

Course Descriptions

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 follows:

- 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;
- 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 stacked with undergraduate.

6000–6999—masters level.

7000–7999—masters/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 and number in brackets indicates the corresponding common course number, established by the Texas Higher Education Coordinating Board, if the common course number 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 retailer; analyzing balance sheet items—cash, receivables, inventory, long-term assets and current liabilities; accounting for partnership equity. Fall, spring, summer. Course fee \$15.
- 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. Fall, spring, summer. Course fee \$15.
- ACCT 3311 Federal Tax Accounting I. (3 3 0)** Prerequisite: 2302. Practice and procedure in determination of income tax liability of individuals. Fall. Course fee \$10.
- 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. Fall, spring.
- ACCT 3332 Intermediate Accounting II. (3 3 0)** Prerequisite: 3331. Current liabilities; long-term liabilities; capital stock; retained earnings; statement analysis. Fall, spring.
- ACCT 3371 Cost Accounting. (3 3 0)** Prerequisite: 2302. Fundamentals of cost accounting under job order and process cost systems. Cost concepts, reports and behavior. Responsibility accounting by use of standard cost and variance analysis. Fall, spring.
- ACCT 3375 Accounting Information Systems. (3 3 0)** Prerequisite: 3331, recommended CIS 3330, demonstrated computer competence or concurrent enrollment. Using technology and computing in specific business and accounting contexts, using and controlling accounting information systems. Spring.
- 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. Course fee \$10.
- 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. Spring. Course fee \$10.
- ACCT 4315 Contemporary Issues in Tax Planning. (3 3 0)** Prerequisite: 2302. Introduction to income-tax law and how that law interfaces with business, investment, personal activities and decisions. Designed for majors other than accounting. May not be taken by accounting majors to satisfy accounting requirements. Fall.
- 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. Summer.
- ACCT 4334 Fundamentals of Petroleum Accounting. (3 3 0)** Prerequisite: 3332. Generally accepted accounting practices

ACCT 4351–6320

- in petroleum accounting, including successful efforts, full cost, tax, joint interest, conveyances, international aspects.
- ACCT 4351 Auditing. (3 3 0)** Prerequisite: 3332. Ethics and standards, internal control, and auditing techniques and objectives.
- 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; AICPA research bulletins and opinions; pronouncements of other authoritative bodies.
- ACCT 4371 Accounting Law. (3 3 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.
- ACCT 4372 Advanced Cost Accounting. (3 3 0)** Prerequisite: 3371. 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.
- ACCT 4391 Governmental and Non-Profit Accounting. (3 3 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. Fall.
- ACCT 4398 Internship in Accounting. (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. Fall, spring, summer. Course fee \$40.
- ACCT 5311 Federal Tax Accounting II. (3 3 0)** Prerequisite: 3311. Income-tax reporting requirements with respect to property transactions and corporations. Analysis and research of tax questions. Spring. Course fee \$10.
- ACCT 5315 Contemporary Issues in Tax Planning. (3 3 0)** Prerequisite: 2302. Introduction to income-tax law and how that law interfaces with business, investment, personal activities and decisions. Designed for majors other than accounting. May not be taken by accounting majors to satisfy accounting requirements. Fall.
- ACCT 5331 Taxation of Business Entities. (3 3 0)** Prerequisite: ACC 3311. Taxation of partnerships, S Corporations, trusts and estates, and federal estate and gift taxes. Analysis and research of tax questions.
- ACCT 5332 Advanced Accounting. (3 3 0)** Prerequisite: ACC 3332 or concurrent enrollment. Principles and techniques of consolidated statements; foreign exchange; governmental; actuarial science.
- ACCT 5334 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 5351 Auditing. (3 3 0)** Prerequisite: 3332. Ethics and standards, internal control, and auditing techniques and objectives. Course fee \$10.
- ACCT 5361 Advanced Accounting Theory. (3 3 0)** Prerequisite: 3331 and 3332. Development of accounting theory; AICPA research bulletins and opinions; pronouncements of other authoritative bodies.
- ACCT 5372 Advanced Cost Accounting. (3 3 0)** Prerequisite: ACC 3371. 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. Alternate summers.
- ACCT 5391 Governmental and Non-profit Accounting. (3 3 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. Fall.
- ACCT 6092 Special Topics. (1-3 3 0)** Prerequisite: 12 hours of accounting. Topics of special graduate interest. May be repeated for credit when topics change. Course fee \$10.
- ACCT 6096 Reading and Conference. (1-3 0-3 0)** Prerequisite: approval of department head. Directed reading and reporting accounting related to student's sphere of concentration.
- ACCT 6300 Financial Accounting. (3 3 0)** Prerequisite: graduate standing. Structure of accounting, income determination, asset valuation, liability recognition, accounting for ownership equity, and interpretation and analysis of financial statements. Fall.
- ACCT 6301 Thesis. (3 0 0)** Fall, spring, summer.
- ACCT 6302 Thesis. (3 0 0)** Fall, spring, summer.
- ACCT 6305 Accounting for Decision Making. (3 3 0)** Prerequisite: 6300 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; responsibility accounting; relevant costs; cost-volume-profit relationships; contribution approach to cost allocation. Students should not take this course if they have had ACC 4372, 5372 or equivalent. Fall.
- ACCT 6306 Seminar in Accounting Theory. (3 3 0)** Prerequisite: 18 semester hours of accounting. Financial accounting theory; current pronouncements and theory; assigned readings of selected literature; oral and written reports. Spring.
- ACCT 6307 Seminar in Accounting Systems. (3 3 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. Spring.
- ACCT 6308 Seminar in SEC Accounting. (3 3 0)** Prerequisite: 18 semester hours of accounting. Accounting and auditing practice and procedures before the Securities Exchange Commission, standards of professional conduct, problems encountered in public practice and current auditing pronouncements.
- ACCT 6309 Seminar in Tax Research. (3 3 0)** Prerequisite: 3311. Researching problems of all areas of federal taxation. Fall. Course fee \$10.
- ACCT 6310 Seminar in Auditing. (3 3 0)** 4351/5351 and 15 semester hours of accounting. Comprehensive analysis of theory and practice of independent auditing with emphasis on real-world applications and current topics. Fall. Course fee \$10.
- ACCT 6320 Seminar in Professional Accounting. (3 3 0)** Prerequisite: 24 completed or concurrent accounting hours and consent of instructor. Development and refinement of

knowledge of auditing and attestation, 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. Spring. Course fee \$10.

ACCT 6398 Internship in Accounting. (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.

AGBE—Agricultural Business and Economics

(Offered through the Division of Agriculture.)

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.

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. Course fee \$10.

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.

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. Course fee \$10.

AGBE 3304 Agricultural Business Management. (3 3 0)

Prerequisite: junior standing. Organizational structure and management principles of agricultural businesses and cooperatives.

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.

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.

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.

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. Course fee \$15.

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.

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. Course fee \$10.

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. Course fee \$10.

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.

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. Course fee \$15.

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 428. Course fee \$15.

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.

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.

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.

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.

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.

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

AGBE 5313—AGRI 3318

decision-making processes associated with marketing of agricultural products; individual commodity problems.

- AGBE 5313 Advanced Agricultural Finance. (3 3 0)** Prerequisite: 2317. Characteristics of agriculture in relation to financing costs, risks and returns; organization and practices of agricultural credit institutions.
- AGBE 5316 Advanced 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.
- 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. Course fee \$15.
- 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. Course fee \$15.
- 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 0-6 0-12)** Recent advances and current topics in agricultural business and economics. May be repeated once for credit. Course fee \$10.
- 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. Course fee \$15.
- 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. Course fee \$10.
- 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 QBA 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. Course fee \$25.
- AGBE 8301 Organization, Operation and Management of Agribusiness. (3 3 0)** Prerequisite: doctoral students only. 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 8302 Policy, Trade and the Agribusiness Firm. (3 3 0)** Prerequisite: doctoral students only. Effect of monetary and fiscal policy on the growth and operation of the agribusiness firm.

AGRI—Agriculture

(Offered through the Division of Agriculture.)

- 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 powerplants 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. Course fee \$10.

- AGRI 3330 Computer Applications in Agriculture. (3 3 0)**
Prerequisite: demonstrated computer competency or equivalent. Use of the microcomputer, computer networks and agricultural software in solving agricultural problems and improving agricultural business management. Course fee \$5.
- 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 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 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. Course fee \$15.
- 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 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)** 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 8000 Doctoral Dissertation. (1-6 0 0)** Prerequisite: consent of division head; doctoral students only. Doctoral dissertation. Doctoral students only.
- AGRI 8097 Doctoral Research. (1-6 0 0)** Prerequisite: consent of division head; doctoral students only. Investigation of a topic requiring a multi-disciplinary solution. May be repeated for credit.
- AGRI 8101 Doctoral Seminar. (1 0 0)** Prerequisite: consent of division head; doctoral students only. Analysis of significant research with oral presentations and discussions. May be repeated for credit.
- AGRI 8301 Advanced Agricultural Statistics. (3 3 0)** Prerequisite: 6316, 7318 or equivalent; doctoral students only. Advanced statistical methods for design and analyses of research data from both traditional and non-traditional data sets. Course fee \$30.
- AGRI 8302 Agricultural Perspectives on Environmental Risk. (3 2 2)** Prerequisite: 8301; doctoral students only. Contemporary approaches to the assessment of environmental and human health risks from agricultural sources.
- 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 Division of Agriculture.)

- ANSC 1178 Horsemanship I. (1 0 2)** Review of fundamental horse safety and horsemanship to include handling, grooming, equipping, riding western or English, and the relationship of riding to physical and mental well-being. May be used to meet one hour of physical education activity. Same as PHED 1178. Course fee \$65.
- ANSC 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. May be used to meet one hour of required physical education activity. Same as PHED 1274. Course fee \$80.
- ANSC 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. May be used to meet one hour of required PE activity. Same as PHED 1275. Course fee \$80.
- ANSC 1319 Principles of Animal Science. [AGRI 1319] (3 2 2)** 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.
- ANSC 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. Course fee \$12.
- ANSC 2074 Directed Studies. (1-3 0 0)** Individual study designed to meet needs and interests of the student.

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- ANSC 2276 English Riding and Jumping II. (2 0 4)** 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.
- ANSC 2279 Introduction to Hippo Therapy. (2 1 2)** 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.
- ANSC 2371 Anatomy and Physiology of Domestic Farm Animals. (3 2 2)** Prerequisite: 1319. Anatomy and physiology of domestic livestock relevant to commercial production agriculture. Spring. Course fee \$50.
- ANSC 2374 Equine Industry and Care of Horses. (3 2 2)** 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.
- ANSC 2375 Selection and Evaluation of Horses. (3 1 4)** 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.
- ANSC 2376 Meat Animal and Carcass Evaluation. (3 2 2)** 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.
- ANSC 2377 Equine Behavior Modification. (3 1 4)** 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.
- ANSC 3240 Advanced Animal and Meat Evaluation. (2 0 0)** Prerequisite: 2375 or 3304 or consent of instructor. Advanced training in judging and grading animals and meat, and evaluating performance for members of the senior livestock, horse and meat judging teams. May be repeated for credit. Course fee \$40.
- ANSC 3304 Independent Studies in Livestock Evaluation and Selection. (3 0 6)** Prerequisite: 2376 or consent of instructor. 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 selections. Students from this course will be chosen to participate in collegiate livestock-judging contests. Course fee \$25.
- ANSC 3310 Applied Animal Nutrition. (3 3 0)** 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. Course fee \$5.
- ANSC 3317 Meat Science (3 2 2)** 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.
- ANSC 3340 Reproductive Physiology. (3 2 2)** 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.
- ANSC 3355 Animal Breeding. (3 2 2)** Prerequisite or concurrent enrollment: AGRI 3301. Principles of inheritance, breeding systems and selection and their application to domestic species. Course fee \$12.
- ANSC 3374 Principles of Nutrition. (3 3 0)** 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. Course fee \$5.
- ANSC 3375 Feeds and Feeding. (3 2 2)** Prerequisite: 3374 or consent of instructor. Characteristics of feedstuffs used in livestock enterprises. Nutrient 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 \$15.
- ANSC 4097 Undergraduate Research. (2-4 0 0)** Prerequisite: consent of division head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work.
- ANSC 4098 Animal Science Internship. (1-6 0 0)** Prerequisite: consent of division 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 \$20.
- 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)** Prerequisites: 3374 or 3310 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.
- ANSC 4370 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 4473 Equine Business Planning and Management. (4 3 2)** Prerequisite: AGRI 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 \$25.
- 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: AGRI 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 \$25.
- 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 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. Ruminant 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 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. Course fee \$25.
- 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 7346 Advanced Livestock Management Systems. (3 3 0)** Alternate management schemes for livestock enterprises. Cow-calf, stocker-calf finishing cattle, farrow-to-finish swine and sheep production systems. Management, inputs, expected production and husbandry techniques for various operations.
- 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. Microbiology and other related characteristics of meat and its implication in commercial meat processing. Course fee \$15.
- ANSC 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.
- ANSC 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. Course fee \$10.
- ANSC 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.
- ANSC 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.
- ANSC 8301 Integrated Animal and Resource Management (3 3 0)** Prerequisite: doctoral students only. Structure of the animal industry, use of natural and capital resources, and effects on the environment and society.
- ANSC 8302 Case Studies in Integrated Animal Management. (3 3 0)** Prerequisite: doctoral students only. Case studies of actual entities in animal industries, focusing on integration of business, production and environmental challenges faced

ANTH 2351–ARTS 3301

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.

ANTH—Anthropology

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

- ANTH 2351 Cultural Anthropology. [ANTH 2351] (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. Spring.
- ANTH 3302 American Archaeology. (3 3 0)** Survey of prehistoric cultures of North and South America. Fall.
- 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/Archeology. (1-3 0 0)**
Prerequisite: consent of instructor. Library, field and laboratory research in anthropology/archeology problems. May be repeated for up to six credit hours. Fall, spring. Course fee \$15.

ARTS—Art

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

- 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. Course fee \$15.
- ARTS 1304 Art History II. (3 3 0)** Survey of painting, sculpture, architecture and minor arts from the 14th century to present. Fall, spring. Course fee \$15.
- ARTS 1311 Design I. (3 2 4)** Emphasis on two-dimensional design: fundamentals of dot, line, color, form, texture, shape, space and arrangement. Fall.
- ARTS 1312 Design II. (3 2 4)** Prerequisite: 1311. 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. [COMM 1310] (3 3 0)** Basics of digital photography and exploration of the digital process; slide scanning, graphics and photo manipulation. Same as MCOM 1319. Course fee \$30.
- ARTS 1372 Two-Dimensional Art for Non-Art Majors I. (3 2 4)**
Introductory exploration of two-dimensional art for non-art majors. Materials, technique, creative process and studio experience in painting and printmaking. May be repeated once for credit. Fall, spring, summer. Course fee \$15.
- ARTS 1373 Three-Dimensional Art for Non-Art Majors I. (3 2 4)**
Introductory exploration of three-dimensional art for
- non-majors. Materials, technique, creative process and studio experience in ceramics, metalsmithing and sculpture. May be repeated once for credit. Fall, spring, summer. Course fee \$25.
- ARTS 1374 Digital/Computer Art for Non-Art Majors I. (3 2 4)**
Introductory exploration of digital/computer art for non-art majors. Materials, technique, creative process and studio experience in computer graphics and computer art. May be repeated once for credit. Fall, spring, summer. Course fee \$20.
- 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 and execution. The computer is used for typesetting. 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 2371 Crafts I. (3 2 4)** Introduction to a variety of craft media. May be repeated once. Course fee \$17.
- 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. Using type and typography as the primary design element. Exploration of uses of type as a strong communications tool. Spring. Course fee \$20.
- ARTS 3301 Crafts II. (3 2 4)** Prerequisite: 2371. Advanced investigation of various crafts processes. Course will not

- fulfill art requirements for the B.F.A. degree. May be repeated once. Course fee \$17.
- ARTS 3313 Graphic Design II. (3 2 4)** Prerequisite: 2313. Exploration of the poster as a vehicle for visual communication. Emphasis on concept, design and execution. The computer is used for typesetting. Fall. Course fee \$20.
- ARTS 3316 Painting II. (3 2 4)** Prerequisite: 2316. Different forms of the picture surface in order to express various types of visual experiences with emphasis on aesthetic and individual exploration. May be repeated once. Fall, spring.
- 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, assemblage, and stone and wood carving. May be repeated once. Fall. Course fee \$30.
- ARTS 3333 Printmaking II. (3 2 4)** Prerequisite: 2333. Further investigation of relief, intaglio, planographic and stencil processes. May be repeated once. Spring. Course fee \$40.
- ARTS 3341 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 \$25.
- ARTS 3346 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 3372 Two-Dimensional Art for Non-Art Majors II. (3 2 4)** Intensive exploration of two-dimensional art for non-art majors. Materials, technique, analysis, research, creative process and studio experience in two-dimensional art. May be repeated once for credit. Fall, spring. Course fee \$15.
- ARTS 3373 Three-Dimensional Art for Non-Art Majors II. (3 2 4)** Intensive exploration of three-dimensional art for non-art majors. Materials, techniques, analysis, research, creative process and studio experience in ceramics, metalsmithing and sculpture. May be repeated once for credit. Fall, spring. Course fee \$25.
- ARTS 3374 Digital/Computer Art for Non-Art Majors II. (3 2 4)** Intensive exploration of digital/computer art for non-art majors. Materials, techniques, analysis, research, creative process and studio experience in computer graphics and computer art. May be repeated once for credit. Fall, spring. Course fee \$20.
- 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 Intermedia I. (3 2 4)** Prerequisite: foundation studio core and 2313. Introduction to video, performance, 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 problems in typography using type as the primary design element. More in-depth solutions to communications problems through typography. May be repeated once. Spring. Course fee \$20.
- ARTS 3379 Illustration I. (3 2 4)** Prerequisite: foundation studio core. Introduction to image making and visualization of ideas. The computer is used for typesetting. Spring. Course fee \$20.
- ARTS 3381 Art Fundamentals. (3 2 2)** Prerequisite: junior standing. To acquaint the student with several basic art media and their use. Fall, spring. Course fee \$20.
- 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. Emphasis on concept, design and execution. Assignments require more in-depth solutions to publications and corporate identity. The computer is used for typesetting. May be repeated once. Fall. Course fee \$20.
- 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. 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

