 Opera Workshop. (1 0 0) Prerequisite: consent of instructor. Organization and staging of standard operas and operettas. Actual production of major work in collaboration with the Department of Art, Communication and Theatre. May be repeated. Fall (opera), spring (musical).

MUSI 3175 Techniques in Music Therapy I. (1 1 0) Prerequisite: 2371, 2172, 2173. Clinical literature and techniques related to specific populations. One-to-one clinical experiences will focus on specific techniques, assessment procedures, treatment planning, measurement and evaluation of changes in behavior and documentation of client progress will be emphasized. Concurrent enrollment in 3278 expected. Fall of odd years. Course fee $5.

MUSI 3176 Techniques in Music Therapy II. (1 1 0) Prerequisite: 2371, 2172, 2173. Continuation of 3175. Different client populations should be emphasized. Concurrent enrollment in 3279 expected. Spring of even years. Course fee $5.

MUSI 3207 Instrumental Conducting. (2 2 0) Prerequisite: 3105. Development and expansion of 3105 as applied to instrumental conducting, including compound meters, expressive gestures, score reading, analysis interpretation, rehearsal and performance techniques. Spring.

MUSI 3209 Choral Conducting. (2 2 0) Prerequisite: 3105. Conducting techniques for glee club, chorus and choir. Training and experience in distinctive features of choral conducting and interpretation. Spring.

MUSI 3217 Advanced German Diction for Singers. (2 0 0) Prerequisite: 1160, 1161, 3117. Fundamentals of German grammar, verb structure, and syntax and translation skills for singers. Fall.

MUSI 3219 Advanced French Diction for Singers. (2 0 0) Prerequisite: 1160, 1161, 3119. Fundamentals of French grammar, verb structure, and syntax and translation skills for singers. Spring.

MUSI 3232 Instrument Techniques. (2 1 2) Functional knowledge of woodwind, brass and string instruments. Spring. Course fee $5.

MUSI 3233 Woodwind Class. (2 1 2) Woodwind instruments, leading to teaching knowledge. Fall. Course fee $5.

MUSI 3234 Brass Class. (2 1 2) Brass instruments, leading to teaching knowledge. Fall. Course fee $5.

MUSI 3238 String Class. (2 1 2) Violin, viola, cello and double bass, leading to a teaching knowledge of the instruments. Spring. Course fee $5.

MUSI 3256 Jazz Theory and Practice. (2 2,0 0) Prerequisite: 2373. Jazz theory (chord progressions, jazz notation, orchestra practices, etc.); practical approach to the style of jazz and jazz improvisation; techniques for teaching and maintaining a jazz program. Spring of odd years. Course fee $5.

MUSI 3263 Form and Analysis. (2 2,0 0) Prerequisite: 2373. Analysis of tonality, harmony and form in European music of the 18th and 19th centuries. Includes aural recognition of forms. Fall of odd years. Course fee $5.

MUSI 3264 Orchestration. (2 2,0 0) Prerequisite: 2373. Instruments of modern orchestra and their use in combination with each other. Spring of odd years. Course fee $5.

MUSI 3265 18th-Century Counterpoint. (2 2,0 0) Prerequisite: 2373. Composition and analysis of contrapuntal music in the instrumental style of high Baroque. Includes canon and fugue. Fall of odd years. Course fee $5.

MUSI 3266 Choral Arranging. (2 2,0 0) Prerequisite: 2373. Arranging for choirs of men's, women's and mixed voices of all ages and musical abilities. Includes arranging piano accompaniments. Fall of even years. Course fee $5.

MUSI 3267 20th-Century Analysis. (2 2,0 0) Prerequisite: 2373. Analytical methods that have been created to explain the pitch content of music of this century. Fall of even years. Course fee $5.

MUSI 3268 Band Arranging. (2 2,0 0) Prerequisite: 2373. Transcribing and arranging for various concert bands. Emphasis on writing for junior and senior high school bands and others. Spring of even years. Course fee $5.

MUSI 3269 Advanced Ear Training. (2 2,0 0) Prerequisite: 2373. Development of additional skills in reading music: sight reading, dictation, and critical listening of tonal and atonal melodies and harmonies. Emphasis on transposing by reading clefs. Spring of even years. Course fee $5.

MUSI 3270 16th-Century Counterpoint. (2 2,0 0) Prerequisite: 2373. Analysis and composition of contrapuntal music in vocal style of the late 16th century. Spring of odd years. Course fee $5.

MUSI 3271 Music in Therapy I. (2 2,0 0) Prerequisite: 2371, 2172, 2173. Functions of the music therapist with emphasis on use of music in specific therapeutic environments: hospitals, institutions and special education. Related literature will be reviewed. Concurrent enrollment in 3175 expected. Fall of odd years.

MUSI 3272 Music in Therapy II. (2 2,0 0) Prerequisite: 2371, 2172, 2173. Continuation of 3278. Concurrent enrollment in 3176 expected. Spring of even years.

MUSI 3280 Keyboard Skills for Today's Church Music. (2 2,0 0) Prerequisite: 1181, 1182, 2181, 2182 or consent of instructor.
Developing necessary piano skills in leading a choir and band using various sacred music literature (hymns, anthems and contemporary Christian music). May be repeated once for credit. Fall.

MUSI 3321 General Music for Children. (3 0 0) Fundamental music concepts and skills to meet minimal Texas Essential Knowledge and Skills (TEKS) music standards for elementary teacher certification. Music majors may not receive credit for this course. Fall, spring, summer I; and online. Course fee $5.


MUSI 3347 Music History from Antiquity to 1750. (3 3 0) Prerequisite: 1208, 1209 and 2373. Chronological study of musical styles, genres, performance practices, and composers of Medieval, Renaissance and Baroque music, including an introduction to world music cultures. Fall; online.

MUSI 3349 Music History from 1750 to Present. (3 3 0) Prerequisite: 1208, 1209 and 2373. Chronological study of musical styles, genres, performance practices and composers of Classic, Romantic and 20th-century music. Spring; online.

MUSI 3380 Survey of Music Business. (3 3 0) Prerequisite: 2372. Survey of the music industry: merchandising, manufacturing, purchasing, recording, performance management and promotion. (Required of music business majors; recommended for music performance majors.) Spring of even years.

MUSI 3381 Seminar in Music Business. (3 3 0) Prerequisite: 3380. In-depth study of various areas of the music industry utilizing a series of guest lecturers. Spring of odd years. Course fee $100.

MUSI 4095 Individual Problems. (1-3 0 0) Introduction to elementary teacher certification. Music majors may not receive credit for this course. Fall, spring, summer I; and online. Course fee $5.

MUSI 4211 Symphonic Literature. (2 2 0 0) Prerequisite: 2372. Survey course examining major categories of symphonic literature. Fall of even years. Course fee $5.

MUSI 4212 Song Literature. (2 2 0 0) Prerequisite: four semesters of APM 100. Survey course examining major categories of solo vocal literature. Fall of odd years/web-based. Course fee $5.

MUSI 4213 Chamber Music Literature. (2 2 0 0) Prerequisite: 2372. Survey of music written for small instrumental ensembles with emphasis on the string quartet. Fall of odd years. Course fee $5.

MUSI 4242 Elementary Piano Pedagogy. (2 2 0 0) Introduction to teaching beginning piano students of all ages. Course is the first part of the two-semester pedagogy curriculum that prepares students to become knowledgeable, professional independent music teachers. Topics include elementary teaching repertoire, method series and developing early technique. Fall of odd years. Course fee $5.

MUSI 4243 Intermediate/Advanced Piano Pedagogy. (2 2 0 0) Sequel to 4242. Examination of intermediate to early advanced teaching repertoire along with topics in teaching strategies, assessments, diagnostic skills and feedback. Spring of even years. Course fee $5.

MUSI 4250 Piano Pedagogy Practicum. (2 2 0 0) Prerequisite: 4242 and 4243 or consent of instructor. Course provides qualified and interested students with teaching experience under faculty supervision. Students will have the opportunity to gain teaching skills through three main means: (1) observing teaching sessions of the supervising faculty member, (2) devising and executing effective lesson plans, and (3) various evaluation methods. Fall, spring.

MUSI 4252 Piano Literature I. (2 2 0 0) Prerequisite: 2372 or consent of instructor. Survey of music written for piano from its beginning to late 19th century with consideration for early keyboard music and early keyboard instruments preceding the piano. May be repeated as topic varies. Fall of even years. Course fee $5.

MUSI 4253 Piano Literature II. (2 2 0 0) Prerequisite: 2372 or consent of instructor. Continuation of 4252 surveys literature for the piano from the late romantic period to the present. Spring of odd years.

MUSI 4262 Techniques for the Singing Actor. (2 2 0 0) Systematic approach to development of skills for the singing actor. Includes study and preparation of character, style and movement using arias and scenes from the musical stage. Spring of even years.

MUSI 4276 Psychological Foundations of Music I. (2 2 0 0) Prerequisite: 3278. Acoustical and psychological aspects of music with emphasis on problems of perception, experimental aesthetics, musical function, measurement and diagnosis of music ability. Spring of even years. Course fee $5.

MUSI 4277 Psychological Foundations of Music II. (2 2 0 0) Prerequisite: 4276. Continuation of 4276. Fall of even years. Course fee $5.

MUSI 4312 Vocal Pedagogy. (3 3 0) Prerequisite: all APM courses. Physical aspects of the vocal mechanism and survey of various voice pedagogies from the 17th century to present. Fall of even years. Course fee $6.

MUSI 4326 Elementary Music Methods. (3 3 0) Prerequisite: all APM courses. Singing, games and musical activities based on folk melodies and folk-like music. Listening, singing, rhythmic response and the playing of instruments. Emphasis on classroom management, discipline and motivational strategies. Fall. Course fee $5.

MUSI 4327 Instrumental Methods. (3 3 0) Prerequisite: all APM courses. Music methods and practical experiences for the teaching of instrumental music in the schools. Emphasis on classroom management, discipline and motivational strategies. Spring. Course fee $5.

MUSI 4378 Influence of Music on Behavior. (3 3 0) Prerequisite: 4276, 4277. Introduction to the field of research as related to music therapy and music education. Overview of various methods of inquiry, including statistical concepts and standardized test. Spring of odd years.

MUSI 4393 Honors. (3 0 0) Prerequisite: 15 hours of honor courses. Students will write a 10-page research paper documenting their senior recital. The manuscript, directed by an honors faculty member, will be catalogued and maintained in the library.

MUSI 4398 Internship in Music Therapy. (3 0 0) Prerequisite: all course work required for a B.M. degree in music therapy. Six-month internship in an approved music therapy program under the direction of a board-certified music therapist (MT-BC). Fall, spring.

MUSI 4698 Internship in Music Business. (6 0 0) Prerequisite: all course work required for B.M. degree in music business. Six-month internship working full time in an approved professional position in music industry. Fall, spring.

MUSI 5211 Symphonic Literature. (2 2 0 0) Prerequisite: 2372. Advanced survey examining major categories of symphonic literature. Fall of even years. Course fee $5.

MUSI 5212 Song Literature. (2 2 0 0) Prerequisite: 4272 and 4273. Survey course examining major categories of solo vocal literature. Fall of odd years/web-based. Course fee $5.
MUSI 5242 Elementary Piano Pedagogy. (2 2,0 0) Introduction to teaching beginning piano students of all ages. Course is the first part of the two-semester piano pedagogy curriculum that prepares students to become knowledgeable, professional independent music teachers. Topics include elementary teaching repertoire, method series and developing early technique. Fall of odd years. Course fee $5.

MUSI 5243 Intermediate/Advanced Piano Pedagogy. (2 2,0 0) Sequel to 5242. Examination of intermediate to early advanced teaching repertoire along with topics in teaching strategies, assessments, diagnostic skills and feedback. Spring of even years. Course fee $5.

MUSI 5250 Piano Pedagogy Practicum. (2 2 0) Prerequisite: 5242 and 5243 or consent of instructor. Course provides qualified and interested students with teaching experience under faculty supervision. Students will have the opportunity to gain teaching skills through three main means: (1) observing teaching sessions of the supervising faculty member, (2) devising and executing effective lesson plans, and (3) various evaluation methods. Fall.

MUSI 5252 Piano Literature. (2 2,0 0) Prerequisite: 2372 or consent of instructor. Survey of music written for piano from its beginning to the late 19th century with consideration for early keyboard music and instruments preceding the piano. May be repeated as topic varies. Fall. Course fee $5.

MUSI 5253 Piano Literature II. (2 2 0) Prerequisite: 2373 or consent of instructor. Continuation of 5252 surveys literature for the piano from the late romantic period to the present. Spring of odd years.

MUSI 5262 Techniques for the Singing Actor. (2 0 0) Systematic approach to skill development for the singing actor. Study and preparation of character, style and movement using arias and scenes from the musical stage. Spring of even years.

MUSI 5280 Keyboard Skills for Today’s Church Music. (2 2,0 0) Prerequisite: 1181, 1182, 2181, 2182 or consent of instructor. Developing necessary piano skills in leading a choir and band using various sacred music literature (hymns, anthems and contemporary Christian music). May be repeated once for credit. Fall.

MUSI 5312 Vocal Pedagogy. (3 3 0) Physical aspects of the vocal mechanism and survey of various pedagogies from the 17th century to present. Fall of even years.

MUSI 5320 Special Topics. (1-3 0-3 0-6) Prerequisite: consent of instructor. Topics in areas of special interest. May be repeated for credit when topics change.

MUSI 5695 Graduate Problems. (1-3 0 0) Advanced exploration and research in the student’s major area. May be repeated for credit up to a maximum of six hours.

MUSI 6203 Graduate Recital. (2 0 0) Presentation of a recital representing culmination of student’s graduate study in music. Enrollment limited to the semester in which the recital is scheduled which should coincide with final enrollment in applied music.

MUSI 6205 Introduction to Graduate Study. (2 2 0) Inquiry into the aims, scope and methods of music research. General areas appropriate to graduate research in music and some specific problems encountered in each. Technique of locating source materials. Collection, tabulation, analysis and interpretations of data. Fall. Course fee $5.

MUSI 6215 Seminar in Instrumental Music. (2 2 0) Advanced rehearsal techniques for band and/or orchestra: instrumental routines and pedagogy; contemporary solutions to rehearsal problems; organization, administration and classroom management. May be repeated for credit when topics vary. Summer I. Course fee $5.

MUSI 6216 Seminar in Choral Music. (2 2 0) Advanced rehearsal techniques for choir: pedagogy and voice building; contemporary solutions to rehearsal problems; administration, organization and classroom management. May be repeated for credit when topics vary. Summer I. Course fee $5.

MUSI 6221 Wind Instrument Literature. (2 2 0) Analysis and evaluation for educational use of published materials for wind instrument solo, ensemble and band. Summer I once every three years. Course fee $5.

MUSI 6223 Score Study and Preparation. (2 2 0) Score analysis, transposition, ear training and rehearsal procedures. Summer I once every three years. Course fee $5.

MUSI 6224 Advanced Instrumental Conducting. (2 2 0) Prerequisite: 3207 or consent of instructor. Practical training for students who have had considerable study and experience. Score reading, interpretation, and baton technique. Summer I once every three years. Course fee $5.

MUSI 6241 Research Seminar in Music. (2 2,0 0) Prerequisite: 6205. Definition and systematic research of a problem in music. Student may, with approval of instructor, choose a problem in the student's special field of interest. Summer I. Course fee $5.

MUSI 6255 Band Directors Workshop. (2 2,0 0) Offered only during WTAMU Band Camp. Instrumental clinics, performance in directors band and band topics presented by band camp faculty. May be repeated twice for credit. Summer II. Course fee $5.

MUSI 6281 Advanced Music Theory. (2 2 0) Prerequisite: 2372. One topic will be studied during each semester of offering: 20th century styles and idioms, basic theory pedagogy, contemporary thought in music theory, advanced instrumental arranging. May be repeated for credit when topics vary. Fall, summer II. Course fee $5.

MUSI 6301 Thesis. (3 0 0) Spring.

MUSI 6302 Thesis. (3 0 0) Summer I.