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- 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. Fall, 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. Course fee \$15.
- 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 Intermedia II. (3 2 4)** Prerequisite: 3376. Emphasis on exploration, video performance, 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. Various formats for illustration will be explored: editorial, institutional, advertising and promotional. May be repeated. Spring. Course fee \$20.
- ARTS 4381 Art Program Development. (3 3 0)** Prerequisite: 3381. Familiarize students with various types of art programs, their philosophies, settings and evaluative bases. Several approaches to innovative and alternative art programs. Fall, spring.
- 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 Painting IV. (3 2 4)** Prerequisite: 3316. Advanced techniques of painting. May be repeated once. Fall, spring.
- ARTS 5323 Drawing VI—Life. (3 2 4)** Prerequisite: 3323. Concentrated study of composition of the human figure; effective presentation of ideas using organizational devices and techniques of professional-quality. May be repeated once. Fall. Course fee \$25.
- ARTS 5333 Printmaking IV. (3 2 4)** Prerequisite: 3333. Advanced individual investigation of printmaking techniques with emphasis on production of major professional-quality pieces. May be repeated once. Spring. Course fee \$40.
- ARTS 5346 Ceramics IV. (3 2 4)** Prerequisite: 3346. Advanced individual investigation of ceramics techniques with emphasis on production of major professional-quality pieces. May be repeated once. Fall, spring. Course fee \$25.
- ARTS 5366 Watermedia IV. (3 2 4)** Prerequisite: 3366. Advanced techniques of watermedia painting. May be repeated once. Spring.
- ARTS 5370 Aesthetics and Advanced Criticism. (3 3 0)** Insights into advanced philosophies of the nature of art, aesthetic principles and critical attitudes through research and discussions. Fall. Course fee \$15.
- ARTS 5371 Art History. (3 3 0)** (1) Western; (2) 20th century; (3) 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. Course fee \$70.
- ARTS 5375 Glass IV—Advanced Techniques of Glass. (3 2 4)** Prerequisite: 3375. Advanced individual investigation of glass-blowing techniques with emphasis on production of major professional-quality pieces. May be repeated once for credit. 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.
- ARTS 6301 Thesis. (3 0 0)** Fall, spring.
- ARTS 6302 Thesis. (3 0 0)** Prerequisite: 5501. Fall, spring.
- ARTS 6313 Special Problems in Graphic Design. (3 0 0-6)** Prerequisite: 4313. Advanced individual exploration of problems in graphic design. May involve work in print or non-print media commonly encountered in professional design work. May be repeated. Course fee \$20.
- ARTS 6316 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 6323 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. Course fee \$20.
- ARTS 6326 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 6333 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 \$40.
- ARTS 6341 Special Problems in Metalsmithing/Jewelry. (3 0 0-6)** Prerequisite: 3341. Advanced individual exploration and experimentation in various metals and techniques. May be repeated. Spring. Course fee \$30.
- ARTS 6346 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 6375 Special Problems in Glass. (3 0 0-6)** Prerequisite: 3375 or 5375. Individual exploration of unique problems relating

to glass blowing. Emphasis on developing new and uniquely personal glass statements. May be repeated once for credit. Fall, spring. Course fee \$70.

- ARTS 6376 Special Problems in Intermedia. (3 0 0-6)** Prerequisite: 4376. Advanced individual investigation of video, performance, photography and moviemaking with emphasis on professional-quality products. May involve mixed or experimental media and techniques. May be repeated. Course fee \$40.
- ARTS 6377 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 6378 Special Problems in Illustration. (3 0 0-6)** Prerequisite: 4379. Advanced individual exploration of problems in illustration. May involve work in mixed media or experimental techniques. May be repeated. Course fee \$20.
- ARTS 6394 M.A. Project. (3 0 0,6*)** Advanced exploration and research in the student's major studio area culminating in the execution of a major studio project and exhibition of the project. Must be repeated once. Classes may meet on a TBA schedule. Fall, spring.
- 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. (3,6 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). 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: admission to the Athletic Training Education Program (ATEP). First of six athletic-training, clinical-education courses. Foundations to pursue an athletic-training career. Course fee \$15.
- ATTR 2272 Clinical Experience in Athletic Training II. (2 1 2)** Prerequisite: 2271. Second of six athletic-training, clinical-education courses. Athletic-training experience with pre-season, athletic-training administrative and athletic-training service provision. Course fee \$15.
- ATTR 2371 Athletic Training I. (3 2 2)** Prevention, care and rehabilitation of athletic injuries and illnesses. Course fee \$12.
- 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 \$20.
- ATTR 3263 Clinical Experience in Athletic Training III. (2 1 2)** Prerequisite: 2272. Third of six athletic-training, clinical-education courses. Athletic-training experience with equipment-intensive sports and knowledge regarding common injuries during collision-type activities. Course fee \$15.
- ATTR 3264 Clinical Experience in Athletic Training IV. (2 1 2)** Prerequisite: 3263. Fourth of six athletic-training, clinical-education courses. Common injuries associated with throwing sports. Course fee \$15.
- 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. Course fee \$20.
- 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. Course fee \$20.
- 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. Course fee \$15.
- 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. Course fee \$15.
- ATTR 4265 Clinical Experience in Athletic Training V. (2 1 2)** Prerequisite: 3264. Fifth of six athletic-training, clinical-education courses. Experience with common injuries associated with running sports.
- ATTR 4266 Clinical Experience in Athletic Training VI. (2 1 2)** Prerequisite: 4265. Capstone of six athletic-training, clinical-education courses with specific exposure to general medical, high-school and non-traditional athletic training practice settings. Broad-based internship experience outside the University athletic-training setting. Practical experiences directed by interacting with clinical instructor and assisting in athletic training as assigned by clinical instructor. Course fee \$15.
- 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. Course fee \$12.

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. May not receive credit for both BIOL 1406 and NSCI 2372. 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. Fall, spring, summer II. 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 and natural selection with laboratory investigations and observations of cells, leaves, stems, roots, plant physiology and ecology. Fall, spring. Course fee \$15.
- 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)** 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)**
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. [BIOL 2420] (4 3 2)**
Prerequisite: four hours of biology. 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 biology. 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 \$8.
- BIOL 3092 Special Topics. (1-6 0-6 0-12)** Prerequisite: consent of instructor. Consideration of recent advances in biology. Course fee \$15.
- 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. Summer. Course fee \$15.
- 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 2 2)** 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 synthesizers. Spring of odd years. Course fee \$15.
- BIOL 3331 Parasitology. (3 3 0)** Important parasites affecting man and domestic animals with concentration on protozoans and helminths. Spring of odd years. Course fee \$5.
- 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 fishes 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 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.
- 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.
- 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.
- 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.
- BIOL 3418 Wildland Soils. (4 3 2)** Formation, properties, classification, distribution and problems of soils of uncultivated lands. Fall of even years.
- BIOL 3420 Natural History of Vertebrates. (4 3 2)** Classification, taxonomy and distribution of vertebrates. Spring of even years.
- BIOL 3424 Wildlife Management Techniques. (4 2 4)** 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.
- BIOL 3425 Introduction to Medicinal Chemistry. (4 3 2)** Prerequisite: CHEM 2525. 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 both 2402 and 3440. Summer I.
- BIOL 3451 Histology. (4 3 2)** Microscopic anatomy of normal animal and human tissues and organs. Fall.
- BIOL 3452 Embryology. (4 3 2)** Prerequisite: 2402 or 3440 or consent of instructor. Embryonic development and morphogenesis in vertebrates with emphasis on human development. Spring.
- BIOL 3510 Entomology. (5 3 4)** General biology of insects: structure, function, ecology, importance and classification. Fall of odd years.
- BIOL 3521 Invertebrate Zoology. (5 3 4)** Prerequisite: 1413 or consent of instructor. Biology of invertebrate animals, including natural history, classification, phylogeny, basic anatomical design and function.
- BIOL 3522 Comparative Anatomy. (5 3 4)** Anatomy of representative vertebrate animals. Lecture and laboratory observations of structural variations that occur among vertebrate animals with emphasis on aquatic and terrestrial forms. Fall.
- BIOL 3532 Plant Classification. (5 3 4)** Prerequisite: 1407 or 1411 or permission of instructor. Classification of spermatophytes, including vocabulary describing characters, ordinal and familial characteristics, systems of classification and nomenclature. Fall of even years.
- BIOL 3575 Medical Microbiology. (5 3 4)** Prerequisite: four hours of microbiology or permission of instructor. Characteristics of disease-causing microorganisms with emphasis on pathogenic bacteria. Fall of even years.
- BIOL 4095 Problems. (1-6 0 0)** Prerequisite: at least 24 hours of biology and permission of department head. Problems course in biology not covered by regular courses. Not to be used as one of the eight courses for a biology major except under special conditions arranged through the department head and dean. May be repeated for a maximum of six hours credit. Fall, spring, summer I, summer II.
- BIOL 4097 Research. (2-4 0 0)** Selected individual research problems. Completion of a problem which is much more extensive than problems encountered in normal class work. Not to be used as one of the eight courses for a biology major except under special conditions arranged through the department head and dean. May be repeated for a maximum of four hours credit. Fall, spring, summer I, summer II.
- BIOL 4098 Internship in Wildlife/Fisheries. (1-6 0 0)** Prerequisite: consent of instructor and 60 hours of coursework. One semester internship with state, federal or private professional agency to observe and participate in daily operations under supervision of co-operating agency personnel involved in wildlife and/or fisheries conservation or management. Not to be used as one of the eight courses for a biology major except under special conditions arranged through the department head and dean. May be repeated for a maximum of six hours credit. Fall, spring, summer I, summer II.
- BIOL 4099 Internship in Health Care. (1-6 0 0)** Prerequisite: consent of department head and 60 hours coursework. One semester internship with a private, county, state or federal institution that will provide the student with additional experience and training for their desired occupation. Not to be used as one of the eight courses for a biology major except under special conditions arranged through the department head and dean. May be repeated for a maximum of six hours credit. Fall, spring, summer I, summer II.
- BIOL 4335 Animal Behavior. (3 3 0)** Psychobiology: behavior of non-human animals, behavior of vertebrates. Fall of even years.
- BIOL 4351 Conservation Biology. (3 3 0)** Prerequisite: 3424 or 4510 or consent of instructor. Fundamentals of the 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 4365 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 even years.
- BIOL 4375 Immunology and Serology. (3 3 0)** Investigation into theories of the human body's defense mechanisms against infection and study of human blood (serology) as a diagnostic tool to detect and evaluate infection. Summer I.
- BIOL 4393 Honors. (3 0 0)** Prerequisite: senior standing and approval of department head. Completion of a senior thesis or research project by a student who is a candidate for graduation with honors in the department.
- BIOL 4401 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. Same as BIOL 4401. Fall of odd years.
- BIOL 4402 Cytotechnology. (4 3 2)** Prerequisite: 1406 and 1407 or 1411 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, cells, chromosomes and fungi. May intersession. Course fee \$5.
- BIOL 4404 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 \$15.
- BIOL 4416 Introductory Biometry. (4 3 2)** Introduction to statistical methods and techniques as applied to biology. Fall.
- BIOL 4425 Limnology. (4 3 2)** 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.
- BIOL 4430 Introduction to Dendrochronology. (4 3 2)** Dendrochronology or tree-ring science; principles and applications to archaeology, environmental studies, ecology and climatology. Same as ESC 4430.

BIOL 4431–5434

- BIOL 4431 Ichthyology. (4 3 2)** Biology of fresh-water and marine fish of the world with emphasis on natural history, ecology, physiology and taxonomy. Spring of odd years.
- BIOL 4432 Herpetology. (4 3 2)** Biology of amphibians and reptiles; classification, ecology, and adaptation and economic importance. Spring of even years.
- BIOL 4433 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.
- 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.
- 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.
- 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.
- BIOL 4510 General Ecology. (5 3 4)** Interrelationships between plants, animals and the environment. Fall, summer I.
- BIOL 4513 Plant Ecology. (5 3 4)** Autecology and synecology of plants, integrating various aspects of range and crop ecology into theoretical ecology. Classical and modern techniques of vegetational and environmental analysis will be applied to Texas High Plains habitat. Spring of even years.
- 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. Summer.
- BIOL 5312 Environmental Microbiology. (3 2 2)** Prerequisite: 2420 or 2572. Role microorganisms play in maintaining balance in nature, disposing of human pollution through bioremediation, and future use as non-polluting pesticides, herbicides and chemical synthesizers. Spring of odd years.
- BIOL 5335 Animal Behavior. (3 3 0)** Psychobiology—behavior of nonhuman animals, behavior of vertebrates. Fall of even years.
- BIOL 5350 Hematology. (3 3 0)** Characteristics of formed elements of blood and their relationship to physiological and pathological processes. Fall of odd years. Course fee \$10.
- 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 I.
- 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.
- BIOL 5402 Cytotechnology. (4 3 2)** Prerequisite: 1406 and 1407 or 1411 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 BIOT 4385 or 4401. Understanding bioinformatics, proteomics and genomics, structure and functions of gene, gene expression. Winter intersession. Course fee \$15.
- BIOL 5416 Introductory Biometry. (4 3 2)** Introduction to statistical methods and techniques as applies to biology. Fall.
- BIOL 5418 Wildland Soils. (4 3 2)** Formation, properties, classification, distribution and problems of soils of uncultivated lands. Fall of even years.
- 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.
- 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.
- 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.
- BIOL 5432 Herpetology. (4 3 2)** Prerequisite: 1413. Biology of amphibians and reptiles; classification, ecology, and adaptation and economic importance. Spring of even years.
- 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.
- 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.

- 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.
- BIOL 5460 Arachnology. (4 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.
- BIOL 5480 Aquaculture. (4 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.
- BIOL 5513 Plant Ecology. (5 3 4)** Autecology and synecology of plants, integrating various aspects of range and crop ecology into theoretical ecology. Classical and modern techniques of vegetational and environmental analysis will be applied to the Texas High Plains habitat. Spring of every other year.
- BIOL 6092 Special Topics. (1-6 0-6 0-12)** Graduate level consideration of recent advances in biology.
- BIOL 6110 Seminar. (1 0 0)** Designed to give the graduate student greater contact with source materials published in his field. Fall of even years.
- BIOL 6301 Thesis. (3 0 0)** Fall, spring, summer I, summer II.
- BIOL 6302 Thesis. (3 0 0)** Fall, spring, summer I, summer II.
- BIOL 6303 Design and Analysis of Experiments. (3 3 0)** Theory and application of experimental design and analysis for biological investigation and experimentation. Fall of even years.
- BIOL 6311 History of Biology. (3 3 0)** Historical development of major concepts of botany and zoology from pre-Greeks to present-day man. Spring of even years.
- BIOL 6312 Zoogeography. (3 3 0)** Geographical distribution of animals.
- BIOL 6314 Plant Geography. (3 3 0)** Geographical distribution of plants as influenced by climatic, geological and ecological conditions. Spring of odd years.
- BIOL 6320 Pathophysiology. (3 3 0)** Examination of scientific concepts of the disease process and human responses to illness.
- BIOL 6330 Principles of Systematics. (3 3 0)** Principles and methods of systematic biology, including taxonomy, rules of nomenclature and phylogeny reconstruction. Spring of odd years.
- BIOL 6331 Speciation. (3 3 0)** Prerequisite: 3301. Facts and theories pertaining to biological principles of evolution, methods and products of speciation.
- BIOL 6365 Reproductive Biology. (3 3 0)** Evolution of sex, mating systems and reproductive strategies of animals with emphasis on vertebrates.
- BIOL 6375 Microbial Genetics. (3 3 0)** Prerequisite: permission of instructor. Molecular genetics of bacteria and bacteriophages, including mechanisms of DNA transfer, uptake, recombination, replication and mutation. Spring of even years.
- BIOL 6395 Advanced Problems. (3 0 0)** Readings, library and laboratory investigations at graduate level. Lectures and conferences with staff. Fall, spring, summer I, summer II.
- BIOL 6397 Advanced Problems. (3 0 0)** Continuation of 6395. Fall, spring, summer I, summer II.
- BIOL 6401 The Process of Scientific Investigation. (4 3 2)** Overview of the process of science and procedures for conducting research, including proposal, grant and manuscript preparation, the peer-review process and presentation style. Fall of even years.
- BIOL 6445 Fisheries Biology. (4 3 2)** Prerequisite: permission of instructor. Biological aspects of fresh-water fisheries, including breeding and feeding habits, adaptations to changing environments and use of fish in water-pollution studies. Field and laboratory work in fisheries survey methods and in lake and pond management. Spring of even years.
- BIOL 6509 Human Ecology. (5 3 4)** Prerequisite: BIOL 4510 or 4513. Critical evaluation of the impact of human activities on the environment. Same as ESC 6509. Fall of odd years.
- BIOL 7370 Endocrinology. (3 3 0)** Prerequisite: permission of instructor. Function of endocrine glands and hormonal regulatory systems. Mechanisms of action of hormones at cellular and molecular levels. Recent advances in endocrinological research.

BIOT—Biotechnology

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

- BIOT 4095 Problems in Biotechnology. (1-6 0 0)** Prerequisite: permission of department head and at least 24 hours of advanced coursework. Independent study in biotechnology not otherwise covered in courses. May be repeated for maximum of six hours.
- BIOT 4098 Internship in Biotechnology. (1-6 0 0)** Prerequisite: Permission of department head. One semester of prearranged internship in industry or research laboratory. Internship will be external; interns will work under supervision of personnel involved in biotechnology industry. A comprehensive report will be required at the end of the internship.
- BIOT 4385 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 of even years.
- BIOT 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.
- 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. May intersession.
- 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. Course fee \$15.

BUSI 1301–CD 3094

BUSI—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.
- 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 U.S. judicial process; constitutional, criminal, 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 is repeatable 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 Healthcare. (3 3 0)** Prerequisite: junior standing. Healthcare law course designed for healthcare 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 Department of Management, Marketing and General Business 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.

- BUSI 5370 Legal Aspects of Healthcare. (3 3 0)** Healthcare law course designed for healthcare 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 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.

CD—Communication Disorders

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

- 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. Course fee \$10.
- CD 2373 Survey of Communication Disorders. (3 3 0)** Survey of human communication and disorders in children and adults. Fall.
- CD 2375 Anatomy and Physiology of Hearing. (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. 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.
- 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 3350 **Fluency and Voice Disorders. (3 3 0)** Prerequisite: 2371, 2372. The nature and fluency resonance and voice disorders in childhood. Two-and-a-half clock hours of observation required. Spring.
- CD 3355 **Introduction to Audiological Assessment. (3 3 0)** Prerequisite: 2375. Measurement of basic audiologic test battery, including audiograms, masking, speech recognition and immittance. Five hours of audiology observation required. Spring. Course fee \$5.
- CD 3360 **Cultural Diversity in Communication Disorders. (3 3 0)** Prerequisite: 2370, 2372. Exploration of a wide range of cultural differences and their implications in the general community. Spring.
- CD 3370 **Diagnosis in Communication Disorders. (3 3 0)** Prerequisite: 3330, 3350. Overview of general procedures in diagnosis in communication disorders. Fall. Course fee \$5.
- 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 4380 **Introduction to Research in Communication Disorders. (3 3 0)** Prerequisite: 3330, 3340, 3350. 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. Fall.
- 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 4384 **Cleft Palate and Craniofacial Anomalies. (3 3 0)** Prerequisite: 2375, 3330, 3340. Communication disorders related to anomalies of craniofacial structures, including orofacial clefting of lips and palate. Fall.
- CD 4385 **Technology Applications in Communication Disorders. (3 3 0)** Prerequisite: 3350. 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: 3350, 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 4399 **Clinical Procedures/Professional Practices in Communication Disorders. (3 0 0)** Prerequisite: 3330, 3350. Senior-level introduction to clinical procedures and professional practices. Students work as apprentices to graduate students in planning of evaluations and treatment for clients with speech and language disorders. May be repeated up to two semesters. Fall, spring. Course fee \$60.
- 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. Fall.
- 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 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 aphasias, dementia and Alzheimer's disease as well as closed-head injuries. Spring.
- CD 6335 **Fluency Disorders. (3 3 0)** Theories, etiology, assessment, personal impact and therapeutic intervention of fluency disorders in children and adults. Fall.
- CD 6350 **Swallowing Disorders. (3 3 0)** Cognitive and methodologic approaches to research, evaluation and therapy in the area of swallowing disorders (dysphagia). Fall.
- CD 6360 **Aural Rehabilitation. (3 3 0)** Approaches to aural rehabilitation in children and adults. Introduction to educational audiology and assistive listening devices. 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 Assessment in the School-Age Child. (3 3 0)** Language assessment of school-age children. Problems and techniques of assessing the individual with later language development. Spring.
- CD 6380 **Speech Science and Instrumentation. (3 2 2)** Normal process of speech production from anatomic, physiologic, kinematic, aerodynamic, acoustic and perceptual perspectives. Emphasis on measurement and analysis techniques, instrumentation and experimental paradigms used to study speech production and perception. Spring. Course fee \$60.
- 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 aspect of the field. May be repeated once for credit. Spring.
- 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—CHEM 4411

CD 6398 Application of Clinical Principles. (3 0 0) 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.

CD 6399 Advanced Application of Clinical Principles. (3 0 0) 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 \$60.

CHEM—Chemistry

(Offered through the Department of Mathematics, Physical Sciences and Engineering.)

CHEM 1405 General Chemistry I. (4 3 2) Introductory course for non-chemistry majors. Fundamental concepts of chemistry, including atomic structure, chemical bonding, chemical reactions and states of matter. Not open to students who have credit in 1411. It is recommended that MATH 1314 be taken concurrently or earlier. Selected laboratory experiments. 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 2525 Organic Chemistry II. [CHEM 2425] (5 3 4) Prerequisite: 2523. Continuation of 201. Halides, alcohols, ethers, carboxylic acids and functional derivatives, aldehydes, ketones, amines and sugars are discussed. Selected laboratory experiments. Spring. 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, atomic structure 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 current 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 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 5423L. 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 glycolysis, citric acid cycle and urea cycle), bioenergetics, electron transport and oxidative phosphorylation, photosynthesis and biological information flow. Spring.
- CHEM 5411 Instrumental Analysis. (4 3 4)** Prerequisite or concurrent enrollment: 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 5321. 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 coursework. 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 6312 Molecular Spectra and Structure. (3 3 0)** Prerequisite: 3522. Introduction to molecular spectroscopy and its relations to structure, theoretical treatments, quantum and wave mechanics, rotational, vibrational, electronic and magnetic transitions in molecules.
- CHEM 6320 Advanced Inorganic Chemistry. (3 3 0)** Prerequisite: 4431. Determination of molecular structure of inorganic and organometallic species, modern aspects of diffraction, 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 6350 Introduction to Quantum Mechanics. (3 3 0)** Prerequisite: 3522. Basic concepts of quantum mechanics; square well, rigid rotator, harmonic oscillator and hydrogen atom. Application to chemical systems in terms of resonance, wave mechanics, perturbation and variation methods.
- CHEM 7423 Life Science Biochemistry I. (4 3 2)** Amino acids, DNA technology, proteins, collagen synthesis and biochemical aspects of animal, plant, biological science and biotechnology. Fall. Course fee \$35.
- CHEM 7424 Life Science Biochemistry II. (4 3 2)** Carbon, nitrogen and sulfur metabolism, lipid and triglyceride synthesis and metabolism, glycolysis and gluconeogenesis, vitamin biosynthesis, biochemical aspects of bacterial and mammalian nutrition and biotechnology. Spring. Course fee \$35.

CIS—Computer Information Systems

(Offered through the Department of Computer Information Systems.)

- CIS 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.
- CIS 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 the mechanics of running, testing and debugging. The course also 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.
- CIS 2390 Systems Analysis and Design. [BCIS 2390] (3 3 0)** Prerequisite: demonstrated computer competency or 1315 or consent of instructor. Examination of information analysis, 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.

CIS 3310–4390

- CIS 3310 Using Application Software on Microcomputers. (3 3 0)** Prerequisite: demonstrated computer competency. Use of microcomputer software packages. Spreadsheets, graphics, data-base packages and text processing. Emphasis on advanced use and integration of software packages. Course fee \$20.
- CIS 3312 Computing for the Business Enterprise. (3 3 0)** Prerequisite: 3310. Broad-based treatment of the integration of computing into the business environment for the experienced user. Emphasis on efficient use of software and productivity tools. Once per year. Course fee \$20.
- CIS 3330 Management Information Systems. (3 3 0)** Prerequisite: demonstrated computer competency and junior standing. In-depth study of conceptual, behavioral and psychological aspects of organizational information systems. Topics include development, operation, management, uses, parties involved, control, structure and social impacts of information systems. Fall, spring. Course fee \$20.
- CIS 3350 Database Systems Design. (3 3 0)** Prerequisite: 2390, CS 2315. Principles of database design and structure. Analysis and implementation of database systems with emphasis on the relational mode. 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.
- CIS 3360 Object-Oriented Analysis and Design. (3 3 0)** Prerequisite: 2390, CS 2315. Thorough overview of concepts of object-oriented analysis and design methods. Focus on modeling to analyze and specify logical requirements in an organizational context. Emphasis on software development process, static architecture, dynamic models and development cycles. Evaluation and selection of appropriate design patterns. Use of models in design of object-oriented applications using documentation standards such as UML. Case studies will be utilized. Course fee \$20.
- CIS 3372 Web Application Development. (3 3 0)** Exploration of the concepts and techniques related to building web applications. Emphasis on using client-side technologies: XHTML, JavaScript, CSS and cookies. Techniques for using images and animation for the web. Spring. Course fee \$20.
- CIS 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.
- CIS 3385 Data Communications and Networking Technologies. (3 3 0)** Prerequisite: demonstrated computer competency or consent of instructor. Introduction to data communications and network concepts. Survey of emerging local area network (LAN) technologies. Students will be exposed to designing, configuring and implementing LANs. Topics include integration of hardware and software elements, network architecture, protocols, security, control, configuration and design fundamentals. Course fee \$20.
- CIS 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.
- CIS 4098 Internship in CIS. (3 0 0)** Prerequisite: junior standing and approval of department head. One semester of prearranged work in CIS 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.
- CIS 4310 Decision Support/Artificial Intelligence Systems. (3 3 0)** Prerequisite: QBA 2342. Concepts of decision support systems (DSS), including DOS 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.
- CIS 4343 Supply Chain Management. (3 3 0)** Prerequisite: QBA 4331, CIS 3330 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 tradeoffs involved in managing these costs. Fall.
- CIS 4350 Data Warehousing and Data Mining. (3 3 0)** Prerequisite: 3350, QBA 2342. Study and application of the concepts and techniques related to designing and building data warehouse applications and data marts. Reviews the management and usage of data, online analytical processing and data mining concepts, tools and techniques. Fall. Course fee \$20.
- CIS 4370 Health Informatics and E-Medicine. (3 3 0)** Prerequisite: demonstrated computer competency or consent of instructor. Applications and management of information technology (IT) in the healthcare sector with the goal of improving quality and efficiency of delivery. Review of health information systems, IT architecture requirements, “best practice” knowledge bases, tele-health, patient privacy issues and health care automation. Course fee \$20.
- CIS 4372 Information Visualization and User Interface Design. (3 3 0)** Prerequisite: CS 2315. Study and application of the design of computer-human interfaces. Utilizes both concepts and principles developed from studies in cognitive psychology and empirical studies of software interfaces. Focuses on visual presentation of large multi-dimensional data sets for data analysis. Course fee \$20.
- CIS 4382 Software Development in a Database Environment. (3 3 0)** Prerequisite: 3382 or consent of instructor. Development of front-end database applications using a visual, event-driven, Rapid Application Development (RAD) tool, including a report generator. Extensive study of Structured Query Language (SQL) with Data Access Objects (DAO), Remote Data Objects (RDO) and ActiveX Data Objects (ADO). Course fee \$20.
- CIS 4390 Software Systems Development. (3 3 0)** Prerequisite: 3350, 3360 and senior standing. A capstone project for the 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.

- CIS 4392 Applied Problems in Computer and Information Systems. (3 3 0)** Prerequisite: consent of instructor. Case problems dealing with data processing in business with emphasis on applications. Course fee \$20.
- CIS 6096 Reading and Conference. (1-3 0 0)** Prerequisite: 6305 and consent of instructor. Directed reading and reporting in information systems as related to the student's area of interest. May be repeated once. Course fee \$20.
- CIS 6305 Management of Enterprise Information Technology. (3 3 0)** Thorough examination of the role of information and related technologies on strategic and operational plans of the enterprise. Emphasis on use of information technology to respond to enterprise competitive forces. Presentations of the role of information technology to manage organizational efficiency and transformation efforts in a global competitive environment. Course fee \$20.
- CIS 6320 Simulation. (3 3 0)** Prerequisite: 6305 and consent of instructor. 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.
- CIS 6325 Development of Internet Applications and Electronic Commerce. (3 3 0)** Prerequisite: 6305 and consent of instructor. 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.
- CIS 6330 Software Engineering and Systems Development. (3 3 0)** Prerequisite: 6325 or consent of instructor. 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. Course fee \$20.
- CIS 6335 Software Development for the World Wide Web. (3 3 0)** Prerequisite: 6325 or consent of instructor. Comprehensive introduction to programming tools and skills required to build and maintain server sites on the World Wide Web. Focus will be on use of Open Source tools, including Open Source operating systems. Course fee \$20.
- CIS 6340 Advanced Network Administration and Management. (3 3 0)** Prerequisite: 6325 or consent of instructor. 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. Course fee \$20.
- CIS 6342 Decision Support Techniques. (3 3 0)** Prerequisite: 6335, QBA 6305 or consent of instructor. Algorithms and methodologies that have been developed to support the decision-making process. Focus on understanding of strengths and weaknesses of each of these methodologies with the objective to being able to select the best tool for a given decision-making task. Course fee \$20.
- CIS 6350 Database Development for Business Applications. (3 3 0)** Prerequisite: 6325 or consent of instructor.

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. Course fee \$20.

- CIS 6360 Enterprise Planning and Process Re-engineering. (3 3 0)** Prerequisite: 6325 or consent of instructor. Strategic role of information technology; information as a corporate resource; theory and application of process re-engineering as it relates to information technology; new paradigm of information technology planning. Course fee \$20.

- CIS 6375 Planning for IT in Biotechnology and Healthcare. (3 3 0)** Prerequisite: 6335 and or consent of instructor. Issues and strategies associated with strategic planning and implementation of the application of IT in healthcare 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.

CRIJ—Criminal Justice

(Offered through the Department of History, 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)** Judiciary 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. (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. (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. Course fee \$10.
- CRIJ 3370 Penology. (3 3 0)** Corrections in the criminal justice system, organization of correctional systems, correctional role, institutional operations, alternatives to

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- institutionalization, treatment and rehabilitation, current and future issues. Same as SOCI 3370. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- 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)** 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 System. (3 3 0)** Introduction to concepts of ethics and examination of contemporary ethical issues in the field of criminal justice.
- 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 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 SOCW 4376.
- CRIJ 4392 Topics in Criminal Justice. (3 3 0)** Thorough examination of a contemporary issue or problem in criminal justice. With permission of instructor, may be repeated when topics vary.
- 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 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. (3,6 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 Judiciary. (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 6337 Advanced Studies in Criminal Law. (3 3 0)** Critical study of aspects of law that are relevant to the criminal justice system and its related processes, including theories of law, historical development, substantive and procedural laws, and administrative law. Same as POSC 6337.
- CRIJ 6340 The Criminal Justice System—An Overview. (3 3 0)** Intensive overview of the criminal justice system as a system, including theory, current issues and trends. Same as POSC 6340.
- CRIJ 6342 Seminar in Criminal Justice. (3 3 0)** Contemporary national, state and local problems in criminal justice. With permission of instructor, may be repeated once when topics vary. Same as POSC/SOCI 6342.
- CRIJ 6346 Seminar in Criminal Justice Administration and Public Policy. (3 3 0)** Advanced study of organizational theories with application to complex criminal justice organizations in the areas of human resource management, financial management, intergovernmental relations, planning and evaluation of programs. With permission of instructor, may be repeated once when topics vary. Same as POSC 6346.
- CRIJ 6348 Seminar in Criminal Justice Ethics. (3 3 0)** Major moral theories, application of ethical principles and moral dilemmas in policing, the courts and corrections.

- CRIJ 6362 Seminar in Criminology and Social Policy. (3 3 0)** Theories of criminal behavior and research based upon theories, analysis of criminal behavior theories and their impact upon social policy. Same as SOCI 6362.
- CRIJ 6364 Seminar in Deviance. (3 3 0)** Critical analysis of deviant behavior in society. Topics may include crime, delinquency, mental illness, alcoholism, drug abuse, institutionalized means of prevention, control and treatment. Same as SOCI 6364.
- CRIJ 6366 Seminar in Juvenile Delinquency and Juvenile Justice. (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 SOCI 6366.
- CRIJ 6372 Seminar in Corrections. (3 3 0)** Examination of the philosophical justification of prisons in the United States, personnel management issues, inmate social structure, community corrections and correctional reform. With permission of instructor, may be repeated once when topics vary.
- CRIJ 6374 Seminar in Rehabilitation and Resocialization Process of Offenders. (3 3 0)** Examination of rehabilitation and resocialization models, rehabilitation and the criminal justice system, effectiveness of rehabilitation and resocialization, the future of rehabilitation and critical issues in the field. With permission of instructor, may be repeated once when topics vary.
- CRIJ 6387 Seminar in Research Methods. (3 3 0)** Nonparametrics; measurement; surveys, research, design; scale construction; methodology. Same as POSC/SOCI 6387. Course fee \$8.
- CRIJ 6388 Statistics for Social and Criminological Research. (3 3 0)** Prerequisite: undergraduate social statistics or equivalent. Statistical techniques most commonly used in criminal justice 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 Computer Information Systems.)

- CS 2315 Object-Oriented Paradigm in Java. [COSC 2315] (3 3 0)** Prerequisite: CIS 1315, ENGR 1301 or consent of instructor. Principles of object-oriented programming to design and solve programming problems using Java. Topics to include classes objects, methods, inheritance and GUI objects. Development of Java applications using control structure, multithreading, user interfaces components and multimedia applications. Course fee \$20.
- CS 2325 Computer Organization and Assembly Language. [COSC 2325] (3 3 0)** Prerequisite: 2315 and 2375. 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 \$20.

- CS 2375 Discrete Structures and Logic Design. (3 3 0)** Prerequisite: MATH 1314 or 1324. A theoretical foundation for computer science, including sets, counting techniques, functions, relations, ordering and equivalences, propositioned logic, Boolean algebra, graph theory with applications to trees and network models, probability and statistics. Course fee \$20.
- CS 2377 Data Structures and Algorithms. (3 3 0)** Prerequisite: 2315 and MATH 1325 or 2413. Introduction to the fundamentals of data structures and algorithms analysis and implementation. Topics include recursion, the underlying philosophy of object-oriented programming, (including stacks, queues, linked lists, hash tables, trees and graphs), the basics of algorithmic analysis, and an introduction to the principles of language translation. Course fee \$20.
- CS 3303 Object-Oriented Software Development. (3 3 0)** Prerequisite: 2315 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. Continuation of 2315. Course fee \$20.
- CS 3307 Algorithm Design and Analysis. (3 3 0)** Prerequisite: 2377 and 2375. 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 3315 Scripting Languages. (3 3 0)** Prerequisite: 2315. 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 \$20.
- CS 4305 Compiler Design. (3 3 0)** Prerequisite: 3307. 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 \$20.
- CS 4320 Multi-Platforms Networking and Networks Design. (3 3 0)** Prerequisite: CIS 3385 or consent of instructor. Introduction to networks architecture, protocols and standards. Investigation of various techniques to plan and implement effective multi-vendor networks, use and managing of networks and Internet infrastructure. Examinations of theories for design, analysis, evaluation, modeling and other issues for high-speed switches, interfaces and controller of high-speed networks. Course fee \$20.
- CS 4325 Computer Architecture. (3 3 0)** Prerequisite: 2325. Reviews of von Neumann architecture and its limitations; parallel computer structures and concurrent computation; pipeline computers and vectorization methods; array processors; multiprocessor architectures and programming; dataflow computers.
- CS 4330 Computer Graphics. (3 3 0)** Prerequisite: 2377. Principles of interactive computer graphics; systems organization and device technologies for raster and vector

CS 4352–ECON 3302

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 4352 Operating Systems. (3 3 0)** Prerequisite: 2377. 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.
- CS 4360 Approaches to Internet and Computer Networks Security. (3 3 0)** Prerequisite: CIS 3385. Presentations of essential computer network security in wired and wireless network topologies, including authentication, encryption and server side protection. Packets, TCP/IN, 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). Fall. Course fee \$20.
- CS 4385 Concurrency and Distributed Systems. (3 3 0)** Prerequisite: 4352. 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 \$20.