MUSI 6312 Advanced Music History. (3 3 0) Prerequisite: 3347 and 3349 or consent of instructor. Stylistic analysis of representative works and consideration of historical trends. One topic studied each semester of offering: (1) Renaissance, (2) Baroque Era, (3) Classical Era, (4) Romantic Era, (5) 20th Century, (6) Middle Ages, (7) Opera, (8) Music in America, (9) Music of Non-Western cultures. May be repeated for credit when topics vary. Spring, summer I. Course fee $5.
NSCI—Natural Sciences
(Offered through the Department of Mathematics, Chemistry and Physics and the Department of Life, Earth and Environmental Sciences)

NSCI 2371 Integrated Science: Earth Science. (3 2 2)
Prerequisite: 1371 and 1372. Concepts and activities in natural sciences for elementary school curriculum with emphasis on earth science; structures and systems, energy transformations, changes over time, interactions and scientific world view. Fall, spring. Course fee $15.

NSCI 2372 Integrated Science: Biology. (3 2 2) Prerequisite: 1371 and 1372. Concepts and activities in natural sciences for elementary school curriculum with emphasis on biology; structures and systems, energy transformations, changes over time, interactions and scientific world view. Fall, spring. Course fee $15. NSCI 4371 The Process of Science. (3 3 0) Meaning, method development and implications of science in historical context as revealed in lives and works of major scientist.

NURS—Nursing
(Offered through the Department of Nursing)

NURS 2250 Nursing Skills and Safety. (2 1 2) Prerequisite: BIOL 2401, SOCI 1301. Pre-professional nursing course in which the LVN/LPN student demonstrates knowledge and nursing skills required for therapeutic communication and intervention with individuals and families from diverse cultures, in a variety of settings and across the lifespan. Course fee $25.

NURS 2330 Health Promotion. (3 3 0) Prerequisite: permission of instructor for non-nursing majors. Explores fundamental conditions and resources for health, such as education, nutrition, physical activity, stress management, shelter, a stable ecosystem, peace and social justice with respect to self-care and the care of others. Includes health promotion with regard to wellness, acute illness and chronic illness across the lifespan.

NURS 2350 Introduction to Nursing Skills. (3 2 2) Prerequisite: BIOL 2401, SOCI 1301. Pre-nursing course providing an introduction to knowledge required for therapeutic communication and non-invasive nursing skills with individuals and families from diverse cultures in a variety of settings and across the lifespan. Course fee $75.

NURS 3094 Directed Studies. (1-6 0 0) Topic and mode of study are agreed upon by student and faculty.

NURS 3125 Transition to Professional Nursing. (3 3 0) Prerequisite: accelerated program acceptance, completion of core requirements. Focus on assuming the professional nursing role and its application in practice. Discussions include transition to the role of the registered nurse. Overview of nursing and the role of the professional nurse as a provider of care, coordinator of care and member of a profession. Winter intersession.

NURS 3290 Geriatric Health. (2 2 0). Interprofessional approach of physical, psychosocial, environmental and spiritual complexities of caring for the geriatric aggregate. Evidence-based practices will be discussed to maximize older adult's maintenance of health and well-being. Provides educational foundation needed to provide high-quality care to older adults.

NURS 3304 Elementary Biostatistics in Health-Care Research. (3 3 0) Prerequisite: MATH 1314 or 1324 or 1332, NURS 2472 or consent of instructor. Emphasis on basic descriptive and inferential methods used in health sciences.

NURS 3306 Concepts of Emergency Nursing. (3 2 2) Prerequisite: 2472, 2374, 2375. Elective focuses on individuals and families experiencing emergency situations of physiological or psychological origin. Emphasis on adaptation theory and use of the nursing process. Course fee $20.

NURS 3310 Applications to Nursing: Pathophysiology. (3 3 0) Prerequisite: BIOL 2401, 2402, 2572, 2420, or departmental consent. Physiologic responses of all ages and diverse cultures will be studied as these individuals adapt to cardiovascular, dermatologic, endocrine, gastrointestinal, genetic genitourinary, hematologic, hepatic, immunologic, infections, musculoskeletal, neuro-sensory, oncologic, respiratory, and renal diseases or conditions. Cellular responses to disease and focused upon to enhance their understanding of nursing decisions.

NURS 3325 Integration into Professional Nursing. (3 3 0) Prerequisite: RN licensure. Discussion of philosophical, theoretical and historical perspectives in the practice of professional nursing. Students will identify their desired individual areas of professional nursing practice and directions for B.S.N. study. To be taken in first semester of B.S.N./M.S.N. course work.

NURS 3330 Health Assessment. (3 2 3) Prerequisite: admission to Nursing Program, all freshman- and sophomore-level courses. Nursing health assessment of individuals throughout the life span as it relates to environmental, physical, psychological, socioeconomic, behavioral and spiritual integrity. Fall, spring. Course fee $40.

NURS 3335 Health Assessment and Clinical Reasoning. (3 1 6) Prerequisite: RN licensure. Gordon's Functional Health Patterns, along with various screening and data-gathering tools, will be used to collect and organize patient information. Students will develop clinical reasoning skills by utilizing patient information to formulate nursing diagnoses and interventions. Course fee $25.

NURS 3340 Pharmacology for Nursing Practice. (3 2 3) Prerequisite: all sophomore-level nursing courses. Nursing knowledge and psychomotor skills required for administering medications in a safe and effective manner across the lifespan. Concepts stressed will be pharmacology, pharmacokinetics, pharmacotherapeutics and pharmacodynamics. Course fee $40.

NURS 3345 Pharmacotherapeutics Applied to Pathophysiology. (3 3 0) Prerequisite: RN licensure. Effects of pharmacotherapeutics in relation to major pathophysiologies/psychopathologies across the life span. Includes nursing knowledge of pharmacokinetics/dynamics/genetics for quality patient care, as well as food/drug, drug/drug interactions and the requisite patient teaching.

NURS 3355 Cultural Competence for Health Promotion. (3 3 0) Prerequisite: RN licensure. Improvement of cultural competence for RNs in providing quality care to diverse patient populations. Various cultures (with particular emphasis on local/rural cultures) are studied as to their health-care beliefs and practices regarding health promotion. Healthy People 2010 will be used as the framework of study.

NURS 3360 Research in Nursing. (3 3 0) Prerequisite: 2472 or consent of instructor. Introduction to the research process as related to nursing. Course fee $30.

NURS 3365 Health Assessment for Professional Nurses. (3 3 0) Prerequisite: 2250, 3125, 3290, 3320, 3340, 3550. Nursing health assessment of individuals throughout the life span as it relates to their environmental, physical, psychological, socioeconomic, behavioral and spiritual integrity. Spring.

NURS 3341 Professional Nursing III: Adult/Gerian Acute Care and Mental Health. (4 4 0) Prerequisite: BIOL 2420/2420L or 2572, NURS 2374, 2471, 2472. Nursing knowledge required for care of adults and gerians with physical and mental conditions necessitating acute
care. Focus on role of the nurse as provider, designer and coordinator of care. Course fee $50.

NURS 3440 Clinical Internship I. (4 0 12) Prerequisite: accelerated program acceptance. Patient care delivery allowing students to apply knowledge and skills learned online in real-world setting. Clinical emphasis on integration of nursing knowledge to care for clients. Nursing process application, emphasis on critical thinking, therapeutic nursing interventions, and effective communication with patients in medical-surgical, maternal, child and infant-care settings. Spring. Course fee $75.

NURS 3451 Professional Nursing IV: Maternal Child Acute Care and Mental Health. (4 4 0) Prerequisite: 3431, 3532. Nursing knowledge required for prenatal care and care of children in acute and mental-health settings. Focus on role of the nurse as provider, designer and coordinator of care for women, infants and children in a variety of health-care settings. Spring.

NURS 3465 Women's and Children's Health. (4 4 0) Prerequisite: accelerated program acceptance, 3310, 3365. Focus on nursing knowledge required for providing, designing, and coordinating care for women, infants and children in a variety of health-care settings. Spring.

NURS 3470 Adult Health Care I. (4 0 4) Prerequisite: accelerated program acceptance. Nursing knowledge required to provide care for adults in a variety of health-care settings. Spring.

NURS 3532 Professional Practice III: Adult/Gerian Acute Care and Mental Health. (5 0 15) Prerequisite: 2374, 2471, 2472. Applies concepts from NURS 3431 to clinical practice. Students provide nursing care for adults and gerians with physiologic and mental-health conditions in acute-care settings. Focus on role of the nurse as provider, designer and coordinator of care in an acute-care clinical setting. Course fee $60.

NURS 3552 Nursing Concepts and Competencies. (5 3 6) Prerequisite: all freshman- and sophomore-level courses. Nursing knowledge required for use of basic nursing concepts and competencies utilized in a variety of settings for a culturally diverse population. Course fee $40.

NURS 3552 Professional Practice IV: Maternal Child Acute Care and Mental Health. (5 0 15) Prerequisite: 3431, 3532. Applies concepts from NURS 3451 to clinical practice. Students provide nursing care to child-bearing women, infants, children and adolescents in acute-care and mental-health facilities. Focus on role of the nurse as provider, designer and coordinator of care in an acute care clinical setting. Course fee $40.

NURS 3570 Health of Women and Children. (5 3 6) Focus on nursing knowledge required for providing, designing, and coordinating care for women, infants and children in a variety of health-care settings. Course fee $50.

NURS 3580 Adult Health I. (3 0 9) Prerequisite: 2250, 3310, 3330, 3340, 3550. Nursing knowledge required to provide care for adults in a variety of health-care settings. Fall, spring. Course fee $50.

NURS 4131 Evidence-Based Practice Seminar. (1 1 0) Prerequisite: 4350, 4530, 4540. Development and implementation of a group capstone presentation related to current health-care issues and trends utilizing evidence-based concepts of nursing practice.

NURS 4145 Evidence-Based Capstone Seminar. (1 1 0) Prerequisite: accelerated program acceptance. Development and implementation of a group capstone presentation related to current health-care issues and trends, utilizing evidence-based concepts of nursing practice. Winter intersession.

NURS 4321 Professional Nursing with Groups/Populations. (3 3 0) Prerequisite: 3431, 3451, 3532, 3552. Nursing knowledge required for providing, designing, managing and coordinating community-based care for groups, populations and communities. Incorporates concepts of public and community health.

NURS 4322 Professional Practice with Groups/Populations. (3 0 9) Prerequisite: 3431, 3451, 3532, 3552. Concurrent enrollment in 4321. Applies concepts from NURS 4321 in the community setting. Nursing practice with groups, communities and populations. Utilizes concepts of public and community health in clinical practice. Focus on role of the nurse as provider, designer/coordinator and manager of care and as a member of the profession. Course fee $55.

NURS 4325 Leadership and Management in Professional Nursing. (3 3 0) Prerequisite: accelerated program acceptance. Emphasizes role of the professional nurse as leader and manager of nursing care. Integrates application of previously acquired knowledge and skill with concepts of leadership and management in health-care delivery. Course will include development and implementation of a group capstone presentation related to current health-care issues and trends utilizing evidence-based concepts of nursing practice. Fall.

NURS 4330 Professional Nursing Preparation. (3 0 9) Prerequisite: accelerated program acceptance. Emphasis on scope of professional nursing practice and nursing jurisprudence. Prepares students for entry into practice. Students must pass a comprehensive, standardized examination to pass this course and to meet requirements for graduation. Winter intersession. Course fee $75.

NURS 4331 Professional Nursing in Complex Situations. (3 0 9) Prerequisite: 3431, 3451, 3532, 3552. Nursing knowledge required for care of patients across the life span requiring complex nursing care, including concepts of families in crisis. Focus on role of the nurse as provider, designer, coordinator of care, and develops role of the manager of care.

NURS 4332 Professional Practice in Complex Situations. (3 0 9) Prerequisite: 3431, 3451, 3532, 3552. Applies concepts from NURS 4331 to clinical practice. Students provide nursing care for patients across the life span requiring highly technological and other complex care. Focus on role of the nurse as provider, designer, coordinator of complex and novice manager of care in critical care and other settings. Course fee $55.

NURS 4335 Issues in Health-Care Delivery. (3 0 9) Prerequisite: RN licensure. Decision making for ethical issues are examined, as well as legal, social, economic and political policies surrounding the current health-care delivery system.

NURS 4340 Clinical Internship II. (3 0 9) Prerequisite: accelerated program acceptance. Use of critical thinking, therapeutic nursing interventions and communication skills in promoting quality of life for persons with complex health needs. Application of nursing roles in diverse settings. Summer I, II. Course fee $75.

NURS 4341 Leadership and Management in Professional Nursing Practice. (3 3 0) Prerequisite: 4321, 4322, 4331, 4332. Must be taken with NURS 4693. Emphasizes role of the professional nurse as leader and manager of nursing care. Integrates application of previously acquired knowledge and skill with concepts of leadership and management in health-care delivery.

NURS 4345 Professional Nursing Leadership/Management. (3 3 0) Prerequisite: all junior-level nursing courses and RN licensure. Management skills and the art of leadership are addressed and include organizational culture, tools for change, conflict management, multidisciplinary collaboration, scheduling/staffing and legal liability, as well as other principles of leadership/management.
### Course Descriptions

**NURS 4350 Behavioral Health Nursing.** (3 2 3) Prerequisite: all 3000-level nursing courses. Focus on nursing care of individuals and families with behavioral disorders including severe and persistent mental illness in community and acute care settings.

**NURS 4351 Preparation for Professional Nursing Practice.** (3 3 0) Prerequisite: 4321, 4322, 4331, 4332. Emphasis on scope of professional nursing practice and nursing jurisprudence, and the Texas Nursing Practice Act. This course focuses on preparing students for entry into practice. Students must pass a comprehensive, standardized examination to pass this course and to meet requirements for graduation. Core competencies emphasized in this course are critical thinking and professionalism. The role competency emphasized in this course is member of a profession.

**NURS 4365 Practice of Professional Nursing.** (3 0 9) Prerequisite: RN licensure. Capstone course in which all concepts learned throughout the program are applied in a clinical setting of the student’s choice. Students will synthesize knowledge from prior courses. To be taken in last semester of B.S.N. course work. Course fee $25.

**NURS 4375 Behavioral Health Nursing.** (3 3 0) Prerequisite: accelerated program (LVN only). Focus on nursing care of individuals and families with behavioral disorders, including severe and persistent mental illness in community and acute care settings. May intersession.

**NURS 4379 Honors.** (3 0 0) Advanced nursing experiences for the self-directed student with a GPA over 3.0. Course content will be negotiable by student and selected faculty.

**NURS 4440 Clinical Internship III.** (4 0 12) Prerequisite: accelerated program acceptance. Clinical nursing practice in the community and acute-care settings designed to improve delivery of patient care by allowing students to apply knowledge learned online in a real-world setting. Students will focus on roles of the nurse as provider, designer and manager of care for individuals, families and groups of patients. Fall. Course fee $75.

**NURS 4465 Population-Focused Nursing Practice.** (4 4 0) Prerequisite: accelerated program acceptance. Focus on nursing knowledge required for providing, designing, managing and coordinating community-based care for individuals, families, populations and communities. Fall.

**NURS 4470 Adult Health II.** (4 4 0) Prerequisite: accelerated program only. Nursing knowledge required to provide care for adults and families requiring complex nursing care, including concepts of families in crisis in a variety of health-care settings. Summer I, summer II.

**NURS 4530 Population-Focused Nursing Practice.** (5 3 6) Prerequisite: all 3000-level nursing courses. Focus on nursing knowledge required for providing, designing, managing and coordinating community-based care for individuals, families, populations and communities. Utilizes concepts of population-focused and community nursing in clinical practice. Course fee $40.

**NURS 4540 Adult Health II.** (5 3 6) Prerequisite: all 3000-level nursing courses. Nursing knowledge required to provide care for adults and families requiring complex nursing care, including concepts of families in crisis in a variety of health-care settings. Fall, spring. Course fee $50.

**NURS 4625 Nursing Decisions for Populations.** (6 3 9) Prerequisite: RN licensure. Epidemiological, community health and public-health concepts are presented as they relate to groups and populations. Health-related issues for rural, local populations are emphasized. Healthy People 2010 will be used as the basis for materials presented. Course fee $25.