DANC—Dance

(Offered through the Department of Music and Dance.)

- DANC 1070 Basic Ballet. [DANC 1041, 1042] (1-3 0-1 2-4)** Developing skills in ballet technique for the beginner. May be repeated for credit.
- DANC 2070 Ballet Ensemble. [DANC 0051, 0052] (1-2 0 2-5)** Prerequisite: audition. Students will present concerts at WTAMU and on occasion tour the Texas Panhandle area. May be repeated up to a total of eight semester hours credit.
- DANC 2075 Individual Problems. [DANC 2301] (1-3 0 0)** Individual work in area of student's special interest.
- DANC 2370 Advanced Beginner/Intermediate Ballet. [DANC 2341, 2342] (3 1 4)** Prerequisite: two semesters of 110 or consent of instructor. Designed for the student who has basic knowledge of ballet and wishes to increase artistic, intellectual and physical skills. May be repeated for credit.
- DANC 3113 Pas De Deux (Partnering). (1 0 2)** Prerequisite: consent of instructor. Art of supported adagio with emphasis on classic and contemporary forms.
- DANC 3119 Junior Dance Concert. (1 0 0)** For dance majors. Individualized projects in dance. Students choreograph or perform for public presentation.
- DANC 3211 Dance Forms: Character, Jazz, Tap. (2 0 4)** Prerequisite: 2370. Survey of American musical theatre with emphasis on technique and style of the jazz idiom. May be repeated for credit.
- DANC 3212 Contemporary Dance. (2 0 4)** Prerequisite: consent of instructor. Theory and technique of contemporary dance, including analysis of movement styles and developmental methods. Fundamentals of placement, flexibility and motor skills. May be repeated for credit.

- DANC 3310 Advanced Intermediate Ballet. (3 1 4)** Prerequisite: two years of ballet 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 3315 Dance History. (3 0 0)** Survey of dance art from prehistoric times to present; emphasis in tracing development of modern and classic dance.
- DANC 3316 Dance Teaching Essentials. (3 0 0)** 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 3382 Arts Management. (3 0 0)** Business aspects of staging artistic performances, scheduling, facility management, personnel and union contractors, audience development, advertising, sales and promotion.
- DANC 4095 Individual Problems. (1-3 0 0)** Advanced individual work in areas of student's special interest.
- DANC 4119 Senior Dance Concert. (1 0 0)** For advanced dance majors. Individualized dance project reinforcing and expanding skills of public performance. Emphasis on choreography or performing.
- DANC 4122 Choreography. (1 0 2)** Prerequisite: six semester hours of dance courses. 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. May be repeated.
- DANC 4310 Advanced Ballet. (3 1 4)** Prerequisite: 3310 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.
- DANC 6122 Graduate Choreography. (1 0 0)** Prerequisite: 4122. Continuation of 4122. Advanced course in creating dances. May be repeated once for credit.
- DANC 6310 Graduate Ballet. (3 0 0)** Prerequisite: 4310. Classical ballet techniques at graduate level. May be repeated once for credit.

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 domestic and international economics. Fall, spring, summer. Course fee \$15.
- ECON 2302 Principles of Microeconomics. (3 3 0)** Survey of microeconomic principles and their application to current problems and policies. Fall, spring, summer. Course fee \$15.
- 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. Spring. Course fee \$15.
- ECON 3302 Fundamentals of Engineering Economy. (3 3 0)** Prerequisite: MATH 1314 or 1316 or 1324 or 1348 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 of tax implications; economic evaluation of projects; risk and uncertainty; replacement analysis; and capital financing. Alternate falls.

- 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. Fall.
- ECON 3321 Development of Modern Capitalism. (3 3 0)** Factual and interpretative study of modern economic development, technology, capital formation, population, income and the rise of capitalistic institutions, ideologies and methods of production.
- ECON 3394 Supervised Readings in Economics. (3 0 0)** Prerequisite: approval of department head. Individual study designed to meet needs and interest of the student. Course fee \$10.
- 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. Alternate springs.
- 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 4321 Comparative Economic Systems. (3 3 0)** Analysis of competing economic ideologies. Emphasis on theoretical aspects of capitalism, socialism, communism and their variants. Alternate falls.
- ECON 4332 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. Alternate falls.
- ECON 4341 International Economics. (3 3 0)** Basic economic factors in international relations. Distribution of resources; principles of international trade, exchange and capital movements; objectives, methods and economic consequences of various commercial policies. Alternate springs.
- ECON 4342 Economic Development. (3 3 0)** Theory of economic growth and problems of economic development of lesser developed areas. Alternate falls.
- 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. Alternate springs.
- 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. Fall.
- 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. Alternate falls.
- ECON 4364 Introduction to Quantitative Economics and Finance. (3 3 0)** Prerequisite: QBA 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 QBA 4364. Alternate springs.
- ECON 4370 Economics of Biotechnology and Healthcare. (3 3 0)** Broad overview of economics of biotechnology, health and pharmaceuticals. Emphasis includes analysis of health innovations and technologies, comparative healthcare systems, market structures in healthcare 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 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. Fall, spring, summer.
- 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. Alternate springs.
- ECON 5321 Comparative Economic Systems. (3 3 0)** Analysis of competing economic ideologies. Emphasis on theoretical aspects of capitalism, socialism, communism and variants of those systems. Some independent study required by graduate students. Alternate Falls.
- 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. Alternate springs.
- 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. Fall.
- ECON 5361 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. Independent analysis emphasized. Alternate falls.
- 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 6096 Readings and Research. (1-3 0 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 a different field of economics under a different instructor. Course fee \$10.

ECON 6300–EDAD 6313

- ECON 6300 Topics in Contemporary Economic Theory. (3 3 0)**
Prerequisite: graduate standing. Intensive analysis of essential microeconomic and macroeconomic theory. Spring.
- 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. Fall.
- 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. Spring, alternate summers.
- 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. Alternate springs.
- 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. Alternate summers.
- 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. Alternate falls. Course fee \$15.
- ECON 6362 Advanced Business Forecasting. (3 3 0)**
Prerequisite: QBA 6305 or equivalent. An analysis of forecasting techniques and business theories, the interconnection between forecasting methods and the conditions under which each are used is examined. The similarities and differences between forecasting for an industry and for the firm are identified. Same as QBA 6362. Alternate springs.
- ECON 6370 Economics of Health and Medical Care. (3 3 0)**
Fundamental economic relations governing the demand, supply, management and financing of the healthcare industry. Topics include the role of government policy, technology, managed care and international comparisons. Alternate falls.
- ECON 6392 Special Topics. (3 3 0)**
Prerequisite: 12 hours of economics. Topics of special graduate interest. May be repeated for credit when topics change. Course fee \$5.

EDAD—Educational Administration

(Offered through the Division of Education.)

- EDAD 6092 Seminar in Educational Leadership. (1-3 1-3 0)**
Examination of current problems, issues and trends relating to the role of the school superintendent. Topics vary from semester to semester but consistently focus on major issues of public and/or private education. Course fee \$20.
- EDAD 6303 Introduction to Educational Leadership. (3 3 0)**
Introduction to educational leadership and the role of the building-level administrator. Topics include organizational structure and roles formal leaders play within educational organizations; emphasis on leadership roles, behaviors and responsibilities. Fall, spring, summer I. Course fee \$30.
- 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 I. Course fee \$15.
- EDAD 6305 Educational Leadership and Technology. (3 3 0)**
Leadership responsibilities and technology within the school setting, promoting instructional application of software, application of theory and relevance to daily practice in teaching and administrative roles. Fall, spring. Course fee \$25.
- EDAD 6306 School Business Management and Finance. (3 3 0)**
Historical and modern theories 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 summary of finance, setting tax rates, financial forecasting, bond issues, bid laws and investments. Fall, spring. Course fee \$15.
- 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). Summer course will offer a travel opportunity at the students' expense. Course fee \$30.
- 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, including Challenging Outdoor Personal Experiences (COPE) course. Fall, spring, summer I. Course fee \$30.
- EDAD 6312 Performance Competencies in Educational Leadership. (3 3 0)**
Prerequisite: instructor approval. This is the capstone course based on the State Board of Educator Certification principal competencies. Students will successfully identify, understand, recognize and apply the principal TExES (Texas Examination of Educator Standards) competencies to everyday actions of school leaders as well as to the State of Texas Principal Certification Exam. Spring, summer. Course fee \$30.
- EDAD 6313 School Superintendency. (3 3 0)**
Basic issues and problems confronting the school superintendent, board/superintendent relations; power and politics as related to superintendency, comprehensive personnel administration; and general fiscal management. Fall. Course fee \$30.

- EDAD 6316 School Plant and Facilities Management. (3 3 0)** Role of the superintendent in maintenance of school facilities, facility needs assessments, property acquisition, building renovations and passage of bond issues. Spring. Course fee \$30.
- EDAD 6320 Superintendency Internship Part I. (3 0 0)** Supervised practicum in public, private or parochial schools. Students engage in 90 hours of activities that build expertise and knowledge in the areas of school politics, board functions, school business operations, community relations, human resources, curriculum and other areas. This course will address the needs of a Texas school superintendent as defined by the State Competencies for Superintendent Certification. This course will be noted on student's record with a letter grade. Course fee \$30.
- EDAD 6322 Performance Competencies for the Superintendency. (3 3 0)** Topics associated with the TExES certification exam. Course will prepare students to be successful on this exam through analysis of question types, review of Texas Education Code, analysis of legal and local policies and procedures, and case studies of school districts. This course is recommended as the final course in the Superintendent Certification Program before the student attempts the TExES certification test. Spring, summer II. Course fee \$30.
- EDAD 6330 Special Populations. (3 3 0)** Prerequisite: 6303/6311. A survey of the diverse programs associated with the role of the building principal. Programs reviewed include special education, reading initiatives, migrant/federal programs, and gifted and talented. Facilitating student success through implementation of these programs is addressed. Fall, summer. Course fee \$30.
- EDAD 6352 Personnel Administration and Supervision. (3 3 0)** In-depth examination of educational leaders as human resource managers. Emphasis placed on application and selection process, interview practices, induction, professional development, employment benefits, evaluation and trends in the field of human resource management/development. Fall, summer II. Course fee \$30.
- EDAD 6353 Instructional Leadership Development. (3 3 0)** Prerequisite: 6303/6311 plus 18 hours. Instructional Leadership Development as designed by the Texas Educational Agency in conjunction with state certification and the Professional Development Appraisal System. Spring, summer II. Course fee \$30.
- EDAD 6393 Mid-Management Internship—Secondary. (3 0 0)** Prerequisite: completion of 12 hours of educational leadership. Supervised practicum in public, private or parochial secondary schools. Students complete administrative tasks in predetermined settings, conducted with an administrative mentor and University supervisor. Successful completion of this course will include 90 hours of field experiences and will be noted on student's record with a letter grade. Students will demonstrate proficiency in state-mandated areas through use of a portfolio. Course may not be repeated for credit. Fall, spring. Course fee \$5.
- EDAD 6394 Mid-Management Internship—Elementary. (3 0 0)** Prerequisite: completion of 12 hours of educational leadership. Supervised practicum in public, private and parochial elementary schools. Students complete administrative tasks in predetermined settings, conducted with administrative mentors and University supervisor. Successful completion of course will include 90 hours of field experiences and will be noted on student's record with a letter grade. Students will demonstrate proficiency in state-mandated areas through use of a portfolio. Fall, spring. Course fee \$30.
- EDAD 6395 Problems in Administration. (3 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. Course fee \$15.
- EDAD 6397 Problems in Administration. (3 0 0)** Prerequisite: approval of department head. Continuation of 6395. May be repeated once when topics vary. Course fee \$15.

EDEC—Early Childhood

(Offered through the Division of Education.)

- EDEC 4095 Problems in Early Childhood Education. (1-3 0 0)** Actual problems relating to early childhood education. To be taken only after prearrangement with a faculty member and approval of division head. May be repeated once when topics vary. Fall, spring, summer I.
- EDEC 4342 Student Teaching—Early Childhood. (3 0 0)** Prerequisite: professional education courses required prior to student teaching semester; admission and retention in teacher education, required grade point averages, minimum of nine hours early childhood courses and enrollment in EDEL 4340. Students will successfully complete six weeks of student teaching at the early childhood 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.
- 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. Course fee \$20.
- EDEC 4384 Curriculum and the Young Child. (3 3 0)** Prerequisite: 4383. Curriculum and methodology related to early childhood programs and developmentally appropriate practice considered in-depth. Field experience required. Fall, spring, summer. Course fee \$20.
- EDEC 4385 Program Development for Early Childhood Education. (3 3 0)** Prerequisite: 4383 and 4384. Program development in early childhood focusing on strategies for parent-involvement, diversity of language and cultural communities, innovations in program design, exemplary program models and programs for English language learners. Field-based observations in early childhood programs. Fall, spring, summer. Course fee \$20.
- EDEC 4386 Practicum in Early Childhood Education. (3 3 0)** Prerequisite: 4383, 4384. Experience in observation, discussion and team teaching in an actual early childhood education classroom setting. Fall. Course fee \$20.
- EDEC 5383 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. Course fee \$20.
- EDEC 5384 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. Field experience required. Fall, spring, summer. Course fee \$20.
- EDEC 6095 Problems in Early Childhood Education. (1-3 0 0)** Specific problems relating to early childhood education. To be taken only after prearrangement with a faculty member

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and approval of division head. May be repeated once when topics vary. Fall, spring, summer I. Course fee \$15.

EDEL—Elementary Education

(Offered through the Division of Education.)

- EDEL 4095 Problems in Elementary Education. (1-3 0 0)** Actual problems relating to elementary education. To be taken only after prearrangements with a faculty member and approval of division head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$10.
- EDEL 4340 Student Teaching—Elementary. (3 0 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 coursework 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 0 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 coursework 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 0 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 courses, enrollment in EDEL 4340. Students completing elementary certification with English as a Second Language endorsement are required to enroll in EDEL 4340 and 4344 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 4345 Internship—Elementary. (3 0 0)** Prerequisite: qualify for post-baccalaureate/STEP, admission to and retention in teacher education, completion of all other required courses, employment in school district as required. Students are required to enroll in a minimum of two internships for a minimum required credit of six semester hours. Student will successfully complete one-half of required teaching assignment in a designated accredited school 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 4346 Internship—Elementary. (3 0 0)** Prerequisite: qualify for post-baccalaureate/STEP, admission to and retention in teacher education, completion of all other required courses, employment in school district as required. Students are required to enroll in a minimum of two internships for a minimum required credit of six semester hours. Student will successfully complete one-half of required teaching assignment in a designated accredited school 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 admission into Teacher Education Program. Investigation of language arts curriculum in the elementary school with emphasis on content and methodology in areas of reading, listening, speaking and writing, including spelling and penmanship. Clinical experiences required. Fall, spring. Course fee \$20.
- EDEL 4371 Mathematics Methods. (3 3 0)** Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and admission into Teacher Education Program. Investigation of mathematics topics, reasoning strategies and related teaching techniques pertaining to grades EC–4 and 4–8 mathematics curriculum, including strategies for English language learners. Field experiences required. Fall, spring. Course fee \$20.
- EDEL 4372 Elementary/Middle School Language Arts and Social Studies. (3 3 0)** Prerequisite: EPSY 3341, admission to teacher education. Investigation of language arts and social studies components of grades EC–4 and 4–8 curriculum. Content, curriculum, methods and resources in grades EC–4 and 4–8, including appropriate technology integration and emphasis on strategies for English language learners. Summer. Course fee \$12.
- EDEL 4373 Elementary/Middle School Mathematics and Science. (3 3 0)** Prerequisite: EPSY 3341, admission to teacher education. Investigation of mathematics and science curriculum in grades EC–4 and 4–8 with emphasis on content and methodology, including appropriate technology integration and emphasis on strategies for English language learners. Summer. Course fee \$20.
- EDEL 4374 Social Sciences Methods. (3 3 0)** Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and admission into Teacher Education Program. Investigation of the social studies component of elementary curriculum. Major areas of study include content and development of curricula and methods and resources used in planning and presentation of classroom experiences. Clinical experiences required. Fall, spring. Course fee \$20.
- EDEL 4381 Science Methods. (3 3 0)** Prerequisite: EDPD 3340, EPSY 3341, EDT 3343 and admission into Teacher Education Program. Investigation of science curriculum in grades EC–4 and 4–8 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 \$20.
- EDEL 6334 Curriculum Development: Integrated Language Arts/Social Studies. (3 3 0)** Prerequisite: admission into

educational post-baccalaureate program. Theories and practices of integrating grades EC–4 and 4–8 language arts and social studies curriculum, including methodology, resources, technology integration and strategies for English language learners. Summer. Course fee \$30.

- EDEL 6335 Curriculum Development and Delivery: Integrated Mathematics/Science. (3 3 0)** Prerequisite: admission into an educational post-baccalaureate program. Theories and practices of integrating grades EC–4 and 4–8 mathematics and science curriculum, including methodology, resources, technology integration and strategies for English language learners. Summer. Course fee \$30.
- 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. Course fee \$15.
- EDEL 6396 Problems in Education. (3 0 0)** Prerequisite: approval of department head. May be repeated once when topics vary. Fall, spring. Course fee \$15.

EDPD—Professional Development

(Offered through the Division of Education.)