**NURS 4693 Clinical Internship for Professional Nursing Practice.** (6 0 18) Prerequisite: 4321, 4322, 4331, 4332. Clinical practice experience in selected health-care settings and simulations laboratories. Emphasis on acute-care settings. Focus on role of the nurse as provider, designer and manager of care for individuals, families and groups of patients. Course fee $60.

**NURS 6094 Directed Studies.** (1-6 0 0) Topic and mode of study are agreed on by student and faculty.

**NURS 6120 Research Utilization Project.** (1 1 0) Prerequisite/Co-requisite: all courses in degree program. A guided exploration of current literature in preparation for development and implementation of a research project. Students will select a topic of study relevant to their area of clinical practice experience. Once a topic is selected, students will develop and implement an evidence-based research project. This course is required for all non-thesis students.

**NURS 6301 Thesis.** (3 0 0).

**NURS 6302 Thesis.** (3 0 0) Student will complete a research study. Enrollment must be repeated until research is completed.

**NURS 6303 Theories for Nursing.** (3 3 0) Introduces theoretical foundations for scholarly inquiry about nursing's unique knowledge base. Emphasis on ability to critique, evaluate and utilize appropriate theory from both nursing and related disciplines. Skill development in written and oral communication will be emphasized.

**NURS 6306 Advanced Analysis of Issues in Nursing.** (3 3 0) Prerequisite: 6303, 6317, 6318. Forum for students to analyze significant health-care issues impacting nursing, the individual, and the family in both rural and urban communities.

**NURS 6307 Nursing Administration in Health-Care Organizations.** (3 3 0) Introduction to theories, concepts, techniques, functions and methods of management as they relate to health-care administration, with an emphasis on nursing administration. Issues and trends affecting planning and organizational processes in health-care administration are explored. Organizational theory and behavior will be emphasized.

**NURS 6308 Leadership and Resource Management in Nursing.** (3 3 0) Nurse executive role in financial and information management, strategic planning and marketing, management of human resources, quality assurance and risk management initiatives for health-care organizations. Conflict resolution, negotiation strategies and the decision-making process are explored.

**NURS 6309 Practicum in Administration.** (3 0 0) Prerequisite: 6308 or concurrent enrollment. Participant observation in administrative process in clinical settings; independent study of a selected aspect of patient care, staff development and/or delivery of health care. Evaluation of supervisory practices.

**NURS 6312 Evaluation in Nursing Education and Practice.** (3 3 0) Evaluation models appropriate for didactic and clinical settings—both faculty and student performance. Models for curriculum evaluation and faculty role related to implementation of a program evaluation plan. Spring.

**NURS 6313 Evidence-Based Nursing Education.** (3 3 0) Emphasis on theories, methods and systems applied to evidence-based curriculum and instructional design in nursing education. Links nursing education to nursing research, practice and knowledge development. Fall.

**NURS 6315 Advanced Assessment for Nurse Practitioners.** (3 2 2) Systematic assessment of clients in the primary health-care system. Required for advanced practice role specialization.
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**NURS 6316** Issues: Nurse Practitioner Role Development. (3 3 0) Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Forum for nurse practitioner students to analyze issues that are operative in development of the advanced practice-family nurse practitioner role.

**NURS 6317** Nursing Research. (3 3 0) Prerequisite/Co-requisite: 6303. Detailed study of methods and techniques of the research process. Includes critical evaluation of published research. Provides the opportunity to gain proficiency in problem identification within the clinical practice setting, awareness of practice outcomes and the clinical application of research as evidence-based nursing practice.

**NURS 6318** Nursing Populations and Settings. (3 3 0) Prerequisite: 6303. Health promotion, illness prevention and maintenance of function across the health-illness continuum will be emphasized. Students will use principles of epidemiology, public health and computer-generated data sets to analyze, implement and evaluate nursing strategies addressing global health.

**NURS 6320** Pathophysiology. (3 3 0) Scientific concepts of the disease processes and human responses to illness.

**NURS 6321** Student Engagement in Nursing Education. (3 3 0) Prerequisite: permission of instructor. Focus on professional development of the nurse educator, as well as theoretical frameworks for best practices in nursing education. Specifically, the philosophical approach of Parker Palmer will be explored.

**NURS 6322** Bioethics. (3 3 0) Prerequisite: permission of instructor. Focus on ethical decision making specific to health care. Case studies will be analyzed.

**NURS 6384** Pharmacotherapeutics. (3 3 0) Drug indication and prescription, therapeutic administration and surveillance will be emphasized from a pharmacotherapeutic perspective.

**NURS 6399** Practicum in Teaching of Nursing. (3 0 0) Prerequisite or co-requisite: 6312. Observation, participation and practice in teaching nursing using evidence-based instructional design. Seminars enable students to discuss issues related to teaching strategies and evaluation of nursing students in the didactic, clinical and laboratory settings. Course fee $25.

**NURS 6490** Capstone Clinical Practicum for Family Nurse Practitioners. (4 0 0) Prerequisite: 6611, 6712, 6713. Guided practice with a qualified preceptor in the role of family nurse practitioner in a clinical setting of the student’s choice. Focus on health maintenance and promotion and health restoration of chronic conditions and minor illness. Weekly clinical conferences will provide students with a forum to discuss issues related to clinical practice and gain information related to the business aspects of clinical practice. 180 practicum hours. Course fee $50.

**NURS 6611** Primary Health Care Across the Lifespan I. (6 3 9) Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Focus on management of acute and chronic conditions found in primary health-care settings. Topics include dermatology, HEENT, pulmonology, immunology and hematology across the lifespan. Clinical practicum 135 hours. Summer. Course fee $60.

**NURS 6712** Primary Health Care Across the Lifespan II. (7 3 12) Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Focus on management of acute and chronic conditions found in primary health-care settings. Topics include cardiology, gastroenterology, urology and reproductive processes across the lifespan. Clinical practicum 180 hours. Fall. Course fee $60.

**NURS 6713** Primary Health Care Across the Lifespan III. (7 3 12) Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Focus on management of acute and chronic conditions found in primary health-care settings. Topics include endocrinology, neurology, musculoskeletal and psychiatric processes across the lifespan. Clinical practicum 180 hours. Spring. Course fee $60.

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**PHED—Physical Education**

(Offered through the Department of Sports and Exercise Sciences.)

**PHED 1101** Group Exercise. (1 0 2) Introduction to various group exercise formats and styles of choreography. Overview of general guidelines for aerobic programs and instruction, as well as personal fitness. Course fee $12.

**PHED 1102** Bowling. (1 0 2) History, rules and fundamentals to develop recreational skills in bowling.

**PHED 1106** Golf. (1 0 2) History, rules and fundamentals to develop recreational skills in golf.

**PHED 1109** Karate. (1 0 2) Development of basic skills of self-defense as related to the sport of Karate. Course fee $30.

**PHED 1110** Advanced Karate. (1 0 2) Prerequisite: 1109 or permission of instructor. Further development of skills of self-defense in the sport of Karate.

**PHED 1111** Lifetime Wellness. (1 1 1) Overview of the seven dimensions of wellness and lifestyle management across the life span. Strategies for responsible decision-making related to health care, physical well-being, stress management, sexual health and safety. Specific activities appropriate to fulfillment of objectives will be included.

**PHED 1115** Racquetball. (1 0 2) History, rules and fundamentals to develop recreational skills in racquetball.

**PHED 1116** Recreational Activities. (1 0 2) Seasonal recreational activities.

**PHED 1117** Recreational Softball. (1 0 2) History, rules and fundamentals to develop recreational skills in softball.

**PHED 1118** Recreational Basketball. (1 0 2) History, rules and fundamentals to develop recreational skills in basketball.

**PHED 1119** Recreational Volleyball. (1 0 2) History, rules and fundamentals to develop recreational skills in volleyball.

**PHED 1127** Tennis. (1 0 2) History, rules and fundamentals to develop recreational skills in tennis.

**PHED 1129** Varsity Athletics. (1 0 2) Varsity intercollegiate participation. Must be currently active in either a (1) NCAA sport, (2) spirit squad, including cheerleaders, or (3) student athletic trainers. May count once toward degree requirement.

**PHED 1130** Walking for Fitness and Fun. (1 0 2) Designed to examine fitness walking (the most popular form of exercise in America) as an activity to improve health and fitness. Adopting exercise (walking) into a lifetime.

**PHED 1135** Weight Training. (1 0 2) History and fundamentals of scientific weight training.

**PHED 1178** Horsemanship. (1 0 2) Review of fundamental horse safety and horsemanship to include handling, grooming, equipping, riding western and English, and the relationship of riding to physical and mental well-being. May be repeated for credit with instructor approval for a maximum of five credit hours. Same as ANSC 1178. Course fee $65.

**PHED 1274** Western Horsemanship. (2 0 4) Prerequisite: ANSC/PHED 1178 or consent of instructor. Development of balanced seat, hands and posture at natural gaits of the horse. Emphasis on control of the horse through primary and secondary aids. Welfare and communication considerations for effective horse-human relationships. Relationship of riding to physical and mental well-being. Same as ANSC 1274. Course fee $80.
PHED 1275 English Riding and Jumping I. (2 0 4) Prerequisite: 1178 or consent of instructor. Introduction to principles of forward seat riding with emphasis on control and use of primary and secondary aids. Use of cavalletti and introduction to jumping. Safety considerations for jumping. Same as ANSC 1275. Course fee $80.

PHIL—Philosophy
(Offered through the Department of English, Philosophy and Modern Languages.)

PHIL 1301 Introduction to Philosophy. (3 3 0) Introduction to the problems and methods of philosophical inquiry. Fall, spring.

PHIL 2303 Logic. (3 3 0) Introduction to logic emphasizing analysis, construction and critique of arguments. Spring.

PHIL 2374 Ethics. (3 3 0) Introduction to theories, problems and methods of traditional and contemporary philosophical ethics. Fall.

PHIL 3094 Individual Study. (1-3 0 0) Prerequisite: junior standing and consent of department head. Individual study designed to meet needs and interests of the student.

PHIL 3301 Ancient Philosophy. (3 3 0) History of the philosophical inquiry in the ancient period.

PHIL 3302 Modern Philosophy. (3 3 0) History of philosophical inquiry from the 17th to 19th centuries. Fall.

PHIL 3303 Metaphysics. (3 3 0) Prerequisite: 1301 or 2301. Systematic study of the fundamental categories of reality, such as existence, substance, property, identity, space, time, change, event, causality, necessity, essence, free will and mind. Philosophical issues in which these categories play a part will also be discussed. Fall.

PHIL 3392 Special Topics. (3 3 0) Prerequisite: three hours of philosophy or permission of instructor. Treatment of one or more specific topics in the history of philosophy. May be repeated once for credit when topic varies. Same as ENGL 3392.

PHIL 4302 Major Figures in Philosophy. (3 3 0) Prerequisite: three credit hours of philosophy or permission of instructor. Focus on individual philosophers. May be repeated once when topics vary. Spring.

PHYS—Physics
(Offered through the Department of Mathematics, Chemistry and Physics.)

PHYS 1401 General Physics I. (4 3 2) Prerequisite: MATH 1314. Classical mechanics, including Newton's Laws and the mathematical description of motion. Selected laboratory experiments. Fall, spring, summer I. Course fee $25.

PHYS 1402 General Physics II. (4 3 2) Prerequisite: 1401. Particles and their interactions, waves and modern physics. Selected laboratory experiments. Fall, spring, summer II. Course fee $25.

PHYS 1411 Planetary Astronomy. (4 3 2) Introduction to planetary astronomy. Largely non-mathematical description of our solar system, including planets, asteroids, meteors and comets. Includes laboratory which will involve outdoor observations on clear nights with cloudy nights devoted to indoor experiments and activities to illustrate physical processes in astronomy. Fall. Course fee $25.

PHYS 1412 Introductory Astronomy II. (4 3 2) Stellar and galactic astronomy. Largely non-mathematical description of stars, galaxies, black holes and other objects beyond our solar system. Includes laboratory which will involve outdoor observations on clear nights with cloudy nights devoted to indoor experiments and activities to illustrate physical processes in astronomy. Spring. Course fee $15.

PHYS 2425 Engineering Physics I. (4 3 2) Prerequisite: MATH 2414 or concurrent enrollment. Mathematical treatment (calculus) of mechanics, energy and waves. Selected laboratory experiments. Spring. Course fee $25.

PHYS 2426 Engineering Physics II. (4 3 2) Prerequisite: 2425 and MATH 2414. Mathematical treatment (calculus) of electricity, magnetism and optics. Selected laboratory experiments. Fall. Course fee $25.

PHYS 3095 Laboratory Problems. (1-6 0 0) One to three semester hours at a time. May be repeated with different content to a total of six semester hours. Fall, spring, summer I, summer II. Course fee $5–$30, depending on hours enrolled.

PHYS 3303 Solar Energy: Residence and Rural Systems. (3 3 0) Alternative energy (solar, wind, biomass) for residence and rural application. Cross-listed with ET 3303.

PHYS 3302 Wind Energy and Wind Turbines. (3 3 0) Introduction to wind characteristics, wind turbine types, design of wind turbines, experimental results and economics. Same as ET 3302.

PHYS 3310 Modern Physics I. (3 3 0) Prerequisite: 2426 and MATH 2414. Quantum theory, special theory of relativity, waves and particles, quantum mechanics in one dimension, hydrogen atom. Fall of odd years.

PHYS 3320 Thermodynamics. (3 3 0) Prerequisite: 2426: concurrent enrollment in MATH 3340. Equations of state, ideal gases, first and second laws of thermodynamics, entropy and statistical methods. Fall of odd years.

PHYS 3330 Mechanics I. (3 3 0) Prerequisite: 2426. Particle and extended body dynamics, force fields, energy and momentum. Fall of even years.

PHYS 3340 Electricity and Magnetism I. (3 3 0) Prerequisite: 2426. Electric Field, potential energy relationships and electromagnetics waves. Fall of even years.

PHYS 3380 Observational Astronomy. (3 3 0) Prerequisite: PHYS 3310 or consent of instructor. How astronomical data is collected and analyzed. Topics include design and use of optical, radio and gamma ray telescopes. Analysis of data from these types of telescopes using standard computer software that professional astronomers use for research. Methods of analysis include spectroscopy, photometry, polarimetry and image processing. Spring of even years. Course fee $15.

PHYS 3450 Advanced Laboratory Techniques. (4 3 2) Prerequisite: 3310. Data collection, data analysis, experimental design, simulations, automated data collection, advanced instrumentation. Spring of even years.

PHYS 4310 Modern Physics II. (3 3 0) Prerequisite: PHYS 3310. Applications of elementary quantum theory to molecular, solid-state, nuclear and elementary particle physics. Spring of even years.

PHYS 4320 Quantum Mechanics I. (3 3 0) Prerequisite: 2426. Schroedinger equation, particle in a box, operators, harmonic oscillator, angular momentum operators, hydrogen atom. Spring of even years.

PHYS 4321 Principles of Physical Science. (3 3 0) Non-mathematical approach to fundamentals of physics and chemistry. Designed for science education students and public school teachers desiring to satisfy deficiencies. Essential elements of physical science and objectives for the physical science TExES test will be covered. Spring.

PHYS 4330 Optics. (3 3 0) Prerequisite 2426. Physical optics, propagation of light, interference and diffraction, general wave equation, interaction of electromagnetic radiation with matter. Spring of odd years.

PHYS 4350 Computational Physics. (3 3 0) Prerequisite: 2427, IDM 1315 or consent of instructor. Data acquisition, data fitting, numerical differentiation, numerical integration, Monte Carlo simulations, Monte Carlo integration, random walks, Euler's method, second order Runge-Kutta method, fourth order Runge-Kutta method, elliptical PDEs, parabolic PDEs, hyperbolic PDEs. Spring of odd years.

PHYS 4360 Nuclear Physics. (3 3 0) Prerequisite: 3310. Natural and artificial radioactivity. Topics include the neutron, positron, nuclear structure and forces, binding energies, nuclear fission and fusion, particle accelerators and cosmic rays. Spring of even years.

PHYS 4370 Solid State Physics. (3 3 0) Prerequisite: 3310. Properties of crystalline materials; electrical and thermal conductivity; heat capacity; crystalline binding; nature of metals, insulators and semiconductors; dielectric properties; and magnetic properties. Spring of even years.

PHYS 6310 Advanced Mathematical Methods. (3 3 0) Prerequisite: 4340. Partial differential equations, Green's functions, perturbation theory, integral equations, calculus of variations, tensor analysis, group theory. Spring of odd years.

PHYS 6320 Advanced Quantum Mechanics. (3 3 0) Prerequisite: 4320, 6310. Hilbert spaces, central force problems, spin, angular momentum, perturbation theory. Fall of odd years.

PHYS 6330 Classical Mechanics. (3 3 0) Prerequisite: 3330, 6310. Lagrange's equations, Hamilton's principle, central force problems, rigid body motion, Hamilton equations, canonical transformations, Hamilton-Jacobi theory. Fall of even years.

PHYS 6340 Electromagnetism. (3 3 0) Prerequisite: 3340, 6310. Electrostatics, magnetostatics, slowly varying fields, dielectrics, Maxwell's equations, radiation. Spring of odd years.

PHYS 6350 Statistical Mechanics. (3 3 0) Prerequisite: 3320, 6310. Distribution functions, kinetic theory of gases, Boltzmann's H-theorem, phase space, Liouville's theorem, transport phenomena. Spring of even years.

PHYS 6360 Advanced Thermodynamics. (3 3 0) Prerequisite: 3320, 4340. Entropy function, extremum principles, thermal stability, phase transitions, chemical thermodynamics, fluctuations, irreversible thermodynamics. Spring of even years.

POSC—Political Science
(Offered through the Department of Political Science and Criminal Justice.)

POSC 1310 Introduction to Law. [GOVT 1310] (3 3 0) Practical study of substantive civil and criminal law and procedures applicable to the average citizen in everyday life. Same as CRJ 1310.

POSC 2107 Federal and Texas Constitutions. (1 1 0) Prerequisite: consent of instructor. Includes consideration of the Constitution of the United States and constitutions of the states, emphasizing Texas. Enrollment will be limited to students who have completed a minimum of six credit hours of government courses but have not satisfied the statutory requirement for study of federal and state constitutions. Fall.

POSC 2304 Introduction to Political Science. [GOVT 2304] (3 3 0) Examination of major fields of political science, including American government, local government, public policy and administration, public law, international relations, comparative politics and political theory.

POSC 2305 American National Government. [GOVT 2305] (3 3 0) Origins, structure and functions of national government of the United States and principles which underlie American democracy. Fall, spring. Course fee $5.

POSC 2306 American State and Local Government. [GOVT 2306] (3 3 0) Principal aspects of state and local government in the United States with special reference to Texas. Fall, spring. Course fee $5.

POSC 2370 Constitutional American Government. (3 3 0) American national government from a constitutional perspective. Examination of traditional topics of American government focusing on Supreme Court cases. Topics include democratic theory, federalism, interest groups, elections and voting, Congress, the presidency, the judiciary, civil liberties and foreign policy.

POSC 3301 The American Presidency. (3 3 0) In-depth analysis of the American presidency. Emphasis on powers and duties of the president in both historical and contemporary settings. Includes the president's relations with Congress, federal courts and bureaucracy.

POSC 3303 U.S. Congress. (3 3 0) Theory, composition, organization and procedures of the U.S. Congress; relations with political parties and interest groups; linkage with executive and judicial branches; legislative and nonlegislative functions; proposals for improvement.

POSC 3305 Judicial Process. (3 3 0) Decision-making process in the judicial branch with emphasis on the impact of courts on American politics.

POSC 3311 Public Opinion. (3 3 0) Nature of public opinion, factors involved in formation and measurements, techniques of modern propaganda and social controls influencing public information. Same as SOCI 3311.

POSC 3312 Political Parties and Interest Groups. (3 3 0) Analysis of history, structures, activities, and roles of political parties and interest groups in the American political system.

POSC 3313 Campaigns and Campaign Management. (3 3 0) Practical aspects of political campaigning and campaign management, including political campaign organization, planning, strategy and tactics, and campaign activity.

POSC 3315 Religion and Politics. (3 3 0) Examination of the interaction of religion and American political life. Problems and prospects presented by mixing religion and politics.

POSC 3317 Women and Politics. (3 3 0) Role of women in politics, including political participation and development of public policy.

POSC 3318 Federalism and Intergovernment Relations. (3 3 0) Prerequisite: 2305, 2306. Examination of the horizontal and vertical relationships among local, regional, state and federal governments.

POSC 3361 Contemporary Political Research Methods. (3 3 0) Introduction to research methods used in political science. Emphasis on recent attempts to develop empirical political theory.

POSC 3362 Statistics for the Social Sciences. (3 3 0) Prerequisite: 3310. Nature of public opinion, factors involved in formation and measurements, techniques of modern propaganda and social controls influencing public information. Same as SOCI 3311.

POSC 3363 Advanced Statistical Methods. (3 3 0) Advanced statistical techniques, emphasizing inferential methods. Prerequisite: 3310.

POSC 3365 Political Thought. (3 3 0) Introductory survey of leading political ideas in the development of political thought. Course is strongly recommended as a background to other advanced courses.
POS: Townsend, Jay B., Jr.

POS 4096 Readings. (3-3-0) Designed to meet specific student needs as approved by department head. Students may enroll for one, two or three hours credit. May be repeated for a maximum of six hours when topics vary.

POS 4098 Internship. (1-6-0) Prerequisite: consent of instructor and 15 hours of political science including 2305 and 2306. Field work in professional political science settings under supervision as prescribed and arranged by instructor. Application of political science knowledge with individuals, groups and communities.

POS 4307 Municipal Government. (3-3-0) Organization, legal aspects, functions and administration of the American municipality; relationship of the city to other units of government; current problems of city governments.

POS 4331 Administrative Law. (3-3-0) Purposes and nature of legal controls over governmental administration; rights, duties and liabilities of administrative officials; legal remedies for administrative acts; administrative jurisdiction; conclusiveness of administrative acts.

POS 4333 American Constitutional Development. (3-3-0) Development of main constitutional principles of the American system of government especially as shaped by judicial interpretation. Nature of judicial power, problems of federalism and division of powers, separation and delegation of powers. Recent trends in constitutional development.

POS 4335 American Constitutional Limitations. (3-3-0) American concept of limited government and various constitutional rights and protections under the American constitutional system.

POS 4340 Constitutional Rights of the Accused. (3-3-0) In-depth study of processes of the criminal justice system governed by guarantees and protections of U.S. and state constitutions with emphasis on recent developments. Same as CRJ 4340.

POS 4348 Ethics and the Justice and EMA Systems. (3-3-0) Introduction to concepts of ethics and examination of contemporary ethical issues in criminal justice and emergency management. Same as CRJ 4348.

POS 4350 Public Administration. (3-3-0) Development and role of administration in the governmental process; principles and problems of administrative organization and coordination; financial and personnel management; problems of administrative control and responsibility.

POS 4351 Public Sector and Nonprofit Marketing/Management. (3-3-0) Prerequisite: 2305 and 2306. Application of basic marketing principles for public sector and nonprofit managers. Focus on grant writing and grant management.

POS 4352 Administrative Management. (3-3-0) Methods of applying administrative principles to the operating process of governmental agencies. Relevance of administrative theory to management procedures in government.

POS 4354 Public Personnel Administration. (3-3-0) Development and role of public service; basic principles, practices and problems in public personnel administration.

POS 4355 Public Financial Administration. (3-3-0) Budgeting problems and internal fiscal practices in American government. Problems of administrative organizations in fiscal activities.

POS 4356 Principles of Emergency Management. (3-3-0) Prerequisite: 2305, 2306. The devastation caused by hurricanes, floods and wildfires highlights the need for highly trained professionals who can develop effective strategies in response to these disasters. Principles of emergency management will cover social and environmental processes that generate hazards. Will include vulnerability analysis, hazard mitigation, emergency response and disaster recovery. Same as POSC 4356.

POS 4357 Public Policy Formulation. (3-3-0) Dynamics of public-policy formulation. Emphasis on analytical framework and substance of policy.

POS 4358 Comparative American Public Administration. (3-3-0) Theory relevant comparison of public administration, public policy and political science in the American states.

POS 4359 Organizational Theory in the Public Sector. (3-3-0) Prerequisite: 2305, 2306. Interaction of individuals and groups in government organizations. Topics include individual behavior in organizations, group dynamics, communication in the working environment and concepts of motivations.

POS 4366 Modern Political Thought. (3-3-0) Leading political ideas of the 19th and 20th centuries and their relation to social and economic conditions and political institutions of the time.

POS 4367 American Political Thought. (3-3-0) Ideas from the colonial period to present.

POS 4368 Topics in Political Theory. (3-3-0) Prerequisite: 3365. In-depth exploration of a specific topic in political theory. Topic changes each semester. May be repeated once for credit.

POS 4369 American National Security. (3-3-0) Political analysis of structures, functions and policies relating to American national security; emphasis on defense and intelligence institutions and policies, conventional weapons, weapons of mass destruction, homeland security, terrorism and international linkages.

POS 4370 International Relations. (3-3-0) Basic historical, economic and cultural factors in contemporary world politics. Rise and development of Western state systems; foundations of national power; sovereignty, nationalism, and imperialism and problems resulting from these factors; development of concepts of international cooperation of government.

POS 4371 American Foreign Policy. (3-3-0) Evolution, objectives and special problems of American foreign policy with reference to developments since World War II.

POS 4372 Nuclear Weapons and World Politics. (3-3-0) History of development of nuclear weapons and delivery systems: use during World War II, deterrence and related theories, scenarios for nuclear war, Soviet and American views, proliferation, arms limitation efforts, peace movements and the overall impact on international relations.

POS 4374 International Law and Organization. (3-3-0) Nature, sources, development and scope of public international law; present status of international law; evolution, scope, and functions of institutions and agencies for international cooperation. Emphasis on the United States.

POS 4375 Capital Punishment. (3-3-0) Capital punishment in the United States will be examined using a balanced approach. Moral and legal considerations, as well as application of the death penalty, will be investigated. Same as CRJ/SOCI 4375.

POS 4376 Former Soviet Union: Domestic and Foreign Policies. (3-3-0) Survey of the Russian era before the communist revolution of 1917, the period of communist rule and the post-Soviet era. Equal emphasis on domestic political developments and foreign policy.

POS 4378 Asian Governments and Politics. (3-3-0) Political analysis of major nations of Asia: People’s Republic of China, Japan and India; survey of other nations in South,
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intergovernmental relations, planning and evaluation of programs. With permission of instructor, may be repeated once when topics vary. Same as CRIJ 6345.

POSC 6350 Seminar in Public Administration. (3 3 0) Development and role of administration in the governmental process; principles and problems of administrative organization and coordination; financial and personnel management; problems of administrative control and responsibility.

POSC 6351 Seminar in Public Policy. (3 3 0) Selected aspects of American public policy, theory, organization, administration and administrative procedures in government. With consent of department head, may be repeated once for credit. Same as CRIJ 6351.

POSC 6352 Environmental Policy Issues. (3 3 0) Prerequisite: 2305 and 2306; three hours advanced political science. Federal and state policies, rules and regulations as they apply to planning and policy issues relating to the environment. Selected case studies in American government relating to environmental quality issues will be evaluated. Same as ECON 6352.

POSC 6353 Seminar in Administrative Management. (3 3 0) Methods of applying administrative principles to the operating process of governmental agencies. Relevance of administrative theory to management procedures in government. Development and role of public service; basic principles, practices and problems in public personnel management. With permission of instructor, may be repeated once when topics vary.

POSC 6354 Administrative Theory and Behavior. (3 3 0) Interaction of individuals and groups in government organizations. Topics include individual behavior in organizations, group dynamics, communication in the working environment and concepts of motivation. Fall of odd years.

POSC 6355 Seminar in Public Financial Administration. (3 3 0) Budgeting problems and internal practices in American government. Problems in administrative organizations in fiscal activities.

POSC 6370 Problems in International Relations. (3 3 0) Selected problems of contemporary international relations. With consent of department head, may be repeated once when topics vary.

POSC 6372 Comparative Political and Social Systems. (3 3 0) Seminar in comparative political and social systems. Examination of theories and research methods concerning comparative approaches. Political ideologies, structures and functions; culture, classes, violence, racism and economics. May be repeated once for credit with consent of department head.

POSC 6380 Certificate in Program Evaluation and Assessment: Capstone I. (3 0 0) Prerequisite: PSTC/SOCI 6378, CRIJ/POSC 6351, CRIJ/POSC/SOCI 6387 and CRIJ/POSC/SOCI 6388. Designed to provide the student an opportunity to develop an evaluation and assessment plan applying knowledge developed in prerequisite course work. Same as CRIJ 6380.

POSC 6381 Certificate in Program Evaluation and Assessment: Capstone II. (3 0 0) Prerequisite: CRIJ/POSC 6380. Designed to provide the student an opportunity to implement an evaluation and assessment plan and write the report applying knowledge developed in prerequisite course work. Same as CRIJ 6381.

POSC 6387 Seminar in Research Methods. (3 3 0) Nonparametric; measurement; surveys, research, design; scale construction; methodology. Same as CRIJ/SOCI 6387.

POSC 6388 Statistics for Social and Criminological Research. (3 3 0) Prerequisite: undergraduate social statistics or equivalent. Statistical techniques most commonly used in social science research with emphasis on probability, estimation, hypothesis methods, sample techniques and use of SPSS. Same as CRIJ/SOCI 6388.

PSES—Plant, Soil and Environmental Science

(Offered through the Department of Agricultural Sciences.)

PSES 1301 Principles of Horticulture. [HORT 1301] (3 2 2) Horticultural plants, including turfgrass, fruit, vegetable, nut, flowering and ornamental plants and their propagation, culture, harvest, storage and utilization. Course fee $12.

PSES 1307 Principles of Plant Science. [AGRI 1307] (3 2 2) Fundamentals of agricultural plants with emphasis on plant structure, nutrition, breeding, function and soil characteristics as related to production of economic plants. Course fee $12.

PSES 2313 Economic Entomology. [AGRI 2313] (3 3 0) Classification, life histories, habits and management practices of common local insects and insect pests of plants and animals. Collect, preserve and identify anthropods with emphasis on insects.

PSES 2372 Individual Study of Seed and Plant Quality. (3 0 6) Identification and evaluation of seed and plant quality. Identification of field crops, important diseases which attack them, weed seeds, practice in judging quality and values of seeds and crop products, and commercial grain grading. May be repeated once for credit. Course fee $12.

PSES 3130 Soil Profile Evaluation. (1 0 0) Prerequisite: 3411. Field description and characterization of soil profiles. Application of taxonomic classification to soil profile descriptions. Evaluation of land use based on profile characteristics. May be repeated twice for credit.

PSES 3411 Soils. (4 3 2) Prerequisite: CHEM 1405 or 1411. Origin, formation and classification of soils and the relationship of their physical, chemical, mineralogical and biological properties to environmental issues and plant growth. Fall, spring. Course fee $12.

PSES 4097 Undergraduate Research. (2 4 0 0) Prerequisite: consent of department head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work.

PSES 4302 Range/Forage/Wildlife Management. (3 2 2) Prerequisite: junior standing. Problems in managing pasture and range lands, including vegetation, reseeding, forage production and utilization, brush control, poisonous plants and managing rangeland for livestock and wildlife. Lab fee $12.

PSES 4310 Plant Breeding and Cytogenetics. (3 3 0) Prerequisite: AGRI 3301 or BIOL 3301. Traditional and biotechnological methods of plant breeding for genetic improvement and seed increase. Spring of odd years.

PSES 4311 Soil Morphology and Classification. (3 2 2) Prerequisite: 3411. Characteristics of soil development, soil catenas and landscape relations, systems of soil taxonomy, regional and world soils, and wetlands classification. Field description of soil profiles, application of taxonomic classification to soil profile descriptions. Spring of even years. Course fee $12.
PSES 4321 Grain, Fiber and Oilseed Crops. (3 3 0) Culture, management, utilization and quality characteristics of grain, fiber and oilseed crops. Fall of even years.