- EDPD 3340 Educational Foundations. (3 3 0)** Prerequisite: 54 hours, pass TSI, minimum GPA of 2.5. Provides prospective teachers with opportunities to learn principles of teaching in Texas and to observe those principles in the classroom setting. Includes legal and ethical issues and concerns; school governance; contemporary pedagogy; community resources at local, state and federal levels; and diversity issues. Clinical experience hours required. Fall, spring, summer I, summer II. Course fee \$30.
- EDPD 4095 Problems in Professional Development. (1-3 0 0)** Problems relating to professional education. To be taken only after prearrangement with a faculty member and approval of division head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$10.
- 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 coursework 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. Course fee \$40.
- EDPD 4363 Bilingual Approach to Teaching Subject Matter. (3 3 0)** Methodology for teaching content areas for learners who have limited English proficiency. Summer II. Course fee \$20.
- EDPD 4378 Bilingual Approach to Language Development. (3 3 0)** Prerequisite: 60 semester hours. First- and second-language acquisition and development of the second language. Emphasis on implications for teaching. Summer I. Course fee \$20.
- EDPD 4388 Methods and Materials of Teaching English as a Second Language. (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 5363 Bilingual Approach to Teaching Subject Matter. (3 3 0)** Methodology for teaching content areas for learners who have limited English proficiency. Summer II. Course fee \$20.
- EDPD 5378 Bilingual Approach to Language Development. (3 3 0)** Prerequisite: 60 semester hours. First- and second-language acquisition and development of the second language. Emphasis on implications for teaching. Summer I. Course fee \$20.
- EDPD 5388 Methods and Materials of Teaching English as a Second Language. (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/or methodology in secondary education. Course may be repeated once for credit when topics vary. Fall, spring, summer I, summer II. Course fee \$15.
- EDPD 6301 Thesis. (3 0 0)** Prerequisite: 6303. Fall, spring, summer I, summer II. Course fee \$5.
- EDPD 6302 Thesis. (3 0 0)** Prerequisite: 6301. Fall, spring, summer I, summer II. Course fee \$5.
- EDPD 6303 Education Research. (3 3 0)** Types of research and use of basic statistical techniques. Fall, spring, summer. Course fee \$30.
- EDPD 6304 Multicultural Education. (3 3 0)** In-depth study of our pluralistic society and strategies for implementation of multicultural concepts for improving relationships with others. Fall, spring, summer. Course fee \$30.
- EDPD 6305 Curriculum Theory and Analysis. (3 3 0)** Theoretical introduction to curriculum and its use in educational settings. Fall, spring, summer I. Course fee \$30.
- EDPD 6306 Educational Data Analysis and Presentation. (3 3 0)** Prerequisite: 6303. Practical application of microcomputer-based statistical software for the 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 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. Course fee \$30.
- EDPD 6311 Community College. (3 3 0)** A detailed examination of the purposes, programs, people, organizations, control and resources of the community college. An examination of the curricular functions of the American community college: occupational education, remedial education, community services, liberal arts and general education. Fall. Course fee \$30.
- EDPD 6312 College Teaching. (3 3 0)** An 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

EDPD 6320–EDRD 4306

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. Course fee \$30.

- EDPD 6320 Curriculum Seminar. (3 3 0)** Curriculum analysis, design, implementation and evaluation. Course fee \$30.
- EDPD 6329 Human Development. (3 3 0)** Systematic analysis of various human behavioral domains concerned with teaching and learning. Fall, spring, summer I. Course fee \$30.
- EDPD 6331 Foundations and Psychological Principles of Education. (3 3 0)** Prerequisite: pass TASP/THEA, admission to post-baccalaureate/alternative certification program; consent required. Intensive study of professional development competencies and proficiencies related to social, historical, philosophical and psychological foundations of education. Spring, summer I. Course fee \$30.
- EDPD 6332 Theories and Practices in Classroom Management. (3 3 0)** Prerequisite: Admission into an education post-baccalaureate program. Theories, research and applications of classroom management. Summer II. Course fee \$30.
- EDPD 6333 Economic Concepts and Resources. (3 3 0)** Introduction to basic economic principles and their integration into pre-college curriculum utilizing a variety of teaching techniques and resources. Course carries graduate credit in education or economics. See instructor for details. Same as ECON 5592. Course fee \$30.
- 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 6390 Internship in the Community College. (3 0 0)** Prerequisite: 6311, 6312, EDT 6305 or 6310. Supervised internship in the community college. Students engage in 75 hours of experiences and successful completion will be noted on the student's record by a grade of "S," indicating hours credit with no points. Spring.
- EDPD 6395 Energy Economics. (3 3 0)** Development of energy economics concepts and integration of those concepts into pre-college curriculum through demonstrations of teaching techniques. Consult instructor for information. Same as ECO 5595. 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 post-baccalaureate intern is 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 post-baccalaureate intern is 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 Division 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. Course fee \$20.
- 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. Course fee \$20.
- 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 reading. Fall, spring, summer. Course fee \$20.
- EDRD 4095 Problems in Reading Education. (1-3 0 0)** Actual problems relating to reading education. To be taken only after prearrangement with a faculty member and approval of division head. May be repeated once when topics vary. Fall, spring, summer. Course fee \$10.
- EDRD 4301 Emergent Literacy in Diverse Cultures. (3 3 0)** Prerequisite: 3301, 3302. Emergent literacy in the context of family, language(s) and culture. Emphasis on theory bases of constructivism, psycholinguistics and sociolinguistics; diverse language and literacy development; bilingual/multicultural literature experiences and emphasis on English language learners. Fall, spring, summer. Course fee \$20.
- 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. Course fee \$20.
- 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. To 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 student. Fall, spring, summer. Course fee \$20.
- 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. Course fee \$20.
- 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. Course fee \$20.
- EDRD 5301 Teaching Reading Through Children's Literature. (3 3 0)**
Prerequisite: admission to post-baccalaureate certification program. 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. Post-baccalaureate only with expanded assignments provided by the instructor. Fall, spring, summer. Course fee \$20.
- 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. Course fee \$20.
- EDRD 5306 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. Course fee \$20.
- 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 is coordinated with individual instruction of at-risk students in an integrated field experience. Fall, spring. Course fee \$20.
- EDRD 5386 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. 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. Course fee \$20.
- 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 division head. May be repeated once when topics vary. Fall, spring, summer. Course fee \$15.
- EDRD 6331 Reading Skills Instruction: Research, Principles and Practices. (3 3 0)**
Prerequisite: admission into an education post-baccalaureate 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. Course fee \$30.
- EDRD 6332 Reading in Content Areas. (3 3 0)**
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. Course fee \$30.
- 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 sociolinguistics as influences on current reading practices; integration of instructional technology. Fall. Course fee \$30.
- 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. 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. Course fee \$30.
- 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. Course fee \$30.
- 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. 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. Course fee \$30.

EDSE—Secondary Education

(Offered through the Division 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 division head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$10.
- EDSE 4320 Teaching in Secondary School. (3 3 0)** Prerequisite: EDPD 3340, EPSY 3341, EDT 3343, admission to and retention in teacher education. Intensive study of general methods of teaching which focuses on secondary curriculum, instructional planning and instructional skills. To be taken the semester prior to student teaching. Field experiences required. Fall, spring. Course fee \$40.
- EDSE 4321 Teaching in Agriscience. (3 3 0)** Prerequisite: EDPD 3340, EPSY 3341, EDT 3343, 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. Course fee \$10.
- 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. Course fee \$20.
- EDSE 4340 Student Teaching—Secondary. (3 0 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 0 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 4344 Student Teaching—English as a Second Language/Bilingual. (3 0 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 courses, enrollment in EDSE 4340. Students completing secondary certification with English as a Second Language subject concentration are required to enroll in 4340 and 4344 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 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 4345 Internship—Secondary. (3 0 0)** Prerequisite: qualify for post-baccalaureate/STEP, admission to teacher education, completion of all other required courses, employment in school district as required. Students are required to enroll in a minimum of two internships for a minimum required credit of six semester hours. Student will successfully complete one-half of required teaching assignment in a designated accredited school 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 4346 Internship—Secondary. (3 0 0)** Prerequisite: qualify for post-baccalaureate/STEP, admission to teacher education, completion of all other required courses, employment in school district as required. Students are required to enroll in a minimum of two internships for a minimum required credit of six semester hours. Student will successfully complete one-half of required teaching assignment in a designated accredited school 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 6095 Problems in Education. (1-3 1-3 0-6)** Prerequisite: approval of department head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$15.
- EDSE 6333 Curriculum Planning and Delivery in Secondary Schools. (3 3 0)** Prerequisite: Admission into an education post-baccalaureate program. Intensive study of general methods of teaching which focuses on secondary curriculum, instructional planning and instructional skills. Summer I. Course fee \$30.

EDSP—Generic Special Education

(Offered through the Division 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 division head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$10.
- 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 coursework and one course in generic special education coursework; secondary—lack no more than one course in generic special education coursework; 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 4340 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)** Psychological effects of disabilities on children and youth: emotional disturbances, learning disabilities, intellectual disabilities, visual impairments, hearing or other health impairments, speech and language impairments, and giftedness. Field-based course. Fall, spring. Course fee \$20.
- 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. Course fee \$20.
- EDSP 4354 Learning and Behavior Disorders. (3 3 0)** Introduction to learning disabilities and emotional disturbances. Field-based course. Fall. Course fee \$20.
- EDSP 4355 Individual Assessment Techniques. (3 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. Course fee \$20.
- EDSP 4357 Educational Procedures for Adolescents. (3 3 0)** Designed to develop understanding and competence in educational procedures and programs for students with learning impairments in the secondary school. Emphasis on remedial and compensatory strategies, career education and adaptation of instructional materials. Field-based course. Spring. Course fee \$20.
- EDSP 4358 Theories of Multiple Disabilities. (3 3 0)** Adaptation 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. Course fee \$20.
- 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. Course fee \$20.
- 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 division 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)** Advanced study of characteristics, etiology, and research related to cognitive, language, motor and social/emotional aspects of emotional behavioral disorders and learning disabilities. Fall. Course fee \$30.
- EDSP 6356 Advanced Remediation Techniques. (3 3 0)** Specific remediation techniques for language- and/or learning-disabled children. Spring. Course fee \$30.
- EDSP 6357 Teaching Secondary Students with Mild Disabilities. (3 3 0)** Understanding and competence in teaching secondary students with learning disabilities. Summer I. Course fee \$30.
- EDSP 6358 Seminar in Students with Multiple Impairments. (3 0 0)** 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. Course fee \$30.
- 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. Course fee \$30.
- EDSP 6360 Assistive Technology. (3 3 0)** 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 communication devices. Instructional planning for using devices across multiple settings will be learned. Fall. Course fee \$30.
- EDSP 6361 Survey of Exceptional Learners. (3 3 0)** Prerequisite: admission to PACE 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. Course fee \$30.
- 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. Course fee \$30.
- EDSP 6363 Programming for Students with Cognitive Disabilities. (3 3 0)** Prerequisite: admission to PACE Program. Advanced study of instructional programming for students with cognitive disabilities and/or multiple impairments. Service delivery options, assistive technology

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and individualized curriculum related to programming from early childhood through transition into adulthood in traditional and inclusive settings. Summer. Course fee \$30.

- 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. Course fee \$30.
- EDSP 6365 Understanding Students with Learning Disabilities/Emotional Disturbances. (3 3 0)**
Prerequisite: admission to PACE Program. Advanced study of characteristics, etiology and research related to cognitive, language, motor and social/emotional aspects of emotional disorders and learning disabilities. Summer. Course fee \$30.
- EDSP 6367 Advanced Curriculum Adaptation Techniques for Exceptional Learners. (3 3 0)** Prerequisite: admission to PACE Program. Curriculum adaptation and remedial techniques for special-needs students. Summer. Course fee \$30.
- EDSP 6376 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 and 6374. 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. Course fee \$30.

EDT—Instructional Technology

(Offered through the Division 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. Course fee \$25.
- EDT 6300 Introduction to Instructional Technology. (3 3 0)**
Overview of current software applications and applied research in the field. Fall, spring, summer, intersession. Course fee \$30.
- EDT 6310 Foundations of Instructional Systems Design. (3 3 0)**
Prerequisite: 6300 or meet departmental competency requirements. Overview providing background theory, research, and current and future practice in the field with an emphasis on instructional systems design. Spring. Course fee \$30.
- EDT 6320 Digital Publishing Systems and Applications. (3 3 0)**
Thorough examination of theory and software applications used in digital publishing. Fall, spring, summer. Course fee \$30.
- EDT 6335 Needs Assessment and Program Evaluation. (3 3 0)**
Application of research and evaluation skills to a needs assessment; investigation of solutions with attention to performance improvement. Includes use of job tasks analysis, consideration of organizational cultures and application of team building skills. Fall. Course fee \$30.
- EDT 6340 Instructional Technology Management. (3 3 0)**
Practical application of project management principles in an IDT (instructional design and technology) context. Covers theory and practice in strategic planning, the change process, program administration, use of human and physical resources, and budgeting. Spring. Course fee \$30.
- EDT 6350 Digital Graphics and Interactive Design. (3 3 0)**
Overview of design theory terms and concepts of digital imaging and media compatibility. Emphasis on design and development tools for graphics and animation. Fall. Course fee \$30.
- EDT 6355 Video Technologies and Application. (3 3 0)**
Prerequisite: consent of instructor and demonstrated computer competency. Theoretical frameworks of multimedia design emphasizing storyboarding/scripting techniques for video file creation. State-of-the-art, software/hardware, current concepts regarding multimedia and high-resolution devices will be discussed as well as copyright, ethical, legal and access issues. Spring. Course fee \$30.
- EDT 6360 Principles and Practices of Distance Learning. (3 3 0)** Principles and theories of distance learning, including design, delivery and evaluation. Participants will develop, present and evaluate instruction via distance-learning technologies. Fall. Course fee \$30.
- EDT 6370 Integrating Computers into the Curriculum. (3 0 0)**
Theories and practices of integrating microcomputer technology into curriculum. Curriculum development and delivery by computer will be applied in a variety of instructional settings. Fall, spring. Course fee \$30.
- 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. Fall. Course fee \$30.
- 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 \$30.
- EDT 6373 Portable Technologies in the Classroom. (3 3 0)**
Designed to assist graduate students (preservice and inservice teachers) and those interested in mastering hand-held technology in development of technical skills, strategies and techniques for integrating portable technologies (such as hand-held computers supported with laptop or desktop computers) into instruction/training across the curriculum. Spring. Course fee \$30.
- EDT 6380 Webmastering: Organization, Design and Resource Utilization. (3 3 0)** Overview of web server administration, site/page design, development tools, software, applications and configurations for cross-platform intranet/Internet

hosts. Includes discussion of access and use issues, including acceptable use policies (AUPs). Fall, spring, summer. Course fee \$30.

- EDT 6385 IDT Project: Management, Development, Delivery and Assessment. (3 3 0)** Prerequisite: permission of instructor. Graduate student opportunity to complete instructional technology and design project under guidance of instructional technology faculty. Considered capstone experience and should be completed during student's final semester within the Instructional Design and Technology Program. Fall, spring. Course fee \$30.
- EDT 6392 Special Topics. (3 3 0)** Prerequisite: 6310 or approval of division head. Topics of special graduate interest in the field of instructional technology. May be repeated once for credit when topics vary. Fall, spring. Course fee \$30.
- EDT 6394 Individual Problems in Instructional Design and Technology. (3 0 0)** Prerequisite: approval of division head. Directed individual study and research on a specific topic within the discipline of instructional technology. May be repeated once with approval of division head. Fall, spring, summer I, summer II. Course fee \$30.
- 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. Summer I. Course fee \$30.

EMA—Emergency Management Administration

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

- ENGL 0002 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 1075 Fundamentals of Library Research. (1-2 1-2 0)** Intellectual resources of the university library and fundamentals of the research process. Structure of information and its retrieval, critical evaluation and appropriate documentation.
- ENGL 1301 Composition and Reading. (3 3 0)** Fundamentals in power and control over language and critical thinking. Fall, spring, summer. Course fee \$10.
- ENGL 1302 Composition and Reading. (3 3 0)** Prerequisite: 1301. Expository writing skills, fundamentals of the academic research process, including library sources and documentation; research reports. Fall, spring, summer. Course fee \$10.
- ENGL 2074 Individual Study. (1-3 0 0)** Individual study designed to meet needs and interests of the student.
- ENGL 2311 Introduction to Technical Communication. (3 3 0)** Prerequisite: 1301 and 1302. 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 2312 Style and Information Design. (3 3 0)** Prerequisite: nine hours of English; demonstrated computer competency. Style and reader-oriented design of technical and scientific documents focusing on audience, writing processes, sentence-level issues, collaboration and style guides throughout the disciplines. Spring.
- ENGL 2332 Masterpieces in Western World Literature. (3 3 0)** Prerequisite: 1302. Literature of the western world before 1700. Fall, spring, summer.
- ENGL 2333 Masterpieces in Western World Literature. (3 3 0)** Prerequisite: 1302. Literature of the western world after 1700. Fall, spring, summer.
- ENGL 2371 Literature of the Non-Western World. (3 3 0)** Prerequisite: 1301 and 1302. Survey of literature written in traditional and developing cultures other than British and North American. Fall, spring, summer.

NOTE: All English courses listed below require nine 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. (3 3 0)** Techniques for writing poetry, short fiction and creative essay. May be repeated once for credit.
- ENGL 3302 Advanced Creative Writing. (3 3 0)** Advanced techniques for writing fiction. May be repeated once for credit.
- ENGL 3303 Playwriting. (3 3 0)** A playwriting workshop that offers an introduction to the art of playwriting through the experience of writing drama. May be repeated once for credit.