PSES 4330 Crop Physiology. (3 3 0) Prerequisite: 1307 or four semester hours of biology. Basic physiological processes of plants and application of these principles to increasing the yield of economic plants.

PSES 4331 Irrigation, Soil and Water Conservation. (3 2 2) Prerequisite: 3411. Emphasis on principles of wind and water erosion control, water conservation practices, surveying, and evapotranspiration and irrigation management. Spring of odd years. Course fee $12.

PSES 4341 Weeds, Herbicides and Cultural Control. (3 3 0) Prerequisite: junior standing or consent of instructor. Problematic weeds in agronomy and horticulture, methods of integrated cultural and chemical control. Fall of even years.

PSES 4342 Soil Fertility. (3 3 0) Prerequisite: 3411. Behavior of nutrient elements in soils and plants. Emphasis on nitrogen, phosphorous and potassium. Fall of odd years.

PSES 4371 Field Crop Entomology. (3 2 2) Prerequisite: 2313 or BIOL 3510. Harmful and beneficial insects that affect major field crops. Biology, identification, economic importance and management of insect pests. Lab fee $30.

PSES 4393 Honors.

PSES 498 Plant, Soil and Environmental Science Internship. (3 0 0) Prerequisite: consent of department head. Supervised internship in an approved discipline of plant, soil and environmental science. Students receive on-the-job training under supervision of faculty and industry personnel.

PSES 5302 Range/Forage/Wildlife Management. (3 2 2) Problems in managing pasture and range lands, including vegetation reseeding, forage production and utilization, brush control, poisonous plants, and managing rangeland for livestock and wildlife. Lab fee $12.

PSES 5310 Plant Breeding and Cytogenetics. (3 3 0) Traditional and biotechnological methods of plant breeding for genetic improvement and seed increase. Spring of odd years.

PSES 5311 Soil Morphology and Classification. (3 2 2) Prerequisite: 3411. Characteristics of soil development, soil catenas and landscape relations, systems of soil taxonomy, regional and world soils, and wetlands classification. Field description of soil profiles, application of taxonomic classification to soil profile descriptions. Spring of even years. Course fee $12.

PSES 5321 Grain, Fiber and Oilseed Crops. (3 0 0) Culture, management, utilization and quality characteristics of grain, fiber and oilseed crops. Fall of even years.

PSES 5330 Crop Physiology. (3 3 0) Prerequisite: nine hours of plant science and/or biology. Basic physiological processes of plants and application of these principles to increasing the yield of economic plants.

PSES 5331 Irrigation, Soil and Water Conservation. (3 2 2) Prerequisite: 3411. Special emphasis on principles of wind and water erosion control, water conservation practices, surveying, and evapotranspiration and irrigation management. Spring of odd years.

PSES 5341 Weeds, Herbicides and Cultural Control. (3 3 0) Problematic weeds in agronomy and horticulture, methods of integrated cultural and herbicidal control. Fall of even years.

PSES 5342 Soil Fertility. (3 3 0) Prerequisite: 3411. Behavior of nutrient elements in soils and plants. Emphasis on nitrogen, phosphorous and potassium. Fall of odd years.

PSES 5371 Field Crop Entomology. (3 2 2) Prerequisite: 2313 or BIOL 3510. Harmful and beneficial insects that affect major field crops. Biology, identification, economic importance and management of insect pests. Lab fee $30.

PSES 6096 Directed Studies in Plant Science. (3-4 0-4 0) Readings and directed individual studies in various topic areas that specifically relate to the graduate student’s interests and needs.

PSES 6097 Research. (1-6 0 0) Investigations in areas of current interest. May be repeated for credit.

PSES 6098 Advanced Professional Internship. (3-6 0 0) Prerequisite: consent of instructor. Supervised internship in an approved discipline of plant agriculture. Detailed evaluation of the selected work area while receiving on-the-job training under supervision of faculty and cooperating personnel.

PSES 7092 Special Topics. (1-6 0-6 0-12) Recent advances and current topics in plant, soil and environmental sciences. May be repeated once for credit.

PSES 7302 Plant, Soil and Environmental Resource Management Perspectives. (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Examination of perspectives and modeling tools available in integrated management of plant, soil and environmental resources, and use of those resources in production. Fall of odd years.

PSES 7325 Soil-Plant-Water Relationships. (3 2 2) Prerequisite: six hours of soil science and PSES 4330 or consent of instructor. Interrelated study of physical and physiological processes in the soil-plant atmosphere system: soil-water absorption and movement, plant-water transport, transpiration and measurement of plant-water stress. Course fee $12.

PSES 7344 Agricultural Waste Management. (3 3 0) Issues and solutions for managing agricultural wastes. Manure characteristics, treatment methods, environmental regulations, odors, air quality, composting and land applications. Same as ENVR 6344. Course fee $10.

PSES 7351 Hydrology and Water Resources in Agriculture. (3 3 0) Prerequisite: consent of instructor. Introduction to basic principles and practices of hydrology and water resources as related to agriculture including the relation of physical and biological sciences to an understanding of the water cycle. Sufficient knowledge of college algebra and statistics is required. Fall of odd years.

PSES 8095 Directed Studies in Plant, Soil or Environmental Science. (1-6 0 0) Prerequisite: approval of instructor and program director. Readings and directed individual studies in various topic areas that specifically relate to the graduate student’s needs and interest. May be repeated for up to six hour credit. Allowed for elective credit only.

PSES 7301 Advanced Plant and Soil Management. (3 3 0) Prerequisite: doctoral student or approval of instructor and program director. Interrelationships between plants and soil under various management systems.
Course Descriptions

PSYC—Psychology

(Offered through the Department of Psychology, Sociology and Social Work.)

PSYC 2170 Psychology Seminar. (1 1-0-2) Selected high-interest topics in psychology with emphasis on recent advances, emerging trends and contemporary perspectives. May enroll up to three times when subject matter varies.

PSYC 2272 Professional Psychology: Careers, Ethics and Research Methodology. (2 1 2) Prerequisite: 2301. Introduction to areas of specialization, ethical considerations and research methods in professional psychology with emphasis on critical thinking, communication techniques, empirical methods and evaluation of research data. At least spring.

PSYC 2301 General Psychology. (3 3 0) Introduction to psychology as a science. Year round.

PSYC 2314 Child Development. (3 3 0) Findings and theory concerning child development within the context of culture and environment. Fall, spring. Course fee $10.

PSYC 2315 Human Behavior and Personal Adjustment. (3 3 0) Individual and social factors which influence behavior, emphasis on prevention of maladjustment. Same as SOCW 2315. Fall, spring.

PSYC 3310 Introduction to Statistics. (3 3 0) Descriptive statistics, including central tendency, variability, correlation and regression. Inferential statistics with emphasis on ANOVA. Fall, summer.

PSYC 3311 Experimental Psychology. (3 2 2) Prerequisite: 2301, 3310. Experimental methods of psychology and use in study of psychological processes. At least spring. Course fee $10.

PSYC 3320 Biological Psychology. (3 3 0) Prerequisite: 2301. Physiological mechanisms underlying basic psychological functions. Spring. Course fee $15.

PSYC 3322 Health Psychology. (3 3 0) Prerequisite: 2301. Introduction to the field of health psychology with emphasis on a biopsychosocial approach to the study of health promotion and maintenance, prevention and treatment of illness, identification of causes and correlates of health and illness, and impact of health institutions and health professionals on people's behavior.

PSYC 3350 Social Psychology. (3 3 0) Prerequisite: 2301. Review of theories and research relating to individual behavior in the social environment. Same as SOCI 3350.


PSYC 3373 Forensic Psychology. (3 3 0) Prerequisite: 2301. Introduction to the field of psychology with emphasis on jury decision making, criminal profiling, eyewitness memory, insanity/mental competency and careers within forensic psychology.

PSYC 3392 Current Issues in Psychology. (3 3 0) Prerequisite: 2301. Topics such as psychology of religion, psychobiology, community psychology or behavioral medicine. May be repeated once for credit when subject matter varies. Varies.


PSYC 4319 History and Systems of Psychology. (3 3 0) Prerequisite: 2301. Survey of history and major systems of psychology.

PSYC 4324 Psychopharmacology. (3 3 0) Prerequisite: 2301. Introduction to the field of psychopharmacology with emphasis on relationships between drugs, their mechanisms of action in the nervous system and human behavior. Course fee $20.

PSYC 4325 Human Neuropsychology. (3 3 0) Exploration of the relationship between structure and function of the human nervous system and behavior of both normal and impaired individuals. Fall of even years.

PSYC 4335 Cognitive Processes. (3 3 0) Prerequisite: 2301. Examination of research findings related to cognition, including early perceptual processes, attention, concepts, memory, knowledge representations, language and reasoning. Spring, summer.

PSYC 4341 Psychology of Adolescence and Youth. (3 3 0) Prerequisite: 2301. Psychological growth and development from adolescence through early maturity. Course fee $25.

PSYC 4342 Psychology of Adulthood. (3 3 0) Prerequisite: 2301. Theoretical and practical issues in adulthood, including aging and death.

PSYC 4355 Theories of Personality. (3 3 0) Prerequisite: 2301. Major theories of personality development. Fall, summer.

PSYC 4360 Abnormal Psychology. (3 3 0) Prerequisite: 2301. Personality abnormalities: description, causation and treatment. Year round. Course fee $5.

PSYC 4361 Individual Differences and Child Psychopathology. (3 3 0) Prerequisite: 2301. Foundation in understanding of individual differences in children and adolescents with focus on assessment, functioning and treatment of child and adolescent psychopathology. Summer.

PSYC 4375 Theories of Counseling. (3 3 0) Prerequisite: 2301. Major counseling theories, related techniques, and introduction to current ethical and professional issues for the beginning human services worker. Fall of odd years. Course fee $10.

PSYC 4395 Problems in Psychology. (3 0-3 0-6) Prerequisite: 2301, 3.0 GPA in all work completed in psychology and approval of department head. Production of a creditable problem of research in a psychological field of value to the student. May be repeated with approval of instructor.

PSYC 4399 Practicum in Psychology. (3 0 0) Prerequisite: 2301, 3.0 GPA in all work completed in psychology and approval of department head. Supervised field experience under person with background and primary training in psychology. May be repeated once with approval of instructor.

PSYC 5324 Psychopharmacology. (3 3 0) Prerequisite: 2301. Introduction to the field of psychopharmacology with emphasis on relationships between drugs, their mechanisms of action in the nervous system and human behavior.

PSYC 5335 Cognitive Processes. (3 3 0) Basic cognitive processes: attention, memory, concept formation, reasoning and information processing.

PSYC 5341 Psychology of Adolescence and Youth. (3 3 0) Psychological growth and development from adolescence through early maturity.

PSYC 5355 Theories of Personality. (3 3 0) Major theories of personality development. Fall, summer.

PSYC 5360 Abnormal Psychology. (3 3 0) Personality abnormalities: description, causation and treatment. Year round.

PSYC 5375 Theories of Counseling. (3 3 0) Survey of major current ethical and professional issues for the beginning human services worker. Fall of even years.
PSYC 6392 Current Issues in Psychology. (3 3 0) Topics such as psychology of religion, psychobiology, community psychology or behavioral medicine.

PSYC 6098 Internship in School Psychology. (1-6 0 0) Prerequisite: admission to the school psychology track of the psychology master's degree program; completion of all course work in the program; instructor approval of the internship contract. Supervised training experience within public schools in which the intern demonstrates knowledge and applies skills in professional school psychology. Fall, spring. Students requiring supervision will be charged the actual cost of travel associated with supervision, including transportation, lodging and food. Course fee $350.

PSYC 6099 Practicum in Psychology and Counseling. (1-6 0 0) Prerequisite: good standing in the graduate program and approval of instructor. May be taken for a maximum of 12 semester hours. Course fee $200.

PSYC 6301 Thesis. (3 0 0)

PSYC 6302 Thesis. (3 0 0) Course fee $15.

PSYC 6310 Advanced Statistics in Psychology. (3 3 0) Prerequisite: 3310. Advanced study of the statistical designs and analyses in psychology.

PSYC 6311 Research and Experimental Design in Psychology. (3 3 0) Prerequisite: 3310. Complex research designs, including factorial, fractional and incomplete block. Coverage of parameter estimation in psychology.

PSYC 6312 Seminar in Biological Psychology. (3 3 0) Advanced study of biological psychology and sensation and perceptions. Fall.

PSYC 6313 Seminar in Learning. (3 3 0) Advanced study of animal learning/behavior and human memory/cognition. Spring.

PSYC 6314 Philosophy of Science and Psychology Ethics. (3 3 0) The relationship among science, psychology and philosophy. Professional ethics for the field of psychology in the contemporary environment. Spring.

PSYC 6315 Social and Cultural Foundations of Psychology. (3 3 0) Historical foundations and social influences that have historically impacted accepted psychological theories. Examine how increased knowledge of the influence of culture has lead to re-examination of such theories as identity formation, attributions, aggression, emotions, conformity, attitudes and gender. Fall.

PSYC 6340 Seminar in Human Development. (3 3 0) Prerequisite: restricted to students admitted to graduate psychology program or permission of instructor. Basic topics in human development. Course fee $25.

PSYC 6351 Assessment I. (3 3 0) Prerequisite: 4371 or consent of instructor. Advanced principles of psychological assessment and methods for determining the extent of behavioral and psychological dysfunction. Fall. Course fee $25.

PSYC 6352 Assessment II. (3 3 0) Prerequisite: 6351; admission to the Graduate Psychology Program or consent of department. Intermediate course covering how to learn and apply psychological assessment techniques. Includes competency-based requirement for administration, scoring, interpretation and reporting of selected standardized assessment measures. Spring. Course fee $150.

PSYC 6353 Assessment III. (3 3 0) Prerequisite: 6352; admission to the Graduate Psychology Program or consent of department. Advanced course covering higher-level skills in assessment, interpretation and reporting. Fall. Course fee $150.

PSYC 6360 Advanced Psychopathology. (3 3 0) Prerequisite: 4360/5360 or permission of instructor. Dynamics of basic psychopathological disorders. Fall.

PSYC 6361 Advanced Child Psychopathology. (3 3 0) Advanced course addressing DSM-IV and IDEA classification systems of children's disorders with emphasis on assessment and treatment of children's mental, emotional, behavioral and medical disabilities. Summer.

PSYC 6369 Professional Seminar in School Psychology. (3 3 0) Prerequisite: admission to the school psychology track of the psychology master's degree program or consent of instructor. Professional preparation and socialization to the field of school psychology. History of school psychology as a discipline will be presented, along with roles and functions of the school psychologist. Ethical principles and responsibilities will be emphasized. Summer. Course fee $25.

PSYC 6371 School Consultation and Collaboration. (3 3 0) Prerequisite: admission to the school psychology track of the psychology master's degree program or consent of instructor. Introduction to theory and practice of consultation. Course goal is to facilitate development of a conceptual framework for providing consultative services to parents, teachers, other educational professionals, and systems within public school or other educational settings and programs. Spring. Course fee $25.

PSYC 6372 Clinical Intervention. (3 3 0) Prerequisite: 6376 or permission of instructor. Advanced course covering the implementation of empirically validated individual and group interventions. Spring.

PSYC 6374 Marriage and Family Counseling. (3 3 0) Intervention for marriage and family crises.

PSYC 6376 Psychological Interventions. (3 3 0) Introductory course in theory and practice of conducting psychological interventions. Course encompasses development of communication and relationship skills and implementation of empirically validated individual and group interventions. Spring.

PSYC 6377 Behavior Modification. (3 3 0) Prerequisite: 3430 or equivalent. Instruction and practice in the skills of behavioral observation, behavior analysis, and behavior modification and its applications in educational, medical and mental health settings. Course fee $50.

PSYC 6378 Program Evaluation and Applied Research. (3 3 0) Prerequisite: undergraduate statistics. Research procedures to systematically investigate the effectiveness of intervention programs and to conduct single-subject design and qualitative research in applied settings. Same as SOCI 6378.