ENGL 3304–4360

- ENGL 3304 Professional Report Writing. (3 3 0)** Prerequisite: nine hours of English; demonstrated computer competency or equivalent. Reports and proposal writing requiring substantial research and analysis. Major assignments include a feasibility or recommendation report and a proposal along with other short documents. Spring.
- ENGL 3305 Professional Document Design and Editing. (3 3 0)** Prerequisite: nine hours of English; demonstrated computer competency. Document design and packaging using professional design features and techniques to achieve clarity and consistency in document design. Documents include forms, pamphlets, equipment evaluations and various reports. Fall, spring.
- ENGL 3306 Writing Poetry. (3 0 0)** Prerequisite: nine hours of English. Techniques for writing poetry with emphasis on the short lyric. Can be repeated once for credit. Fall.
- ENGL 3310 Vocabulary Building. (3 3 0)** Derivations and growth of language. Spring.
- 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. Fall, 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 England. Emphasis on Wordsworth, Coleridge, Shelley, Keats and Byron. Every second or third fall.
- ENGL 3323 Modern Poetry of England and America (3 3 0)** Chronological development of modern British and American poetry. Every second or third fall.
- ENGL 3331 Modern Short Story. (3 3 0)** Evolution of the modern form of the short story: Continental, English and American. Every second or third spring.
- ENGL 3332 Modern Novel. (3 3 0)** Significant literary developments in prose of England and the United States in the 20th century and immediately before. Every second or third fall.
- ENGL 3341 Modern Drama. (3 3 0)** Modern tendencies in drama of Europe and America since the time of Ibsen. Every second or third spring.
- ENGL 3342 Film and Literature. (3 3 0)** Introduction to and development of the art of analyzing films. Analysis of challenges and difficulties of turning literary works into film. Comparison of processes of analyzing novels and films. Every second or third fall.
- 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 fall.
- ENGL 3351 Survey of English Literature to 1800. (3 3 0)** Survey of English literature from its origin through the Age of Enlightenment. Major 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 3380 Introduction to Literary Criticism. (3 3 0)** Theories and traditions of literary criticism. Fall.
- ENGL 3381 Literature for Children. (3 3 0)** General survey of literature which is suitable for children, sources of children's literature, standards for selection and evaluation of children's books. Fall, spring.
- ENGL 3392 Special Topics in English. (3 3 0)** Topics in areas of special interest. May be repeated for credit when topics change.
- 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: nine hours of English; demonstrated computer competency or equivalent. Internet, style, visual design, and other advanced issues applied through standard technical and professional genres. Fall.
- ENGL 4305 Theory of Scientific and Technical Discourse. (3 3 0)** Prerequisite: nine hours of English; demonstrated computer competency or equivalent. Internet, style, visual design, and other advanced issues applied through standard technical and professional genres. Spring.
- ENGL 4310 Advanced Grammar. (3 3 0)** Review of traditional grammar; introduction to modern grammar. Spring.
- ENGL 4311 Language Acquisition. (3 3 0)** How users of English make meaning through language. Emphasizes phonology, morphology, semantics and syntax. Fall.
- ENGL 4322 English Poetry: 1840–1890. (3 3 0)** Intellectual background and major poets of the Victorian age. Every second or third fall.
- ENGL 4332 19th-Century Novel. (3 3 0)** Development of the English and American novel in the 19th century. Every second or third fall.
- ENGL 4350 Medieval Literature. (3 3 0)** Early English literature through the 15th century with emphasis on the age of Chaucer. Every second or third spring.
- ENGL 4351 Works of Geoffrey Chaucer. (3 3 0)** Prerequisite: nine hours of English. Works of Geoffrey Chaucer with emphasis on *The Canterbury Tales*.
- ENGL 4352 Shakespeare—Early Plays. (3 3 0)** Plays written before 1600. Most fall semesters.
- ENGL 4353 Shakespeare—Later Plays. (3 3 0)** Plays written after 1600. Most spring semesters.
- ENGL 4354 Modern/Contemporary British Literature. (0-3 0-3 0-0)** Prerequisite: Nine hours of English. Modern/contemporary British literature and culture.
- ENGL 4360 American Regionalism. (3 3 0)** Prerequisite: nine hours of English. American regionalism's theoretical background and application to literature. Focus determined by instructor.

- ENGL 4361 Multicultural American Literature. (3 3 0)** Prerequisite: nine hours of English. Focused, comparative study of multicultural U.S. literatures.
- ENGL 4382 English Methods. (3 3 0)** Prerequisite: senior standing. Classroom applications of the principles of teaching literature, composition and language in grades 6–12. Fall. Course fee \$5.
- ENGL 4392 Selected Studies in Literature. (3 3 0)** Concentrated study of selected genres, periods or authors. May be repeated once with permission of instructor/department head.
- 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 5380 Literary Criticism. (3 3 0)** Theories of criticism with much practice in application. Spring.
- ENGL 5381 Literature for Children. (3 3 0)** Book selection, standards of evaluation, sources of children's literature. Designed primarily for elementary teachers and librarians. Fall, spring.
- ENGL 5382 English Methods. (3 3 0)** Classroom applications of the principles of teaching literature, composition and language in grades 6–12. Fall. Course fee \$5.
- 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. Course fee \$30.
- ENGL 6301 Thesis. (3 0 0)** Prerequisite: 24 semester hours of English.
- ENGL 6302 Thesis. (3 0 0)** Prerequisite: 24 semester hours of English. Course fee \$30.
- 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 3 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 3 0)** Prerequisite: 24 semester hours of English. Seminar in major Renaissance writers other than Shakespeare.
- 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 3 0)** Prerequisite: 24 semester hours of English. Selected topics for study and research. May be repeated when subjects vary.
- ENGL 6380 Teaching College Composition. (3 3 0)** Introduction and practice with professional resources that support teaching of writing in higher education. Fall.
- ENGL 6381 Literary Theory. (3 3 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 3 0)** Prerequisite: 24 semester hours of English. Topics in area of special graduate interest. May be repeated for credit when topics change.

ENGR—Engineering

(Offered through the Department of Mathematics, Physical Sciences and Engineering.)

- ENGR 1301 Fundamentals of Engineering. (3 2 2)** Comprehensive study of fundamental engineering concepts, principles. Systematic approach to problem solving. Course fee \$15.
- ENGR 1302 Fundamentals of Engineering II. (3 2 2)** Prerequisite: 1301. Comprehensive study of fundamental engineering concepts, principles and technology systems as applied to engineering and engineering technology. Further investigation into engineering software and problem solving using computer applications and modeling. Fall and spring. Course fee \$25.
- ENGR 1304 Engineering Graphics. (3 2 2)** Fundamentals of engineering graphics using computer aided drafting and design. Fall, spring. Course fee \$15.
- 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. Course fee \$15.
- ENGR 2301 Engineering Statics. (3 3 0)** Prerequisite: 1301 and MATH 2413. Bodies in equilibrium, including Newtonian mechanics, gravitational forces, reference systems.
- ENGR 2302 Engineering Dynamics. (3 3 0)** Prerequisite: 2301, 2413. 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 3302 Fundamentals of Engineering Econ. (3 3 0)** Prerequisite: MATH 1314 or 1316 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. Same as ECON 3302. Spring.

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.
- 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.
- ENVR 4306 Hazardous Waste Site Assessment. (3 2 2)** This 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- ENVR 6092 Special Topics. (1-6 0-6 0-12)** Recent advances in environmental sciences.
- 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.
- 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.
- 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.
- ENVR 6350 Applied Hydrogeology. (3 2 2)** Prerequisite: GEOL 3350. Quantitative techniques used in surface hydrology and underground aquifers. Spring of even years.
- 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 coursework. May be repeated once with approval of department head. Fall, spring, summer I, summer II.

- ENVR 6509 Human Ecology. (5 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.

EPSY—Educational Psychology

(Offered through the Division of Education.)

- EPSY 3341 Educational Psychology. (3 3 0)** Prerequisite: EDPD 3340, 54 semester hours completed, pass TSI, minimum GPA of 2.5, admission into WTAMU Teacher Education Program. Theories of stage development, age-level characteristics, understanding cultural diversity, human variability, behavioral and social learning theories, cognitive field learning theories, motivation, reinforcement theory, stages of moral development, learning styles and problem solving. Clinical experience hours required. Fall, spring, summer I, summer II. Course fee \$25.
- 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. Course fee \$25.
- 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 division head. May be repeated once when topics vary. Fall, spring, summer I, summer II. Course fee \$10.
- 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. Course fee \$25.
- 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. Course fee \$30.
- 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 II. Course fee \$30.
- EPSY 6310 Educational Psychology. (3 3 0)** Psychological assessment of human behavior related to teaching and learning. Course fee \$30.
- EPSY 6322 Individual Mental Testing I. (3 3 0)** Administration, scoring and interpretation of various Wechsler Scales and other assessment instruments. Fall. Course fee \$30.
- 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. Course fee \$30.
- 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. Course fee \$30.
- EPSY 6327 Vocational and Educational Information. (3 3 0)** Theories of vocational choice. Competence in selection, organization and evaluation of materials to be utilized in counseling students. Fall, summer I. Course fee \$30.
- EPSY 6328 Group Counseling. (3 3 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 II. Course fee \$30.
- 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. Course fee \$30.
- EPSY 6350 Exceptional Children in the Mainstream of Society. (3 3 0)** Prerequisite: TSI and 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 II. Course fee \$30.
- 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. Course fee \$30.
- 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. Course fee \$30.
- 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. Course fee \$30.
- 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. Course fee \$30.
- EPSY 6374 Individual Mental Testing II. (3 3 0)** Administration, scoring and interpretation of Woodcock Johnson and other assessment instruments. Spring. Course fee \$30.
- 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. Course fee \$30.
- EPSY 6376 Sexuality for Marriages and Family. (3 3 0)** Advanced information regarding couple therapy and relational

EPSY 6381–ET 6095

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. Course fee \$10.

- EPSY 6381 Seminar in Counseling. (3 3 0)** Prerequisite: approval of adviser. Intensive studies in areas pertinent to professional activities of counselors. May be repeated as topics vary. Course fee \$30.
- 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. Course fee \$30.
- EPSY 6395 Problems in Guidance and Counseling. (3 0 0)** Prerequisite: approval of department head. Specific problems in guidance and counseling. Fall, spring. Course fee \$15.
- 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. Course fee \$30.
- 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 is accepted for school counselors, and enrollment for the summer is limited to those in school counseling program. May be repeated once for credit. Fall, spring, summer I. Course fee \$30.

ET—Engineering Technology

(Offered through the Department of Mathematics, Physical Sciences and Engineering.)

- 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 3315 Digital Electronics. (3 2 2)** Prerequisite: 2375. Modern integrated circuit logic families. Implementation of digital circuits using integrated circuit devices. Course fee \$25.
- ET 3330 Fluid Power/Power Transmission. (3 2 2)** Prerequisite: ENGR 1301. Fluid mechanics and mechanical transmission applications. Course fee \$25.
- 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 4370 Industrial Safety and Accident Prevention. (3 3 0)** Fundamentals, accidents and their application to industrial supervision and management. Causes of accidents, prevention of industrial accidents, qualifications and duties of safety consultants. Recognition and elimination of health hazards, machinery, guards, in-plant traffic, materials handling, emergency treatment and preparation of safety reports.
- 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 relevant problems 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 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 CADD 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.

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. Fall.
- 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-comparison 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. Fall, spring, summer. Course fee \$15.
- 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. Fall, spring.
- 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. Course fee \$10.
- 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 is also required. Fall, spring.
- 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. Spring, summer.
- 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 an

FIN 4324–FREN 3094

- lectures on risk analysis, financing methods, long-range planning and other topics. Emphasis on pragmatic handling of topical problems in international finance. Fall.
- 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. Fall. Course fee \$10.
- 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. Spring.
- 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. Spring, summer. Course fee \$15.
- FIN 4398 Internship in Finance. (3 0 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. Fall, spring, summer.
- 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. Fall, spring.
- 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. Spring, summer.
- 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. Fall.
- 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. Fall. Course fee \$10.
- 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. Spring.
- 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. Spring, summer. Course fee \$15.
- 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. Spring.
- 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. Spring, alternate summers.
- 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. Alternate falls and summers.
- 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. Alternate falls.
- 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. Alternate falls and summers.
- FIN 6370 Financial Management of Biotechnology and Healthcare. (3 3 0)** Prerequisite: 3320 or 6300 or consent of instructor. Analysis of financial strategies for biotechnology and healthcare organizations. Topics include financial environment of biotechnology and healthcare 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. Course fee \$10.

FREN—French

(Offered through the Department of English 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.

GEOG—Geography

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

- GEOG 1302 Cultural Geography. (3 3 0)** Analysis of the world's culture regions. Population characteristics, settlement patterns, economic activity and politico-geographic problems. Course fee \$5.
- 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, soil, 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 Middle East. (3 3 0)** Systematic overview of political, social, religious, economic and physical geography of the Middle East. Emphasis on relationships between geography and current events. 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.
- 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 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.

GEOLOGY—Geology

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

- GEOLOGY 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 GEOLOGY 1401 and 1403 or NSCI 2371. Fall, spring.
- GEOLOGY 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.
- GEOLOGY 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 GEOLOGY 1401 and 1403 or NSCI 2371. Fall.

- GEOLOGY 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.
- GEOLOGY 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.
- GEOLOGY 2475 Petrology. (4 3 2)** Prerequisite: 2471. Introduction to origins, characteristics and associations of igneous, sedimentary and metamorphic rocks. Spring of odd years.
- GEOLOGY 3092 Special Topics. (1-6 0-6 1-12)** Prerequisite: consent of instructor. Consideration of recent advances in geology.
- GEOLOGY 3311 Structural Geology. (3 2 2)** Prerequisite: 1403, 1404 or consent of instructor. Descriptive and interpretive study of rock structure. Spring of odd years.
- GEOLOGY 3312 Geomorphology. (3 3 0)** Prerequisite: 1403, 1404 or consent of instructor. Descriptive and interpretive study of land forms. Fall of even years.
- GEOLOGY 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.
- GEOLOGY 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.
- GEOLOGY 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.
- GEOLOGY 4095 Problems in Geology. (1-6 0 0)** Prerequisite: instructor's permission. Library, field and laboratory research on geologic problems. Fall, spring.
- GEOLOGY 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.
- GEOLOGY 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.

GERM—German

(Offered through the Department of English 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 3303–HIST 3334

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: GEOL 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.
- 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.

HIST—History

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

- 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 \$10.
- 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 \$10.
- HIST 2311 Western Civilization. (3 3 0)** Chief political, social and intellectual developments of Western civilization from decline of the Roman empire to the present. Fall, spring.
- HIST 2321 Comparative World History to 1500. (3 3 0)** Survey of global history from a balanced point of view beginning with inception of civilized life some 6,000 years ago and ending just prior to the age of European expansion.
- 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 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 (Oing 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 \$10.
- 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 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 3310 American Colonial History. (3 3 0)** Exploration of the New World, settlement of English colonies and social, economic and political developments. Causes consequences of the American Revolution and formation of the nation.
- 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.
- HIST 3333 Early Modern Europe, 1350–1789. (3 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 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 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 4096 Readings. (1-3 0 0)** Prerequisite: minimum of three advanced hours work in the 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 4301 Senior Seminar in History. (3 3 0)** Prerequisite: 21 semester hours of history or consent of department head. Senior-level required course for all history majors and teacher education students with a history teaching field. Intensive study of historical methodology, research and historiography by focusing on selected historical problems. Emphasis on analytical and communication skills relating to study and practice of history.
- HIST 4303 Film and History. (3 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. Course fee \$10.
- HIST 4310 Age of the American Revolution. (3 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 3 0)** Exploration, colonization and development of the Southwest under Spanish rule.
- HIST 4316 Texas. (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 4317 The New American West, 1877–Present. (3 3 0)** Course will cover the major social, political and economic changes that have occurred in the post-frontier American west. Focus upon commonalities and conflicts within the region.
- HIST 4319 U.S. Environmental History: 1607–Present. (3 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 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 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 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 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 4335 Origins and Conduct of World War I. (3 3 0)** Prerequisite: six semester hours of history. Origins, conduct and significance of World War I.
- HIST 4337 Nazi Germany. (3 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 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 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 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 how residents of East Asia remembered World War II. HIST 210 and 252 recommended. Course fee \$10.
- 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 4360–6360

- 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 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 5301 Historical Methods. (3 3 0)** Prerequisite: graduate standing. 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.
- HIST 5310 Age of the American Revolution. (3 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 5313 United States, 1914–1945. (3 3 0)** Major events and issues in American history from the beginning of 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 5314 United States Since 1945. (3 3 0)** United States in post World War II period, Cold War, Korea and Vietnam; economic, political and social problems of American society since 1945.
- HIST 5315 Hispanic Frontier in North America, 1513–1821. (3 3 0)** Exploration, colonization and development of the Southwest under Spanish rule.
- HIST 5316 Texas. (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 5317 The New American West, 1877–Present. (3 3 0)** Course will cover the major social, political and economic changes that have occurred in the post-frontier American west. Focus upon commonalities and conflicts within the region.
- HIST 5319 U.S. Environmental History: 1607-Present. (3 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 5320 U.S. Women’s History. (3 3 0)** History of women in the United States from colonial times to the present.
- 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.
- HIST 5352 Modern Japan, 1868 to Present. (3 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 5354 World War II in Asia. (3 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 how residents of East Asia remembered World War II. Course fee \$5.
- HIST 5357 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 5360 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 6096 Readings. (1-3 0 0)** Intensive readings in history selected to meet needs and interests of the student. May be repeated once for credit.
- HIST 6301 Thesis. (3 0 0)**
- HIST 6302 Thesis. (3 0 0)**
- HIST 6310 Seminar in U.S. History Before 1900. (3 3 0)** Problems developed around a central theme of definite scope on topics before 1900. May be repeated once.
- HIST 6311 Seminar in U.S. History Since 1900. (3 3 0)** Topics in U.S. history since 1900 of definite scope will be developed and intensely investigated. May be repeated once.
- HIST 6312 The American West. (3 3 0)** Lectures, readings and directed research on the westward movement; American Indians; frontier institutions; pioneer lifestyles; environmental problems and conservation; and other selected aspects of the North American frontier experience. May be repeated once.
- 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 6350 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 6360 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 6370 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 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.

HNRS—Honors

HNRS 2073 Honors Colloquia. (0 0 0) Required each semester of all honors students enrolled in six or more hours. Attendance at a minimum of one colloquium each semester is required. A grade of “S” or “F” will appear on the student’s transcript.

HNRS 2371 Honors I: Interdisciplinary Theory. (3 3 0) Prerequisite: admission to Honors Program. Development of reasoning abilities needed for the advanced thought required from Honors Program participants. Fall.

HNRS 2372 Honors II: Interdisciplinary Practice. (3 3 0) Prerequisite: 2371. Opportunities for applied thought, problem solving and intellectual activism. Spring.

HNRS 2373 Honors Seminar. (3 0,3 0) Interdisciplinary, team-taught course. Topics vary by semester. Open only to students admitted to the Honors Program. May be repeated once for credit.

HNRS 3373 Honors Seminar. (3 3 0) Prerequisite: Honors Program membership. Interdisciplinary, team-taught course. Topics vary by semester. Open only to students admitted to the Honors Program. May be repeated once for credit.

HNRS 4393 Honors Program Capstone Course. (3 3 0) Prerequisite: Senior status and honors standing. Facilitates the Honors Program capstone experience by institutionalizing an independent study based on a thesis, research, internship or other approved learning opportunity. Fall.

HUMA—Humanities

HUMA 1315 Art, Dance, Music, Theatre Interaction. [HUMA 1315] (3 3 0) Selected topics from visual and performing arts and how, through their diversity, they interact, promoting an understanding of creativity. Live performance and studio experience. Fall, spring, summer I, summer II.

IDS—Interdisciplinary Studies

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

IDS 1071 Elementary Group Dynamics. (1-3 1-3 0-2) Broad interdisciplinary introduction (with contributions from psychology, anthropology, linguistics, mass communications and speech communication) to a communication model effective for sending and receiving information in group situations. Emphasis on responding to individuals and groups in various environments. Development of listening skills and recognition and response to verbal and nonverbal communication. Fall, spring. Course fee \$10.

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 leadership concepts, credibility, leadership definitions, risk taking, vision, collaboration, values and commitment.

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 literary, 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 Buff 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

IPM 5301–LEGL 3358

- 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.

IPM—Integrated Pest Management

(Offered through the Division of Agriculture.)

- IPM 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 arthropods with emphasis on insects. Course fee \$7.
- IPM 3343 Weeds and Weed Control. (3 2 2)** Prerequisite: junior standing. Identification, distribution, characteristics and methods of controlling weeds. Course fee \$12.
- IPM 4094 Directed Studies in Pest Management. (3,4 0 0)** Prerequisite: junior standing and consent of instructor. Readings and directed individual studies in subjects related to integrated pest management. May be repeated once for credit.
- IPM 4343 Pest Management. (3 3 0)** Current management practices used to control agricultural pests such as insects, weeds, plant diseases and nematodes. Chemical nature of various pesticide groups and their ecological effects.
- IPM 4351 Plant Pathology. (3 2 2)** Prerequisite: BIOL 1413, 1411 or 1406, 1407. Fundamental principles of plant diseases, diagnosis, cause and control. Course fee \$12.
- IPM 4361 Agricultural Chemicals. (3 3 0)** Prerequisite: CHEM 2573, junior standing. Pesticide application theory. Chemicals used to manage crop pests, including insects, weeds, pathogens and vertebrates. Defoliation, desiccation and plant-growth regulators as management tools, biological control, pesticide resistance, toxicity and hazards, laws and regulations, and of pesticide use for the future. Course fee \$10.
- IPM 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. Course fee \$30.
- IPM 4398 Pest Management Internship. (3 0 0)** Supervised internship in an approved discipline of the agricultural pest management industry or research activity. IPM students receive on-the-job training under supervision of faculty and industry or research personnel. May be repeated once for credit.
- IPM 5343 Pest Management. (3 3 0)** Current management practices used to control agricultural pests such as insects, weeds, plant diseases and nematodes. Chemical nature of various pesticide groups and their ecological effects.
- IPM 5351 Plant Pathology. (3 2 2)** Prerequisite: BIOL 1413, 1411, or 1406, 1407. Fundamental principles of plant diseases, diagnosis, cause and control. Course fee \$12.
- IPM 5361 Agricultural Chemicals. (3 3 0)** Prerequisite: CHEM 2573, junior standing. Pesticide application theory. Chemicals used to manage crop pests, including insects, weeds, pathogens and vertebrates. Defoliation, desiccation and plant-growth regulators as management tools, biological control, pesticide resistance, toxicity and hazards, laws and regulations, and of pesticide use for the future. Course fee \$10.
- IPM 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. Course fee \$30.
- IPM 6096 Directed Studies in Pest Management. (3-4 0 0)** Prerequisite: consent of instructor. Readings and directed individual studies in integrated pest management specifically related to the student's interest and needs. May be repeated for a maximum of six hours of credit.
- IPM 6097 Research. (1-6 0 0)** Prerequisite: consent of instructor. Investigation into current problems related to management of agricultural pests. May be repeated for a maximum of six hours of credit.

JAPN—Japanese

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

- JAPN 1411 Elementary Japanese I. (4 3 2)** Development of fundamental skills in speaking, listening, grammar, reading and writing. Fall. Course fee \$5.
- 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 \$5.

LEGL—Legal Program

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

- LEGL 1373 Legal Research and Terminology. (3 3 0)** Introduction to legal research and terminology; familiarization with primary and secondary sources of law and how each may be found.
- LEGL 1374 Advanced Legal Research and Writing. (3 3 0)** Development of research skills through use of case analysis, legal citation, legal bibliography and computer-assisted legal research. Development of advanced legal-writing skills through preparation of legal documents and memoranda.
- LEGL 3350 Legal Ethics. (3 3 0)** Code of professional responsibility, regulation of the legal assistant profession and other ethical considerations relating to the legal profession.
- LEGL 3358 Civil Litigation. (3 3 0)** Procedures and techniques for assisting attorneys in collecting information, document preparation and organizing and indexing materials for civil litigation cases.

MATH—Mathematics

(Offered through the Department of Mathematics, Physical Sciences and Engineering.)

- MATH 0001 Beginning Algebra. (1-3 1-3 0)** Prerequisite: test score guidelines for placement—205 or below on THEA math section or 62 or below on Accuplacer Elementary Level Algebra or 15 or below on Enhanced ACT math section or 370 or below on SAT I math section. Real numbers, equations, inequalities, problem solving, basic graphing, exponents and polynomials at a beginning-algebra level. Course serves as preparation for 0302. May not be counted toward baccalaureate degree requirements. Fall, spring. Course fee \$10.
- MATH 0302 Intermediate Algebra. (3 3 0)** Prerequisite: 0001 or test score guidelines for placement—206–269 on THEA math section or 63–84 on the Accuplacer Elementary Level Algebra or 16–18 on Enhanced ACT math section or 371–440 on SAT I math section. Real numbers, equations, inequalities, problem solving, graphing, exponents, polynomials, factoring, rational expressions and radicals at an intermediate algebra level. Course serves as preparation for 1314, 1332 or 1324. Intended for students who did not have Algebra I and II in high school. May not be counted toward baccalaureate degree requirements. Fall, spring. Course fee \$10.
- MATH 1314 College Algebra. (3 3 0)** Prerequisite: 0302 or score of 85 or higher on Accuplacer Elementary Level Algebra. Relations, functions, equations and inequalities, exponents and radicals, logarithms, binomial theorem and probability. 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: 0302 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 Contemporary Mathematics. (3 3 0)** Prerequisite: 0302 or score of 85 or higher on Accuplacer Elementary Level Algebra. Practical applications of mathematics with a goal of mathematical literacy. Emphasis on problem-solving and critical-thinking skills with topics that include mathematics of finance, probability and odds, statistical reasoning and models, applications in geometry, population growth and logarithmic models, voting methods. Course fee \$10.
- MATH 1348 Pre-Calculus. (3 3 0)** Prerequisite: two years of high school algebra, one year of high school geometry and one semester of high school trigonometry. Coverage of algebraic and trigonometric concepts necessary for calculus.
- 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 grades EC–4 and 4–8 teacher certification. Fall, spring. Course fee \$5.
- 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 grades EC–4 and 4–8 teacher certification. Fall, spring. Course fee \$5.
- MATH 2375 Discrete Structures and Logic Design. (3 3 0)** Prerequisite: 1314 or 1324. A theoretical foundation for computer science, including sets, counting techniques, functions, relations, ordering and equivalences, propositioned logic, Boolean algebra, graph theory with applications to trees and network models, probability and statistics. Spring.
- MATH 2412 Pre-calculus Math. (4 4 0)** Prerequisite: two years of high school algebra, one year of high school geometry and a passing score on Math Placement Test. Coverage of algebraic and trigonometric concepts necessary for calculus. Fall, spring. Course fee \$10.
- MATH 2413 Calculus I. (4 4 0)** Prerequisite: 1316, 1348 or 2412. Limits, continuity, differentiation of algebraic and trigonometric functions, applications of derivative, differentials, indefinite and definite integrals. Fall, spring. Course fee \$10.
- 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 Computer Mathematics I. (3 3 0)** Prerequisite: 1351 and demonstrated computer competency. Application and use of technology especially computers and calculators in elementary and middle school mathematics. Emphasis on mathematics of finance, informal geometry, pre-algebra, algebra, number theory, statistics, probability, introduction to use of the internet and software evaluation. Fall, spring. Course fee \$5.
- MATH 3306 Computer Mathematics II. (3 3 0)** Prerequisite: 1314; 1316 or 1348; demonstrated computer competency. Application and use of technology especially computers and graphing calculators in secondary mathematics. Emphasis on algebra, trigonometry, analytic geometry, probability, statistics and geometric constructions. Fall. Course fee \$5.
- MATH 3311 Linear Algebra. (3 3 0)** Prerequisite: 2414. Matrix operations, vector spaces, linear transformations and the algebra of polynomials. Fall.
- MATH 3316 Problem Solving and Programming. (3 3 0)** Prerequisite: MATH 1325 or 2413, and demonstrated computer competency. Programming of computers for numerical and non-numerical problems solving; development of programming skills and application to various disciplines such as engineering, sciences and business; emphasis on developing programming techniques. Fall. Course fee \$10.
- MATH 3321 Probability and Finite Mathematics. (3 3 0)** Prerequisite: 2414. Permutations, combinations, discrete probability, discrete and continuous distributions. Spring of even years.
- MATH 3331 College Geometry. (3 2 2)** Prerequisite: high school geometry, 1314. Designed primarily for grades 4–8 and 8–12 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. Course fee \$7.

MATH 3340–6398

- 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: 2414. 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 3340. Complex numbers, analytic functions, elementary functions, complex series and integration. Fall of odd years.
- MATH 4341 Advanced Calculus. (3 3 0)** Prerequisite: 2414. 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: 2414. 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 is supplemented by computer solutions. Fall of even years.
- MATH 4390 Understanding Mathematical Principles I. (3 3 0)** Prerequisite: 1314 or 1348, 1351, 2413, 3305 or 3306, and 3331. Review of mathematics necessary for successful completion of the TExES examination for grades 4–8 mathematics teacher certification. (Senior mathematics capstone course.) Critical thinking and reasoning skills emphasized. Credit will not be given for both MATH 4390 and 4391. Fall, spring. Course fee \$5.
- MATH 4391 Understanding Mathematical Principles II. (3 2 2)** Prerequisite: 2414, 3305 or 3306, 3321 and 3331, 3360 or 4361. Review of mathematics necessary for successful completion of the TExES examination for grades 8–12 mathematics teacher certification. (Senior mathematics capstone course.) Credit will not be given for both MATH 4390 and 4391. Spring.
- 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 combinatorics. Fall.
- MATH 5390 Understanding Mathematical Principles I. (3 3 0)** Prerequisite: 1314 or 1348, 1351, 2413, 3305 or 3306, and 3331. Capstone course for mathematics instruction. Review of mathematics necessary for successful completion of TExES examination for 4–8 mathematics certification. Critical thinking and reasoning skills are emphasized. Credit will not be given for both MATH 5390 and 5391. Fall, spring. Course fee \$5.
- MATH 5391 Understanding Mathematical Principles II. (3 2 2)** Prerequisite: 2414, 3305 or 3306, 3321 and 3331, 3360 or 4361. Capstone course for prospective mathematics teachers. Course will review mathematics necessary for successful completion of the TExES examination for grades 8–12 mathematics teacher certification. Credit will not be given for both MATH 5390 and 5391. Spring.
- 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 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 6398 Mentoring/Leadership. (3 0 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. Course fee \$20.

MCOM—Mass Communications

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

- 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, 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. Every other spring. Same as ARTS 1319. Course fee \$20.
- MCOM 1336 Basic TV 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 2071 Radio Practicum. [COMM 2120, 2220, 2324] (1-3 0 0)** Participation in live, on-the-air broadcasting on campus radio station KWTS-FM. May be repeated up to a total of eight hours. A maximum of three semester hours may count toward the major. Fall, spring, summer. Course fee \$20.
- MCOM 2303 Radio Production. [COMM 2303] (3 3 0)** Techniques employed in radio production. Instruction in electronic-audio production and control-equipment operation. Various types of radio programs produced. Spring. Course fee \$30.
- MCOM 2305 News Editing. (3 1 4)** Prerequisite: 2311 and 2315. Copy editing and headline writing; laboratory practice in handling copy for publications. Fall. Course fee \$20.
- MCOM 2310 Media Design. (3 3 0)** Development, analysis and implementation of new media (Internet, audio, visual and print). Focus on developing media, regulation and delivery. Fall.
- MCOM 2311 Introduction to Journalism. (3 3 0)** Analysis of journalistic writing. Language, styles and techniques of communication through print media. Fall, spring, summer. Course fee \$20.
- MCOM 2315 Writing for the Media. (3 1 4)** Prerequisite: 2311. Adaptation of journalistic writing to print, broadcasting and online news media practices and requirements. Fall, spring, summer. 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 2331 Broadcast Announcing. (3 3 0)** Techniques of effective radio and TV announcing. Practice in types of announcing. Every third fall. Course fee \$15.
- MCOM 2375 Desktop 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 or fall; offered at least once a year. 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. Every other fall. Course fee \$20.
- MCOM 3302 Computer-Assisted Reporting. (3 3 0)** Prerequisite: 2311. Emphasis on computer-assisted reporting and investigative work. Offered every other year, fall or spring. Course fee \$10.
- MCOM 3304 Broadcast/Cable Programming. (3 3 0)** Successful programming strategies for radio, television and cable stations. Formats, counterprogramming, and format change theory and practice. Every third fall. Course fee \$15.
- 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. Fall. Course fee \$10.
- MCOM 3306 Advanced Radio Production. (3 3 0)** Prerequisite: 2303. Audio production of news, commercials, music, theatre, sound effects and other audio program elements. Multi-tract/digital equipment will be the primary tool of instruction. Every third spring. 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 fall semester, students will direct public relations campaigns for clients, and in the spring semester, they will direct a national campaign selected by the American Advertising Federation. Fall, spring. Course fee \$25.
- MCOM 3308 Advertising Campaigns. (3 3 0)** Prerequisite: 2327. Students act in agency capacity to develop an advertising campaign for a national client selected by the American Advertising Federation. Students will produce a comprehensive plan book detailing the campaign's research, creative execution, media buying, promotions and evaluation methods. A presentation team will be selected from this class to compete in the National Student Advertising Competition. Spring. Course fee \$25.
- MCOM 3309 News Reporting. (3 1 4)** Prerequisite: 2315. Beat reporting for print media. Continued emphasis on interviewing, news gathering and writing; laboratory practice in preparing news stories for publication under newsroom conditions. Fall, spring.
- MCOM 3310 Movies as Mass Medium. (3 3 0)** Movies as an art, industry and a social force in American society. Every third fall. Course fee \$5.
- MCOM 3312 Advertising Copywriting. (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

MCOM 3322–MENG 4097

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 Intermediate TV Production. (3 3 0)** Prerequisite: 1336 and 2331. 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.
- MCOM 3331 History and Principles of Journalism. (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. Every other fall. Course fee \$10.
- MCOM 3335 Television Reporting. (3 3 0)** Prerequisite or concurrent enrollment: 1307 and 2315. Advanced study in preparation of news copy for radio and television. Fundamentals of news film, tape recorder and interview techniques. Spring. Course fee \$30.
- 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. Spring. Course fee \$10.
- 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. Every third semester. Course fee \$10.
- MCOM 3379 Mass Communications 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. Every third semester.
- MCOM 3392 Special Topics. (3 3 0)** Special media-related topics germane to a rapidly changing mass media environment. May be repeated once.
- MCOM 4301 Politics and the Media. (3 3 0)** Public affairs journalism, including operations of local, state and national government. Reporters learn who to interview, what the issues are and how to convey that information to the public. Every other fall. Course fee \$10.
- MCOM 4302 Mass Communications Ethics. (3 3 0)** Ethical standards for reporters and broadcasters. Evaluation of past, current and hypothetical ethical problems facing the industry. Fall. Course fee \$10.
- MCOM 4322 Advanced TV Production. (3 3 0)** Prerequisite: 3322. Instruction in advanced television and directing programs. Creative aspects of TV production. Every third spring. Course fee \$45.
- MCOM 4372 Contemporary Music Video. (3 3 0)** Analysis, discussion and survey of music videos. Popularity, censorship, history, production techniques, styles and their effects on society. Music videos as art, entertainment and commercialization. Same as SCOM 4372 and THRE 4372. Every third spring. Course fee \$15.
- MCOM 4390 Senior Project. (3 0 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. Course fee \$7.

- MCOM 4398 Media Internship. (3 0 0)** Prerequisite: six semester hours each in editing and reporting, or program director's permission. 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. Course fee \$12.

MENG—Mechanical Engineering

(Offered through the Department of Mathematics, Physical Sciences and Engineering.)

- 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 1348 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 3342. 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. Course fee \$12.
- MENG 3360 Engineering Ethics. (3 3 0)** Prerequisite: junior classification. Professional ethics, social and environmental responsibilities of engineers. Role of communication, considerations of risk, safety, and liability in engineering design and practice. Fall.
- MENG 4097 Mechanical Engineering Research and Problems. (1-6 0 0)** Selected individual research topics in mechanical

engineering to accommodate more substantial research than can be encountered in normal coursework. May be repeated for a maximum of six hours.