PSYC 6392 Current Issues in Psychology. (3 3 0) Prerequisite: 12 hours in psychology, (including 2301) or permission of instructor. Emphasis on recent advances, emerging trends and contemporary perspectives. May be repeated.

PSYC 6395 Problems in Psychology. (3-3 0-6) Prerequisite: approval of instructor. Individual study and research on a specific topic within the discipline of psychology. May be repeated once with approval of department head.
Course Descriptions

**RELI—Religion**
(Offered through the Department of English, Philosophy and Modern Languages.) NOTE: A maximum of six hours of religion may be counted for degree requirements.

- **RELI 1371** Old Testament Studies. (3 3 0) History, literature and teaching of the Old Testament.
- **RELI 2371** Comparative Religion. (3 3 0) Major religions of the world, including Hinduism, Buddhism, Judaism, Christianity and Islam.
- **RELI 2372** Understanding Christian Beliefs. (3 3 0) Examination of the origin, history, beliefs and practices of Christianity.
- **RELI 2375** Contemporary Religious Issues. (3 3 0) Examination of selected social, political, economic and cultural problems from a religious perspective.
- **RELI 2377** Readings in Making Moral Choices. (3 3 0) Application of religious principles to contemporary concerns. May be repeated once when topics vary.

**SES—Sports and Exercise Sciences**
(Offered through the Department of Sports and Exercise Sciences.)

- **SES 1301** Historical and Contemporary Issues in Sport. [PHED 1301] (3 3 0) Historical context of sports and the contemporary relationship between sport and our culture. Focus on the current nature of sport in relation to becoming a future professional in the field of sports and exercise science.
- **SES 2342** Personal Fitness Concepts. (3 3 0) Comprehension of concepts in cardiovascular endurance, strength, flexibility, body composition, stress and nutrition. Ability to design, implement and conduct personal fitness programs will be expected.
- **SES 2355** Theory and Practice of Non-Traditional Games/Sports. (3 2 2) Variety of recreational, multi-cultural and nontraditional games, as well as outdoor adventure education for lifelong participation.
- **SES 2372** Philosophy of Coaching. (3 3 0) Theories, techniques, strategies, rules and their relationship to principles of coaching athletes of all levels.
- **SES 2375** Coaching and Officiating Basketball. (3 3 0) Coaching fundamentals and analysis of the duties and responsibilities of officials in basketball with practical experience in officiating.
- **SES 2376** Coaching and Officiating Baseball. (3 3 0) Coaching fundamentals and analysis of the duties and responsibilities of officials in baseball with practical experience in officiating.
- **SES 2377** Coaching and Officiating Volleyball. (3 3 0) Coaching fundamentals and analysis of the duties and responsibilities of officials in volleyball with practical experience in officiating.
- **SES 2378** Coaching and Officiating Soccer. (3 3 0) Coaching fundamentals and analysis of the duties and responsibilities of officials in soccer with practical experience in officiating.
- **SES 3302** Structural and Mechanical Kinesiology. (3 3 0) Structural and mechanical properties of the musculoskeletal system, functional and movement characteristics, applied physics and analysis of movement. Course fee $10.
- **SES 3303** Safety. (3 3 0) Foundations of safety focusing on accident prevention and injury control in home, workplace and community.
- **SES 3304** Measurement and Evaluation Techniques. (3 3 0) Basic statistical designs, skill test administration, data collection and principles of evaluation.
- **SES 3306** Human Sexuality. (3 3 0) Physical, psychological, social and comparative cultural aspects of sexual behavior, reproduction, sex education, family health, disease process, and biological and sexual dysfunctions.
- **SES 3311** Principles of Instruction in Physical Activity. (3 3 0) Principles of skills and techniques used in instructional delivery. Unit and lesson planning, class management, teaching aids, implementation and evaluation in a physical activity setting.
- **SES 3316** Drugs, Alcohol and Tobacco. (3 3 0) Effects of drugs, alcohol and tobacco on physiological, mental, and psychological health and well-being with a focus on prevention education for self-responsibility.
- **SES 3320** Programming for Elementary Kinesiology. (3 2 2) Prerequisite: 3311 or department head approval. Developmentally appropriate physical education for children. Concepts and skills analyzed and utilized progressively as a means of developing, refining and applying physical, social and cognitive abilities of young children. Emphasis on cognitive, affective and behavioral instructional strategies.
- **SES 3321** Motor Development. (3 3 0) Assessment of motor development in individuals, infant to adult; instructional applications of motor skills to appropriate levels of development; design of motor skill acquisition sequences for basic motor skills of running, jumping, throwing, catching, striking, kicking and for complex sport motor skills.
- **SES 3325** Programming for Health and Wellness of Children. (3 2 2) Contemporary issues related to school health and physical education programs. Content will include health promotion, communication skills, goal-setting and decision-making, motor-skill development, components of physical fitness, personal fitness programming, nutrition and its impact on health and performance, and safety. Course required for elementary teacher certification.
- **SES 3340** Sport Nutrition. (3 2 2) Review of knowledge associated with nutritional strategies used to enhance sport and exercise performance.
- **SES 3341** Physiology of Exercise. (3 2 2) Physiological adaptations made by the human body in adjusting to various activities. Course fee $25.
- **SES 3356** Theory and Practice of Strength Training and Conditioning. (3 3 0) Prerequisite: 3302, 3341 or consent of instructor. Scientific principles and current techniques for sports-specific fitness and performance. Screenings for athletes, functional fitness and skills testing, program development and evaluation, and exercise supervision.
- **SES 3382** Outdoor Living. (3 3 0) Knowledge, techniques and skills for safe enjoyment in the outdoor natural environment.
- **SES 3392** Special Topics.
- **SES 4098** Internship. (3 0 0) Supervised internship in agencies as prescribed and arranged by the department. Translation and extension of knowledge in professionally supervised practice with individuals, groups and communities. May be repeated for credit with department approval for a maximum of 6 credit hours.
- **SES 4302** Motor Learning and Skill Acquisition. (3 3 0) Introductory course of fundamental principles related to learning and retention of motor skills and related effective
teaching practices. Topics include motor-learning theories, demonstration and modeling, whole-part learning, feedback, practice, transfer of skill, rituals, and gender differences in motor learning and performance. Fall.

SES 4322 Applied Instruction in Physical Activity. (3 2 2) Prerequisite: 3311 or department head approval. Application of skills and techniques used in instructional delivery. Unit and lesson planning, class management, teaching aids, implementation and evaluation in a physical activity setting will be assessed in an applied setting.

SES 4325 Sport Psychology. (3 3 0) Application of research findings as they apply to psychological performance factors in sport, physical education and exercise settings, such as motivation/adherence, stress management, personality and psychological skills training.

SES 4326 Sport Sociology. (3 3 0) Analysis of sport as a social institution and interrelations between sport and societal subsystems. Analysis of contemporary problems associated with sport: race relations, the traditional and emergent role of women, leisure behavior, aggression and violence, and political and economic concerns.

SES 4327 Exercise Psychology. (3 3 0) Exploration of theory and research findings regarding psychological aspects of exercise adoption, healthy lifestyle and behavior change. Implications of the importance of physical activity for health and fitness professionals and its potential impact on exercising and sedentary populations.

SES 4328 Psychology of Sport and Injury. (3 3 0) Prerequisite: at least junior status. In-depth examination of commonly used interventions designed to maximize performance of individual athletes and teams with an exploration of psychosocial antecedents to athletic injury and factors related to the psychological experience and treatment of the injured athlete. Spring of odd years.

SES 4330 Principles of Sports Administration. (3 3 0) Efficient and effective organization and administration in physical activity settings. Content focused on leadership, personnel decisions, legal issues and facility management.

SES 4340 Sport and Exercise Testing. (3 2 2) Prerequisite: 3341. Hands-on training and theoretical background needed to competently assess levels of health/fitness in a sport or exercise population. Lecture/lab content structured to prepare students for taking the ACSM Health/Fitness or Exercise Specialist certification. Course fee $32.


SES 4394 Individual Problems in Sports and Exercise Sciences. (3 0 0) Prerequisite: approval of department head. Independent study, under direction of a faculty member, within the fields of exercise and sport. May be repeated once for credit.

SES 6301 Thesis. (3 0 0).

SES 6302 Thesis. (3 0 0).

SES 6311 Research Techniques. (3 3 0) Critical analysis of the types of research with uses and purposes; library techniques; experience in writing, critiquing and solving problems; statistical tools available and uses with computer programs.

SES 6312 Instructional Delivery in Sports and Exercise Sciences. (3 3 0) Development of knowledge base and delivery methodologies to effectively provide instruction in sports and exercise sciences to different populations in activity settings.

SES 6315 Curriculum Development in Sports and Exercise Sciences. (3 3 0) Curriculum development process in the field of sports and exercise sciences focusing on the domains of health, wellness and physical education and their curricular applications in today’s society.

SES 6321 Sport Psychology. (3 3 0) Intensive study of psychological dimensions of sports and fitness activities. Topics may include motives and constraints; adherence; arousal and performance; stress, distress and health; self-efficacy and self-concept; locus of control; attitude toward physical activity; personality and sport; and aggression and violence in sport.

SES 6323 Sport Marketing. (3 3 0) Prerequisite: graduate standing. Overview of major marketing issues facing the sport industry. Focus on developing basic knowledge and understanding of sport marketing and sponsorship for professional and collegiate settings. Components include utilizing sponsorships, special events, fund-raising, public relations, promotions, and utilizing radio and television marketing.

SES 6327 Sociological Analysis of Sport. (3 3 0) Prerequisite: graduate standing. Examination of the sociological phenomena that contribute to sport in the United States and globally. Focus on societal issues such as inequality, commercialization and deviance in the world of sport. Explores the sociological impact of sport on the values of larger society.

SES 6329 Facility Operations and Event Management. (3 3 0) Prerequisite: graduate standing. Foundation and understanding of the day-to-day operation of sport facilities and of event management planning and procedures. Focus on development, operation and financing of facilities. Examines risk management, feasibility studies, financial concepts and organizational theories related to event management.

SES 6330 Administration of Sport and Exercise Science, Athletics. (3 3 0) Environmental factors which influence resources management of sport and exercise sciences/athletics in public and private sectors. Analysis and application of administrative/leadership theory to strategic planning, organizing, implementing and controlling programs.

SES 6331 Legal and Ethical Issues in Sport. (3 3 0) Prerequisite: graduate standing. Laws and legal concepts that govern the sport industry. Focus on legal and ethical issues related to legislation, drug testing, employment law, as well as negligence and liability. Application of ethical theories to sport operations and decision making.

SES 6332 Scientific Basis of Motor Learning. (3 3 0) Psychophysiological study of motor learning and movement behavior. Evolution of theories and approaches utilized in the study of skill learning; examination of factors which facilitate or deter acquisition.

SES 6341 Advanced Exercise Physiology. (3 2 2) Prerequisite: 3341 or equivalent. Review of acute and long-term effects of sport and exercise on various physiological systems. Course fee $25.

SES 6344 Sport and Exercise Biomechanics. (3 3 0) Mechanical and structural analysis of selected sport and exercise skills with focus on achieving maximum performance with reduced incidence or absence of participant injury. Course fee $30.

SES 6351 Trends/Issues in Sports and Exercise Sciences. (3 3 0) Investigation and discussion of current issues in the fields of exercise and sport sciences, including problems and trends within public and private sectors at local, state or national levels.

SES 6392 Special Topics. (3 3 0) Exploration of an emerging, unique or special topic in sports and exercise sciences. May be repeated once for credit. Course fee $15.
Course Descriptions

SES 6396  Readings and Research in Sports and Exercise Sciences. In-depth readings and related research addressing a specialization in the sports and exercise domain. May be repeated once for credit.

SES 6397  Inquiry in Exercise Science. (3-0-0) Prerequisite: 6311, 6327, 6331 and 6351 and consent of instructor. Students pursue an area of personal interest, develop a research question, investigate the topic, and present findings in both written and oral formats. Student’s research question should focus on a specific area of exercise science including exercise physiology, biomechanics and/or exercise psychology.

SES 6398  Internship in Sport Management. (3-0-0) Prerequisite: 6311, 6327, 6331 and 6351 and consent of instructor. Professional experience through internship in sport industry. Positions in professional and intercollegiate sports, health and fitness clubs, sport facilities, sport marketing firms and other sport entities. Directed and evaluated by a faculty member with supervision of an on-site professional. Students complete an analysis portfolio and oral summary presentation.

SES 6399  Practicum. (3-0-0) Prerequisite: student must submit a formal practicum proposal. Fieldwork consisting of research, leadership and/or management in the sport and exercise domain. Students will be required to accomplish research and/or writing assignments appropriate to the experience. May be repeated once for credit. Course fee $30.

SOCI 1301  Introduction to Sociology. (3-3-0) Prerequisite: 1301. Fundamental concepts of sociology and introduction to analysis of social problems in both collective and individual aspects.

SOCI 1306  Social Problems. (3-3-0) General survey of major social trends and contemporary social problems in American society.

SOCI 3094  Independent Study. (3-3-0) Prerequisite: permission of instructor. Individual study designed to meet needs and interests of the student.

SOCI 3311  Public Opinion. (3-3-0) Nature of public opinion, factors involved in its formation and measurement, techniques of modern propaganda and social controls influencing public opinion formation. Same as PSYC 3311.

SOCI 3350  Social Psychology. (3-3-0) Prerequisite: 1301. Review of theories and research relating to individual behavior in the social environment. Same as PSYC 3350.

SOCI 3362  Statistics for the Social Sciences. (3-3-0) Prerequisite: 1301. Introduction to statistical techniques most commonly used in social sciences, including nonparametric tests, correlation, sampling techniques and use of SPSS. Same as PSOC 3362, SOCW 3362 and CRIJ 3362.

SOCI 3370  Penology. (3-3-0) Corrections in the criminal justice system, organization of correctional systems, correctional roles, institutional operations, alternatives to institutionalization, treatment and rehabilitation, current and future issues. Same as CRIJ 3370.

SOCI 3372  Prisons in America. (3-3-0) Origins, role and philosophy of imprisonment in both juvenile and adult corrections, including special problems of inmate subculture. Same as CRIJ 3372.

SOCI 3374  Victimization. (3-3-0) Introductory course exploring the role, treatment and remedies of crime victims in the criminal justice system. Same as CRIJ 3374.

SOCI 3382  Women and the Criminal Justice System. (3-3-0) Evolution and impact of women’s participation in the justice system as victims, offenders and professionals. Same as CRIJ 3382.

SOCI 3384  Drug Abuse, Crime and Society. (3-3-0) Issues and problems surrounding drugs and drug abuse in society and the connection between drugs and crime. Emphasis on social legal control measures on alcohol and other drugs, prevention and public safety. Same as CRIJ 3384. Spring.

SOCI 3392  Current Issues in Sociology and Social Policy. (3-3-0) Prerequisite: 1301. Sociology of poverty, sociology of medicine, sociological foundations of social policy, sociology of education and sociological issues in addictive lifestyles. May be repeated once for credit when subject matter varies.

SOCI 4099  Practicum in Sociology. (1-6-0-0) Prerequisite: 1301 and permission of instructor. Internship in social agencies, under supervision, as prescribed and arranged by the staff. Focus on translation and extension of sociological knowledge in professionally supervised practice with individuals, groups and communities. May be repeated once with approval of instructor.

SOCI 4302  Criminology. (3-3-0) Prerequisite: 1301. Crime as a social problem, theories concerning the nature and causes of crime and treatment of the criminal, programs and facilities for crime prevention.

SOCI 4304  Community Corrections. (3-3-0) Survey of origins, functioning and effectiveness of probation and parole with emphasis on the problem of pre-sentence/pre-release investigations and supervision.

SOCI 4305  Social Services and the Aging. (3-3-0) Survey of social and economic conditions of the aged in America; physical and mental aspects of aging; institutional care; governmental policies and social service delivery systems. Same as SOCW 4305.

SOCI 4310  Group Processes. (3-3-0) Provides an understanding of the nature of groups, process of group development and relevance of group work in different settings. Same as SOCW 4310.

SOCI 4311  Contemporary Families. (3-3-0) Families as a social institution, changes in family structure and their impact on family members, family organization and disorganization, and future of the family and home.

SOCI 4315  Population Studies and Trends. (3-3-0) Prerequisite: 1301. Population trends as reflected in census and other demographic studies, trends in quantity and growth of populations, and population changes as factors in society.

SOCI 4320  Loss and Grief. (3-3-0) Processes and issues related to death and dying as well as other types of loss and grief, including divorce, adoption and foster care. Includes self-awareness about death and dying, as well as unresolved loss issues in the person’s life. Same as SOCW 4320.

SOCI 4321  Racial and Cultural Minorities. (3-3-0) Characteristics and distribution of ethnic and other culture minorities in modern societies; nature and causes of conflicts arising from group contacts and interaction; problems of minority adjustment and assimilation.

SOCI 4322  Social Classes in Modern Society. (3-3-0) Prerequisite: 1301. Incidence and characteristics of social-economic classes and status groups; forces which give rise to class groups and problems of mobility of individuals among them; patterns and process of conflicts and accommodation among classes; influence of social stratification on personality and group behavior.

SOCI 4325  Sociology of Gender Roles. (3-3-0) Male and female gender roles in American society, evolution of gender roles, contemporary challenges to traditional roles in society.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCI 4330</td>
<td>Sociology of Education</td>
<td>(3 3 0) Social origins of goals and curricula, theories of change and control, nature of achievement in education and educational policy.</td>
</tr>
<tr>
<td>SOCI 4332</td>
<td>Society in Mexico</td>
<td>(3 3 0) Social institutions of modern Mexico, including Mexican families, religion, education, media, military, justice, government, politics and economy. Macro- and micro-level social interactions will be examined in Mexican society. Spring of odd years.</td>
</tr>
<tr>
<td>SOCI 4341</td>
<td>The Community</td>
<td>(3 3 0) Community organizations and problems. Development of the community, its population and occupational structure, institutions and social values, and trends in American community development. Same as SOCW 4341.</td>
</tr>
<tr>
<td>SOCI 4342</td>
<td>Juvenile Delinquency</td>
<td>(3 3 0) Causes and manifestations of delinquency and the problem of the juvenile offender, agencies for delinquency adjustment, evaluation of penal methods.</td>
</tr>
<tr>
<td>SOCI 4345</td>
<td>Health-Care Policy and Planning</td>
<td>(3 3 0) Comprehensive overview of major issues in health-care practices and policy in the United States. Same as SOCW 4345.</td>
</tr>
<tr>
<td>SOCI 4351</td>
<td>Sociology of Religion</td>
<td>(3 3 0) Nature of religious movements and the role of religion in society.</td>
</tr>
<tr>
<td>SOCI 4361</td>
<td>Sociological Theory</td>
<td>(3 3 0) Prerequisite: 1301. Basic concepts and theories of modern sociology and examination of assumptions which underlie them.</td>
</tr>
<tr>
<td>SOCI 4362</td>
<td>Social Research</td>
<td>(3 3 0) Prerequisite: 1301. Logic and techniques of social research. Relationship of social theory and method. Same as SOCW 4362.</td>
</tr>
<tr>
<td>SOCI 4375</td>
<td>Capital Punishment</td>
<td>(3 3 0) Capital punishment in the United States will be examined using a balanced approach. Moral and legal considerations as well as application of the death penalty will be investigated. Same as CRIJ/POCI 4375.</td>
</tr>
<tr>
<td>SOCI 4385</td>
<td>Sociology of Law</td>
<td>(3 3 0) Prerequisite: 1301. Social control functions of law and legal institutions in civil, criminal, family and social welfare laws.</td>
</tr>
<tr>
<td>SOCI 4396</td>
<td>Readings and Research</td>
<td>(3 0 0) Prerequisite: 1301 and permission of instructor. Directed individual and group readings and investigations in areas of sociology not covered in available courses. May be repeated once for credit with permission of instructor.</td>
</tr>
<tr>
<td>SOCI 5302</td>
<td>Criminology</td>
<td>(3 3 0) Crime as a social problem; theories concerning nature and causes of crime and treatment of the criminal; programs and facilities for crime prevention.</td>
</tr>
<tr>
<td>SOCI 5304</td>
<td>Community Corrections</td>
<td>(3 3 0) Origins, functioning and effectiveness of probation and parole with emphasis on the problem of pre-sentence/pre-release investigations and supervision.</td>
</tr>
<tr>
<td>SOCI 5311</td>
<td>Contemporary Families</td>
<td>(3 3 0) Families as social institutions; changes in family structure and their impact on family members; family organization and disorganization; future of the family and home.</td>
</tr>
<tr>
<td>SOCI 5321</td>
<td>Research in Racial and Cultural Minorities</td>
<td>(3 3 0) Characteristics and distribution of ethnic and other culture minorities in modern societies; nature and causes of conflicts arising from group contacts and interaction; problems of minority adjustment and assimilation.</td>
</tr>
<tr>
<td>SOCI 5325</td>
<td>Sociology of Gender Roles</td>
<td>(3 3 0) Male and female gender roles in American society; evolution of gender roles; and contemporary challenges to traditional gender roles in society.</td>
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<td>(3 3 0) Social institutions of modern Mexico, including Mexican families, religion, education, media, military, justice, government, politics and economy. Macro- and micro-level social interactions will be examined in Mexican society. Spring of odd years.</td>
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<td>SOCI 5342</td>
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<tr>
<td>SOCI 5362</td>
<td>Social Research</td>
<td>(3 3 0) Logic and techniques of social research. Relationship of social theory and method.</td>
</tr>
<tr>
<td>SOCI 5385</td>
<td>Research in the Sociology of Law</td>
<td>(3 3 0) Social control functions of law and legal institutions with attention to civil, criminal, family and social welfare laws.</td>
</tr>
<tr>
<td>SOCI 6099</td>
<td>Advanced Field Practicum</td>
<td>(1-6 0 0) Prerequisite: permission of instructor. Advanced fieldwork in social agencies, under supervision, as arranged and directed by the staff. Translation and extension of theoretical knowledge in professionally supervised practice with individuals, groups and communities. May be repeated once with approval of instructor.</td>
</tr>
<tr>
<td>SOCI 6310</td>
<td>Seminar in Social and Political Theory</td>
<td>(3 3 0) Topics vary from classical to modern theories. May, with permission of instructor, be repeated once when topics vary. Same as POSC 6310.</td>
</tr>
<tr>
<td>SOCI 6312</td>
<td>Problems in Social and Political Institutions</td>
<td>(3 3 0) Critical investigation of social conditions affecting the structure and functioning of contemporary social and political institutions and analysis of public policy solutions to these problems. Same as CRIJ/POSC 6312.</td>
</tr>
<tr>
<td>SOCI 6342</td>
<td>Seminar in Criminal Justice Administration</td>
<td>(3 3 0) Contemporary national, state and local problems in criminal justice. With consent of instructor, may be repeated once when topics vary. Same as POSC 6342 and CRIJ 6342.</td>
</tr>
<tr>
<td>SOCI 6362</td>
<td>Seminar in Criminology and Social Policy</td>
<td>(3 3 0) Theories of criminal behavior and research based on these theories; analysis of criminal behavior theories and their impact on social policy. With permission of instructor, may be repeated once for credit when topics vary. Same as CRIJ 6362.</td>
</tr>
<tr>
<td>SOCI 6364</td>
<td>Seminar in Deviance</td>
<td>(3 3 0) Critical investigations of deviant behavior in society. Topics may include crime delinquency, mental illness, alcoholism, drug abuse, institutionalized means of prevention and treatment. With permission of instructor, may be repeated once when topics vary. Same as CRIJ 6364.</td>
</tr>
<tr>
<td>SOCI 6366</td>
<td>Seminar in Juvenile Delinquency and Juvenile Justice</td>
<td>(3 3 0) Theoretical causes of delinquency and youth criminality, rehabilitation and punishment of the juvenile offender and the role of the juvenile justice system. Same as CRIJ 6366.</td>
</tr>
<tr>
<td>SOCI 6378</td>
<td>Program Evaluation and Applied Research</td>
<td>(3 3 0) Prerequisite: undergraduate statistics. Research procedures to systematically investigate the effectiveness of intervention programs and to conduct single-subject design and qualitative research in applied settings. Same as PSYC 6378.</td>
</tr>
</tbody>
</table>
| SOCI 6387   | Seminar in Research Methods | (3 3 0) Nonparametrics; measurement; surveys, research design;
SOCW 2074 Independent Study. (1-3 0 0) Prerequisite: permission of instructor. Directed individual and group investigations of specific areas in sociology, including stratification, intergroup relations, socialization, social institutions and deviance. May be repeated once with permission of instructor.

SOCW 2315 Human Behavior and Personal Adjustment. (3 3 0) Individual and social factors which influence behavior. Emphasis on prevention of maladjustment. Same as PSYC 2315.

SOCW 2361 Introduction to Social Work. (3 3 0) Survey and analysis of social welfare and the social work profession. Philosophy, history, fields of service, practice settings, professional roles, current issues and future directions of social work.

SOCW 3381 Social Policy and Planning. (3 3 0) Prerequisite: 236I and 330I or permission of instructor. Institutional nature of social welfare and its relationship to other institutions in society. Skills and tasks required in policy.

SOCW 3383 Social Work Methods. (3 3 0) Prerequisite: 3380 or permission of instructor. Introduction to principles, values and methods of social work, including social case work, case management, social group work and community organization. Course fee $10.

SOCW 3395 Problems in General Sociology. (3 0 0) Prerequisite: permission of instructor. Directed individual and group investigations of specific areas in sociology, including stratification, intergroup relations, socialization, social institutions and deviance. May be repeated once with permission of instructor.

SOCW 6392 Advanced Issues in Sociology and Social Policy. (3 3 0) Prerequisite: 130I. Social policy, applied research methods, issues in sociological theory, sociological foundations of organizational behavior, sociological foundations of administrative and welfare law, sociological perspectives of corrections or international sociological perspectives. May be repeated once for credit when subject matter varies.

SOCW 6395 Problems in General Sociology. (3 0 0) Prerequisite: permission of instructor. Directed individual and group investigations of specific areas in sociology, including stratification, intergroup relations, socialization, social institutions and deviance. May be repeated once with permission of instructor.

SOCW 6396 Readings in Sociology. (3 0 0) Prerequisite: permission of instructor. Directed individual group readings and investigations in areas of sociology not otherwise covered in available courses. May be repeated for credit with permission of instructor provided topics vary.

SOCW—Social Work

(Offered through the Department of Psychology, Sociology and Social Work)

SOCW 2074 Independent Study. (1-3 0 0) Prerequisite: permission of instructor. Individual study designed to meet needs and interests of the student.

SOCW 2315 Human Behavior and Personal Adjustment. (3 3 0) Individual and social factors which influence behavior. Emphasis on prevention of maladjustment. Same as PSYC 2315.

SOCW 2361 Introduction to Social Work. (3 3 0) Survey and analysis of social welfare and the social work profession. Philosophy, history, fields of service, practice settings, professional roles, current issues and future directions of social work.

SOCW 2379 Practicum in Social Work. (3 0 0) Prerequisite: 236I, permission of instructor. Supervised volunteer experience in social agencies. Successful completion will be noted on student's record by a grade of "S," indicating hours credit with no grade points. Course is not a substitute for Field Instruction I or II.

SOCW 3094 Independent Study. (1-3 0 0) Prerequisite: permission of instructor. Individual study designed to meet needs and interests of the student.


SOCW 3362 Statistics for the Social Sciences. (3 0 0) Introduction to statistical techniques most commonly used in social sciences, including nonparametric tests, correlation, sampling techniques and use of SPSS. Same as POSC 3362, SOCI 3362 and CRJ 3362.

SOCW 3380 Human Behavior in the Social Environment. (3 3 0) Prerequisite: 2315 and 236I. Integrated understanding of processes which influence development of individuals through the life cycle. Enables understanding of people with problems as individuals, members of groups and members of communities.

SOCW 3381 Social Policy and Planning. (3 3 0) Prerequisite: 236I and 330I or permission of instructor. Institutional nature of social welfare and its relationship to other institutions in society. Skills and tasks required in policy.
SOCW 4688 Field Instruction I. (6 0 0) Prerequisite or concurrent enrollment: 2.25 overall GPA, 4383 and permission of instructor. Beginning experience in social agencies, under faculty supervision, involving direct practice activities of the social work student with individuals, groups and community. Course fee $40.

SOCW 4698 Field Instruction II. (6 0 0) Prerequisite or current enrollment: 2.25 overall GPA, 3383, 4688 and permission of instructor. Fieldwork in social agencies under supervision as prescribed and arranged by the staff. Translation and extension of social work knowledge in professionally supervised practice with individuals, groups and communities. Course fee $40.

SOCW 5300 Group Processes. (3 3 0) Understanding the nature of groups, process of group development and relevance of group work in different settings. Fall.

SOCW 5321 Practice Methods with Diverse Populations. (3 3 0) Various disenfranchised groups and the application of practice techniques appropriate to these populations. Values, ethics and self-exploration related to diverse populations are explored and skills needed for culturally competent intervention developed. Spring.

SOCW 5341 The Community. (3 3 0) Community organizations and problems. Development of the community, its population and occupational structure, institutions and social values, and trends in American community development. Spring.

SOCW 5362 Social Research. (3 3 0) Prerequisite: SOCI 1301. Logic and techniques of social research. Relationship of social theory and method. Summer.

SOCW 5380 Human Behavior in the Social Environment I. (3 3 0) Prerequisite: 2315, 2361. Integrated understanding of processes which influence development of individuals through the life cycle. Enables understanding of people with problems as individuals, members of groups and members of communities. Summer.

SOCW 5381 Social Policy and Planning. (3 3 0) Prerequisite: 2361, 3301. Institutional nature of social welfare and its relationship to other institutions in society. Skills and tasks required in policy. Summer.

SOCW 5383 Social Work Methods. (3 3 0) Prerequisite: 3380 or consent of instructor. Introduction to principles, values and methods of social work, including social case work, case management, social group work and community organization. Fall.

SOCW 5688 Field Instruction I. (6 0 0) Prerequisite: 2.25 GPA overall, 5383 and consent of instructor. Beginning experience in social agencies, under faculty supervision, involving direct practice activities of the social work student with individuals, groups and community. Fall.

SOCW 5698 Field Instruction II. (6 0 0) Prerequisite: 2.25 GPA overall, 5383, 5688 and consent of instructor. Field work in social agencies under supervision as prescribed and arranged by the staff. Translation and extension of social work knowledge in professionally supervised practice with individuals, groups and community. Spring.

SOCW 6305 Integrative Seminar. (3 3 0) Prerequisite: completion of all other M.S.W. course work; may be taken concurrently with 6499. Focuses on issues and aspects of practice of broad concern to the profession of social work. Faculty members serve as consultants and resource persons to seminar members.

SOCW 6310 Foundations of Social Welfare. (3 3 0) Historical development of the social welfare system in the United States. Conceptual frameworks are developed for analyzing social welfare institutions and evaluating social welfare policies and programs. Evolution of the social work profession.

SOCW 6320 Micro and Macro Practice Field Seminar. (3 3 0) Prerequisite: must be taken concurrently with 6599. Focus on integration of social work knowledge, theory and skills learned in the classroom with practical application in social work settings. Opportunity for exchange of ideas, feelings and experiences relative to practice issues, professional growth and development, cultural diversity, the helping process, and social work values and ethics.

SOCW 6321 Racism: Discrimination and Society. (3 3 0) Characteristics and distribution of ethnic and other culture minorities in modern societies related to majority groups; nature and causes of discrimination at the societal, institutional and personal level; problems of minority acceptance, adjustment and assimilation; related aspects of policy. Summer.

SOCW 6341 Community and Organizational Practice. (3 3 0) Human service organizations and community with emphasis on theory and practice models. Focuses on understanding community and organizational change.

SOCW 6362 Research Methods in Social Work. (3 3 0) Methods of scientific inquiry as it applies to social work. Techniques and tools of social research, problem conceptualization, research designs and data collection.

SOCW 6380 Human Behavior and Social Environment. (3 3 0) Behavioral and social science knowledge of human behavior and development through the life span. Majors systems in society: individual, group, family and community; and diversity of ethnicity, race, class, sexual orientation and culture.

SOCW 6395 Current Issues in Social Work. (3 3 0) Topics of special interest in the field of social work. Emphasis on recent advances, emerging trends and contemporary perspectives. May be repeated up to three times for credit when topics vary.

SOCW 6497 Applied Social Work Practice I. (5 0 0) Prerequisite: Methods or Direct Practice, 4341 or 6341, 3380 or 6380 and 3301 or 6310. Beginning generalist social work practice experience in social agencies, under faculty supervision, involving practice activities of students with individuals, groups and communities. Course fee $40.

SOCW 6498 Applied Social Work Practice II. (4 0 0) Provides opportunity for the application of social work values, knowledge and skills gained in the classroom and from ASWP I in the student’s area of concentration. Course fee $40.

SOCW 6499 Applied Social Work Practice III. (4 0 0) Builds on experience gained from ASWP. Provides opportunity for the application of social work values, knowledge and skills gained in the classroom and from earlier field experience in the student’s area of concentration. Course fee $40.
**Course Descriptions**

### SPAN—Spanish

(Offered through the Department of English, Philosophy and Modern Languages.)

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPAN 1411</td>
<td>Elementary Spanish I.</td>
<td>(4 3 2) Development of fundamental skills in speaking, listening, reading, writing and grammar.</td>
<td>Fall, spring, summer. Course fee $10.</td>
</tr>
<tr>
<td>SPAN 1412</td>
<td>Elementary Spanish II.</td>
<td>(4 3 2) Prerequisite: 1411.</td>
<td>Continuation of 1411. Fall, spring, summer. Course fee $10.</td>
</tr>
<tr>
<td>SPAN 2311</td>
<td>Intermediate Spanish I.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Strengthens skills in speaking, listening, reading and writing. Fall, spring.</td>
</tr>
<tr>
<td>SPAN 2312</td>
<td>Intermediate Spanish II.</td>
<td>(3 3 0) Prerequisite: 2311 and permission from instructor.</td>
<td>Strengthens skills in speaking, listening, reading and writing. Fall, spring.</td>
</tr>
<tr>
<td>SPAN 2313</td>
<td>Spanish for Heritage Speakers I.</td>
<td>(3 3 0) Prerequisite: heritage speaker, consent of instructor.</td>
<td>Heritage Spanish-speaking students will study Spanish formally in an academic setting in the same way English-speaking students study English. Because the course requires oral competency, it will hone reading and writing skills of heritage speakers. This course will prepare students to take upper-division Spanish courses.</td>
</tr>
<tr>
<td>SPAN 2315</td>
<td>Spanish for Heritage Speakers II.</td>
<td>(3 3 0) Prerequisite: 2313 and consent of instructor.</td>
<td>Continuation of 2313. The geography, history, ancient cultures, politics, literature and art of Latin America.</td>
</tr>
<tr>
<td>SPAN 2371</td>
<td>Spanish for Professionals.</td>
<td>(3 3 0) Prerequisite: 1412 or equivalent and consent of instructor.</td>
<td>Topics include business Spanish, medical Spanish, Spanish for law enforcement. May be repeated once for credit.</td>
</tr>
<tr>
<td>SPAN 3301</td>
<td>Advanced Spanish.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315 or 2371.</td>
<td>Enrichment of vocabulary and enhancement of skills in speaking, listening, reading and writing. Course prepares the student to take advanced Spanish classes that require superior linguistic skills in Spanish.</td>
</tr>
<tr>
<td>SPAN 3307</td>
<td>Advanced Conversation.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Oral practice and presentations.</td>
</tr>
<tr>
<td>SPAN 3308</td>
<td>Vocabulary Building and Composition.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Development of advanced vocabulary in speaking, listening, reading and writing.</td>
</tr>
<tr>
<td>SPAN 3314</td>
<td>Latin American Culture and Civilization.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>The geography, history, indigenous cultures, politics, literature and art of Latin America.</td>
</tr>
<tr>
<td>SPAN 3315</td>
<td>Spanish Culture and Civilization.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>The geography, history, ancient cultures, politics, religion, literature and art of Spain.</td>
</tr>
<tr>
<td>SPAN 3340</td>
<td>Language Arts for Bilingual Students.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Language acquisition theories, developmental theories, history of bilingual education in the United States and Spanish vocabulary for major subject areas at elementary-school level.</td>
</tr>
<tr>
<td>SPAN 4320</td>
<td>Advanced Spanish Grammar.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Advanced grammatical structures in reading, writing, listening and speaking.</td>
</tr>
<tr>
<td>SPAN 4330</td>
<td>Spanish Phonology.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>The sound system of the Spanish language.</td>
</tr>
<tr>
<td>SPAN 4355</td>
<td>Spanish American Literature.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Selected works by major Spanish American writers. May be repeated once for credit when topics vary.</td>
</tr>
<tr>
<td>SPAN 4365</td>
<td>Spanish Literature.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Selected works by major Spanish writers. May be repeated once for credit when topics vary.</td>
</tr>
<tr>
<td>SPAN 4375</td>
<td>Hispanic Writers in the U.S.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Literary works of Hispanic heritage writers in the U.S., with emphasis on contemporary authors.</td>
</tr>
<tr>
<td>SPAN 4385</td>
<td>Hispanic Film.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Films from Spain and Spanish America. Analysis of cultural issues (social, political and historical) within films. Taught in Spanish.</td>
</tr>
<tr>
<td>SPAN 4392</td>
<td>Selected Studies in Spanish.</td>
<td>(3 3 0) Prerequisite: 2312 and 2315.</td>
<td>Concentrated study of selected topics, genres, periods or authors. May be repeated once with permission of instructor/department head.</td>
</tr>
<tr>
<td>SPAN 4393</td>
<td>Honors.</td>
<td>(3 3 0) Prerequisite: senior status and approval of department head.</td>
<td>Completion of a senior thesis or research project by a candidate for graduation with special honors in the department. Must be taken in addition to the 123-hour minimum degree requirement.</td>
</tr>
<tr>
<td>SPAN 4395</td>
<td>Mexican Literature and Culture.</td>
<td>(3 3 0) Prerequisite: 2312 or 2315.</td>
<td>Mexican culture through its literature, especially the Spanish conquest, French Intervention, Mexican Revolution, and current topics such as el machismo, La Llorona, the student massacre of 1968, the life of the campesino, míscares mexicanas, and figures such as Angeles Mastretta and Carlos Fuentes.</td>
</tr>
</tbody>
</table>

### THRE—Theatre

( Offered through the Department of Art, Theatre and Dance.)

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>THRE 1120</td>
<td>Drama Workshop Practicum.</td>
<td>(DRAM 1120)</td>
<td>Practical experience and instruction in the theatrical production process. May be repeated up to a total of six semester hours. Fall, spring. Course fee $25.</td>
</tr>
<tr>
<td>THRE 1310</td>
<td>Introduction to Theatre Arts.</td>
<td>(DRAM 1310)</td>
<td>Not for credit to theatre majors. Various aspects of theatre arts: acting, theatre architecture, dramatic theory, theatre history and various areas of production. Fall, spring.</td>
</tr>
<tr>
<td>THRE 1161</td>
<td>Musical Theatre I.</td>
<td>(1 1 0)</td>
<td>Foundational analysis and performance of musical theatre. May be repeated once for credit.</td>
</tr>
<tr>
<td>THRE 1330</td>
<td>Stagecraft.</td>
<td>(DRAM 1330)</td>
<td>Planning and techniques of constructing stage settings and special scenic units for all types of productions. Spring. Course fee $25.</td>
</tr>
<tr>
<td>THRE 1341</td>
<td>Make-Up.</td>
<td>(DRAM 1341)</td>
<td>Relationship between stage characterization and stage make-up. May be repeated once for credit.</td>
</tr>
<tr>
<td>THRE 1342</td>
<td>Costume Technology.</td>
<td>(3 3 0) Planning and techniques for constructing costumes and special accessories for all types of productions. Fall.</td>
<td></td>
</tr>
<tr>
<td>THRE 1351</td>
<td>Acting I: Basic Techniques.</td>
<td>(DRAM 1351)</td>
<td>Development of basic acting skills and introduction to foundational theories. Emphasis on physical expression. Fall.</td>
</tr>
<tr>
<td>THRE 1352</td>
<td>Acting II: Character Development.</td>
<td>(DRAM 1352)</td>
<td>Further development of basic acting skills with emphasis on character development. Spring.</td>
</tr>
<tr>
<td>THRE 1371</td>
<td>Dramatic Criticism.</td>
<td>(3 3 0) Basics of critiquing dramatic and theatrical texts, live theatrical productions and filmed performances from a performance viewpoint. Fall.</td>
<td></td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Prerequisite(s)</td>
<td>Credits</td>
</tr>
<tr>
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</tr>
<tr>
<td>THRE 1373</td>
<td>Theatre Design Concepts</td>
<td>(3 3 0) Principles and practices of theatre design concepts in areas of set, light and costume design.</td>
<td>Spring</td>
</tr>
<tr>
<td>THRE 2074</td>
<td>Individual Problems</td>
<td>(3 0 0) Individual study designed to meet needs and interests of the student. May be repeated.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 2076</td>
<td>Summer Theatre I</td>
<td>(1-3 0-6) Permitted to be repeated for a total of six semester hours. A maximum of three semester hours may count toward the major.</td>
<td>Summer I, summer II.</td>
</tr>
<tr>
<td>THRE 2331</td>
<td>Concepts in Technical Production</td>
<td>(3 3 0) Prerequisite: 1373. Survey of theatre technology and production crafts. Topics include drafting, scenic</td>
<td>Fall of odd years.</td>
</tr>
<tr>
<td>THRE 2374</td>
<td>Actor's Voice and Movement</td>
<td>(3 3 0) Use and training of the voice and body for the stage. Vocal process, regional dialect control, physical centeredness, expression and versatility.</td>
<td>Fall of odd years.</td>
</tr>
<tr>
<td>THRE 2376</td>
<td>Summer Theatre II</td>
<td>(1-3 0-6) Permitted to be repeated for a total of six semester hours. A maximum of three semester hours may count toward the major.</td>
<td>Summer I, summer II.</td>
</tr>
<tr>
<td>THRE 2394</td>
<td>Individual Problems</td>
<td>(3 0 0) Individual study designed to meet needs and interests of the student. May be repeated.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 2399</td>
<td>Musical Theatre II</td>
<td>(1 1 0) Prerequisite: 1161 (2 hours) Advanced analysis and performance of musical theatre. May be repeated for a total of three semester hours.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 3161</td>
<td>Advanced Drama Workshop Practicum</td>
<td>(3 3 0) Prerequisite: 1120 (three hours) Advanced experience and instruction in the theatrical production process. May be repeated up to a total of six semester hours.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 3312</td>
<td>Play Direction I</td>
<td>(3 3 0) Prerequisite: 1371 and 1352. Directing theory, directing history and play analysis. Emphasis on intrinsic and extrinsic interpretation as well as composition, ensemble and director-actor communication. Research and preparation for theatrical production.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 3335</td>
<td>Concepts in Light Design</td>
<td>(3 3 0) Prerequisite: 1373 and 2331. Theory and practice in light design and equipment. Application of lighting to stage production through play analysis, color theory and development of a light plot.</td>
<td>Fall of even years.</td>
</tr>
<tr>
<td>THRE 3342</td>
<td>Concepts in Costume Design</td>
<td>(3 3 0) Prerequisite: 1342, 1373. Theory and practice in costume design creating costume designs through script, color and historical analysis. Practical application through rendering and working drawings.</td>
<td>Spring of even years.</td>
</tr>
<tr>
<td>THRE 3351</td>
<td>Acting III: Styles in Acting</td>
<td>(3 3 0) Prerequisite: 1352. Various acting periods in the historical genre of theatre. Exploration of period mannerisms, physicality, etiquette, social environment and behavior.</td>
<td>Fall of even years.</td>
</tr>
<tr>
<td>THRE 3355</td>
<td>Computer Applications in Theatrical Design</td>
<td>(3 3 0) Prerequisite: 1330 or 1373. Application of computer technology in the creation of artistic output specific to the theatre designer, including theatrical renderings, drafting and painter's elevations. Software training includes Photoshop, Vectorworks and SketchUp.</td>
<td>Fall of even years.</td>
</tr>
<tr>
<td>THRE 3370</td>
<td>Theatre Fundamentals</td>
<td>(3 3 0) Prerequisite: 1371, 3312. Synthesis of theatre subjects, processes and theories for presentation and demonstration. Integration of acting, directing, history, technical theatre design and design.</td>
<td>Spring of even years.</td>
</tr>
<tr>
<td>THRE 3374</td>
<td>Actor's Voice and Movement</td>
<td>(3 3 0) Prerequisite: 2374. Advanced use and training of voice and body for stage. Advanced voice and diction process, advanced expression and movement, including stage combat and commedia dell'arte.</td>
<td>Spring of even years.</td>
</tr>
<tr>
<td>THRE 3377</td>
<td>Special Topics in Theatre</td>
<td>(3 3 0) Specialized study in theatre as necessary due to advances in technology, research or performance. May be repeated once.</td>
<td>Fall of odd years.</td>
</tr>
<tr>
<td>THRE 3380</td>
<td>Stage Management</td>
<td>(3 3 0) Prerequisite: 1371, 1373. Designed as an introduction to the art and practice of managing a live production for theatre. Styles of management and techniques used in professional and educational theatre are explored. Emphasis on organization and communication. Every other year.</td>
<td>Spring of odd years.</td>
</tr>
<tr>
<td>THRE 3381</td>
<td>Directing II</td>
<td>(3 3 0) Prerequisite: 1371, 1373. Directing theory, directing history and play analysis. Emphasis on intrinsic and extrinsic interpretation as well as composition, ensemble and director-actor communication. Research and preparation for theatrical production.</td>
<td>Spring of odd years.</td>
</tr>
<tr>
<td>THRE 3382</td>
<td>Concepts in Scenic Design</td>
<td>(3 3 0) Prerequisite: 1373, 2331, 3335. Theory and practice in scenic design creating stage settings through script, color and architectural analysis. Practical application through rendering and technical drawings.</td>
<td>Spring of odd years.</td>
</tr>
<tr>
<td>THRE 3383</td>
<td>Stage Management</td>
<td>(3 3 0) Prerequisite: 1371, 1373. Designed as an introduction to the art and practice of managing a live production for theatre. Styles of management and techniques used in professional and educational theatre are explored. Emphasis on organization and communication. Every other year.</td>
<td>Spring of odd years.</td>
</tr>
<tr>
<td>THRE 3393</td>
<td>Honors</td>
<td>(3 0 0) Prerequisite: senior standing and approval of theatre faculty. Completion of a senior thesis or research project by a student who is a candidate for graduation with honors in the department.</td>
<td>Fall, spring.</td>
</tr>
<tr>
<td>THRE 6321</td>
<td>Special Problems in Acting and Directing</td>
<td>(3 3 0) Prerequisite: 1371, 1373. Directing theory, directing history and play analysis. Emphasis on intrinsic and extrinsic interpretation as well as composition, ensemble and director-actor communication. Research and preparation for theatrical production.</td>
<td>Spring of even years.</td>
</tr>
<tr>
<td>THRE 6335</td>
<td>Special Problems in Theatre Design and Technology</td>
<td>(3 0 0) Problems, projects and advanced exploration developed around graduate-level performance opportunities in acting and directing. May be repeated once.</td>
<td>Fall of even years.</td>
</tr>
<tr>
<td>THRE 6396</td>
<td>Readings and Research in Theatre</td>
<td>(3 0 0) Intensive readings and research in theatre history, theatre criticism or other areas of theatrical specialization. May be repeated once.</td>
<td>Fall of even years.</td>
</tr>
</tbody>
</table>