- MENG 4264 Heat Transfer and Fluid Flow Experiments. (2 1 3)**
Prerequisite: 4360. Experiments in laminar and turbulent flows, steady-state and transient problems of conduction, convection and radiation heat transfer in one, two and three dimensions.
- MENG 4304 Fundamentals of Fluid Mechanics. (3 2 2)**
Prerequisite: ENGR 1301, 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 4351 Electric Power Systems. (3 3 0)** Prerequisite: MATH 1348 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: 3320, 4304, 4360. 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: 4304. 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. Course fee \$12.
- MENG 4362 Introduction to Numerical Analysis. (3 3 0)**
Prerequisite: MATH 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 is supplemented by computer solutions. Fall of even years.
- MENG 4380 Mechanical Engineering Design. (3 0 0)** Prerequisite: senior classification. A project will be selected by the student to work as part of a student team. 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.
- 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 \$15.
- 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 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, 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.
- MGT 4330 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 4333–6375

- 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 raise awareness of potential barriers, skills and strategies related to managing effectively in intercultural environments.
- 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 \$50.
- MGT 4343 Supply Chain Management. (3 3 0)** Prerequisite: QBA 4331, CIS 3330 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.
- MGT 4370 Biotechnology and Healthcare Management. (3 3 0)** Prerequisite: 3330 or consent of instructor. Prepares students for management positions in the healthcare industry. Covers conditions and issues that make management in healthcare 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, MKT 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.
- 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.
- MGT 6320 Entrepreneurship. (3 3 0)** Prerequisite: ACCT 6300, FIN 6300, MKT 6300, MGT 6300, 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. Attitudes 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 6350 Contemporary Issues in Management. (3 3 0)** Selected topics of current interest in the field, for example, business use of the internet, developing a national policy or job outsourcing. Semester-long examination of the topic. May be repeated once with consent of instructor.
- MGT 6370 Seminar in Biotechnology and Healthcare Management. (3 3 0)** Prerequisite: 3330 or 6300 or consent of instructor. Analysis of significant conditions and issues impacting healthcare management with a focus on upper-level strategic management. Prepares students for leadership positions in the biotechnology and healthcare industry.
- MGT 6375 Planning for IT in Biotechnology and Healthcare. (3 3 0)** Prerequisite: CIS 6335 or consent of instructor. Issues and strategies associated with strategic planning and implementation of the application of IT in healthcare organizations. Examination of role of information technology as a critical contributor to strategies and plans to integrate care, reduce costs and respond to a complex reimbursement environment.

MKT—Marketing

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

- MKT 3340 Principles of Marketing. (3 3 0)** Description and analysis of our marketing system and investigation of basic responsibilities held by marketing executives in business organizations. Fall, spring, summer. Course fee \$15.
- 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)** 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: 3340, CIS 3330, QBA 2342. Theories, concepts and methodology in applying research to market problems. Attention toward the application of sampling, sample design, data analysis of marketing problems and how findings are used in formulating marketing policies. Fall, spring.
- MKT 3350 E-Commerce. (3 3 0)** Examination of marketing in the context of electronic commerce as well as other emerging methods of distributing goods and services. Attention to the role of technology in marketing and development of sound strategies for Internet-related business. 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: 3340. 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: 3340. Nature, scope and contribution of advertising to the firm's problems of demand stimulation. Attention on establishing objectives and budgets for promotional activities and advertiser-agency relationships. Emphasis on technical aspects of advertising layout. Course content is culminated 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.
- MKT 5340 International Marketing. (3 3 0)** Prerequisite: 3340 or equivalent. Additional research analysis not covered in the text is required. Special study of current international monetary problems, international political problems and world-trade problems that affect strategies in international marketing. Spring.
- MKT 5342 Principles of Advertising. (3 3 0)** Prerequisite: 3340. Nature, scope and contribution of advertising to the firm's problems of demand stimulation. Attention on establishing objectives and budgets for promotional activities and advertiser-agency relationships. Emphasis on technical aspects of advertising layout. Course content is culminated into a full-scale advertising campaign. Spring.
- MKT 5344 Retail Marketing. (3 3 0)** 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 5346 Sales Management. (3 3 0)** Prerequisite: 3340 or equivalent. An additional research project is required in such areas as planning for a specific sales management seminar and/or construction of specific sales compensation plan. Fall, spring.
- MKT 6300 Managerial Marketing. (3 3 0)** Prerequisite: graduate standing, consent of department head. Description or survey course of our marketing system and investigation of basic responsibilities of marketing executives in business organizations. Fall.
- MKT 6319 Seminar in International Business and Marketing Strategy. (3 3 0)** Prerequisite: MKT 6300, MGT 6300, FIN 6300, or proficiency in these courses in an undergraduate program. International business in foreign environments, integration and coordination of international business operations and strategies and all other activities across national borders, as well as the role/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 electronic commerce, marketing strategy

MKT 5352–MUAP

and sales management. Semester-long examination of the selected topic. May be repeated once with consent of instructor.

- MKT 6352 Seminar in E-Commerce. (3 3 0)** Prerequisite: 6300 or equivalent. Methods of conducting e-commerce, models, comparison to the old paradigm, consumer behavior issues, web advertising, security, branding and strategy.
- MKT 6370 Healthcare Marketing. (3 3 0)** Prerequisite: 6300 or equivalent. Application of strategic marketing to biotechnology and healthcare 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, Physical Sciences and Engineering.)

- MPS 4097 Math/Physical Science Research. (1-6 0 0)** Selected individual research problems in chemistry, mathematics and/or physics.
- MPS 4350 Machine Design. (3 3 0)** Prerequisite: 3350. 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.
- 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 4393 Math/Physical 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/Physical Science Problems. (3 3 0)** Selected individual problems. Completion of a problem more extensive than those encountered in normal courses.
- MPS 6320 Advanced Mathematics/Science Activities for Instruction I. (3 3 0)** Concepts/activities to enhance the instruction in science. Topics will vary, but all courses involve concentration in science and physical sciences. May be repeated with different content.
- MPS 6321 Advanced Mathematics/Science Activities for Instruction II. (3 3 0)** Science: Research summative and formative assessment techniques with emphasis on appropriateness, validity, reliability, level of bias and dissemination of assessment data. Science: Laboratory activities, demonstrations and simulations. May be repeated with different content.

MUAP—Applied Music

(Offered through the Department of Music and Dance.) Applied Music is private instruction for music majors. MUAP is the prefix for applied music courses. The number identifies the level and type of lesson by medium; e.g., MUAP 3037, section 2, indicates two credit hours of upper-division (junior- or senior-level) trumpet. Course fees variable.

Applied Music Level Numbers

- 1000—First- and second-year students
- 3000—Third- and fourth-year students
- 6000—Graduate students

Applied Music Medium Numbers

- Bassoon—1025, 3025, 6025 [1025, 1026, 1027, 1028]
- Brass—1040
- Clarinet—1029, 3029, 6029 [1029, 1030, 1031, 1032]
- Composition—1087, 3087, 6087
- Conducting—1088, 3088, 6088
- Double Bass—1013, 3013, 6013 [1013, 1014, 1015, 1016]
- Euphonium—1049, 3049 [1049, 1050, 1051, 1052]
- Flute—1017, 3017, 6017 [1017, 1018, 1019, 1020]
- Harp—1077, 3077 [1077, 1078, 1079, 1080]
- Horn—1041, 3041, 6041 [1041, 1042, 1043, 1044]
- Oboe—1021, 3021, 6021 [1021, 1022, 1023, 1024]
- Organ—1065, 3065, 6065 [1065, 1066, 1067, 168]
- Percussion—1057, 3057, 6057 [1057, 1058, 1059, 1060]
- Piano—1069, 3069, 6069 [1069, 1070, 1071, 1072]
- Saxophone—1033, 3033, 6033 [1033, 1034, 1035, 1036]
- Trombone—1045, 3045, 6045 [1045, 1046, 1047, 1048]
- Trumpet—1037, 3037, 6037 [1037, 1038, 1039, 1040]
- Tuba—1053, 3053, 6053 [1053, 1054, 1055, 1056]
- Viola—1005, 3005, 6005 [1005, 1006, 1007, 1008]
- Violin—1001, 3001, 6001 [1001, 1002, 1003, 1004]
- Violoncello—1009, 3009, 6009 [1009, 1010, 1011, 1012]
- Voice—1081, 3081, 6081 [1081, 1082, 1083, 1084]
- Woodwinds—1020
- Jazz Improvisation—1085, 3085
- Piano Improvisation (for music therapy majors after completing piano requirement)—3086 (one two-hour enrollment)

Credit Hours

- One credit hour is a half-hour lesson per week for secondary music majors and non-music majors (subject to availability of instructor).
- Two credit hours is an hour lesson per week for music majors.
- Three credit hours is an hour lesson per week in junior and senior years and is limited to music performance majors only in their principal area of performance. Three credit hours at the graduate level is limited to master of music (M.M.) degree students in their major performance area.

MUEN—Music Ensemble

(Offered through the Department of Music and Dance.) 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. (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 (two hours credit) in the fall semester. Non-music majors may enroll for one or two hours credit. 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; 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 (two hours credit) in the spring semester. Non-music majors may enroll for one or two hours credit. Music majors may enroll for one credit hour only during first summer session. Spring, summer I.
- 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. Students enrolling for major ensemble credit must enroll for two hours credit. Students not enrolling to satisfy major ensemble requirements, such as wind and percussion majors and non-majors, may enroll for one hour credit. 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 is required. Fall, spring, summer I.
- MUEN 1241 Chorale. [MUEN Major; FOSC] (2 0 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 1242 Collegiate Choir. [MUEN Major; FOSC] (2 0 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 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 (two hours credit) in the fall

semester. Non-music majors may enroll for one or two hours credit. 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 (two hours credit) in the spring semester. Non-music majors may enroll for one or two hours credit. Music majors may enroll for one credit hour only during summer session I. Spring, summer I.
- 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 majors. Open to all University students by audition. 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. Students enrolling for major ensemble credit must enroll for two hours credit. Students not enrolling to satisfy major ensemble requirements, such as wind and percussion majors and non-majors, may enroll for one hour credit. Fall, spring.
- MUEN 3143 Chorus. (1 0 5)** Prerequisite: three semesters of 1143. Open to all University students who are not music majors. Music majors may enroll only during summer session I. No audition is required. Fall, spring, summer I.
- MUEN 3241 Chorale. (2 0 5)** Prerequisite: three semesters of 1241 or 1242. 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 3242 Collegiate Choir. (2 0 5)** Prerequisite: three semesters of 1241 or 1242. 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.

MUSI—Music

(Offered through the Department of Music and Dance.)

- MUSI RCTL Music Recital. (0 0 0)** Required each semester of all undergraduate music majors enrolled in nine or more hours. (Students are exempt during the semester of student teaching or internship.) Attendance at a minimum of 12 recitals/concerts each semester, one of which must be special student or honors recitals designated by the department. A grade of “S” or “F” will appear on the student’s transcript. Fall, spring.
- MUSI 1160 Italian Diction for Singers. (1 1 0)** Prerequisite: 1161. Application of the International Phonetic Alphabet (IPA) to Italian language and diction. Spring.
- MUSI 1161 Diction for Singers. (1 1 0)** Introduction to and practical application of the International Phonetic Alphabet (IPA). Fall.
- MUSI 1180 Piano Class I. [MUSI 1181, 1182; FOSC] (1 1 1)** Prerequisite: ability to read music. Performance of simple music with emphasis on expressive playing and development of necessary technical facility. May be repeated for credit. Fall, spring.
- MUSI 1208 Literature I. [FOSC] (2 2 0)** Should be taken concurrently with 1372. Introductory survey of music

MUSI 1209–3209

- literature of Romantic, Classic, Medieval and Renaissance periods. 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 1306 Introduction to Music in World Culture. (3 3 0)** Not for credit to music majors. Non-technical course for the general college student, designed to lead to basic understanding and increased enjoyment of the world's music. Taught in a multimedia format with lectures and guided listening sessions supplemented by video, filmstrips and live performances. Fall, spring, one summer session.
- MUSI 1372 Theory I. [MUSI 1011 and 1016; FOSC] (3 3 2)** Notation, scales, intervals, simple chord construction and progression; exercises in composition and improvisation; development of aural dictation and sight-singing techniques. Fall.
- MUSI 1373 Theory II. [MUSI 1012 and 1017; FOSC] (3 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.
- MUSI 1374 Elementary Music Theory. (3 3,0 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.
- 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 three times. Fall, spring.
- 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 2180 Piano Class II. [MUSI 2181, 2182; FOSC] (1 1 1)** Prerequisite: 1180 or consent of instructor. Continuation of 1180. May be repeated for credit. Fall, spring.
- 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.
- 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 is devoted to functional guitar instruction. Fall (music therapy); spring (all-level certification).
- MUSI 2372 Theory III. [MUSI 2011 and 2016; FOSC] (3 2 2)** Prerequisite: 1373. Introduction to 18th-century counterpoint, variation technique and more complex harmonic structures of Classic and early Romantic periods; exercises in composition and improvisation; continuation of aural dictation and sight-singing techniques. Fall.
- MUSI 2373 Theory IV. [MUSI 2012 and 2017; FOSC] (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.
- MUSI 3037 Percussion Class. (1-2 0-1 2)** Percussion instruments with emphasis on the snare drum, leading to a teaching knowledge. Spring.
- 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.
- MUSI 3117 German Diction for Singers. (1 1,0 0)** Prerequisite: 1161. Application of the International Phonetic Alphabet to German language and diction. Fall.
- MUSI 3119 French Diction for Singers. (1 1,0 0)** Prerequisite: 1161. Application of the International Phonetic Alphabet to French language and diction. Spring.
- 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.
- 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.
- 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.
- 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.
- 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 0)** Prerequisite: 3105. Conducting techniques for glee club, chorus and choir.

- Training and experience in distinctive features of choral conducting and interpretation. Spring.
- MUSI 3232 Instrument Techniques. (2 1 2)** Functional knowledge of woodwind, brass and string instruments. Spring.
- MUSI 3233 Woodwind Class. (2 1 2)** Woodwind instruments, leading to teaching knowledge. Fall.
- MUSI 3234 Brass Class. (2 1 2)** Brass instruments, leading to teaching knowledge. Fall.
- MUSI 3238 String Class. (2 1 2)** Violin, viola, cello and double bass, leading to a teaching knowledge of the instruments. Spring.
- MUSI 3256 Jazz Theory and Practice. (2 2,0 0)** Prerequisite: 1373. 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- MUSI 3278 Music in Therapy I. (2 2 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 3279 Music in Therapy II. (2 2 0)** Prerequisite: 2371, 2172, 2173. Continuation of 3278. Concurrent enrollment in 3176 expected. Spring of even years.
- MUSI 3312 Vocal Pedagogy. (3 3 0)** Physical aspects of the vocal mechanism and survey of various voice pedagogies from the 17th century to present. Fall of even years.
- MUSI 3321 General Music for Children. (3 3 0)** Fundamental music concepts and skills to meet minimal Texas Essential Knowledge and Skills (TEKS) music standards for the EC-4 generalist. Music majors may not receive credit for this course. Fall, spring, summer I.
- MUSI 3343 Computer Assisted Electronic Music. (3 3,0 0)** Prerequisite: 1373. Microcomputers in generation and control of electronic music. Study of one or more commonly available microcomputer programs for MIDI application. Spring.
- MUSI 3347 Music History from Antiquity to 1750. (3 3 0)** Prerequisite: 1208, 1209 and 2373 (for music majors) or consent of instructor (for non-music majors). Chronological study of musical styles, genres, performance practices, and composers of Medieval, Renaissance and Baroque music, including an introduction to world music cultures. Fall.
- MUSI 3349 Music History from 1750 to Present. (3 3 0)** Prerequisite: 1208, 1209 and 2373 (for music majors) or consent of instructor (for non-music majors). Chronological study of musical styles, genres, performance practices and composers of Classic, Romantic and 20th-century music. Spring.
- MUSI 3380 Survey of Music Business. (3 3,0 0)** 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 0)** Prerequisite: 3380. In-depth study of various areas of the music industry utilizing a series of guest lecturers. Spring of odd years.
- MUSI 4095 Individual Problems. (1-3 0 0)** Advanced individual work in area of student's special interest.
- MUSI 4211 Symphonic Literature. (2 2,0 0)** Prerequisite: 2372. Survey course examining major categories of symphonic literature. Fall of even years.
- 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.
- 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.
- MUSI 4251 Piano Pedagogy. (2 2,0 0)** Prerequisite: six semester hours of piano or consent of instructor. Survey of various teaching materials and methods. Development of technique, style and musicianship. Topics will be (1) teaching children and adult beginners and (2) teaching advanced students. May be repeated for credit provided topic is different from that of previous enrollment. Spring.
- MUSI 4252 Piano Literature. (2 2,0 0)** Prerequisite: 2372 or consent of instructor. Survey of music written for piano from its beginning to the present with consideration for early keyboard music and early keyboard instruments preceding the piano. May be repeated as topic varies. Fall.
- MUSI 4262 Techniques for the Singing Actor. (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)** 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.
- MUSI 4277 Psychological Foundations of Music II. (2 2 0)** Prerequisite: 4276. Continuation of 4276. Fall of even years.

MUSI 4326–6312

- MUSI 4326 Elementary Music Methods. (3 3,0 0)** 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.
- MUSI 4327 Instrumental Methods. (3 3,0 0)** Music methods and practical experiences for the teaching of instrumental music in the schools. Emphasis on classroom management, discipline and motivational strategies. Spring.
- 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 coursework 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 coursework 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.
- MUSI 5212 Song Literature. (2 2,0 0)** Survey course examining major categories of solo vocal literature. Fall of odd years/web-based.
- MUSI 5251 Piano Pedagogy. (2 2,0 0)** Prerequisite: six semester hours of piano or consent of instructor. Survey of various teaching materials and methods. Development of technique, style and musicianship. Topics: teaching children and adult beginners; teaching advanced students. May be repeated for credit as topic varies. Spring.
- 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 present with consideration for early keyboard music and instruments preceding the piano. May be repeated as topic varies. Fall.
- 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 6092 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 6095 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.
- 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.
- 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.
- 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 2004.
- MUSI 6223 Score Study and Preparation. (2 2 0)** Score analysis, transposition, ear training and rehearsal procedures. Summer I 2005.
- 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.
- 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.
- MUSI 6275 Band Directors Workshop. (2 2,0 0)** Offered only during WTAMU Band Camp. Instrument clinics, performance in directors band and band topics presented by band camp faculty. May be repeated twice for credit. Summer II.
- 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.
- MUSI 6301 Thesis. (3 0 0)**
- MUSI 6302 Thesis. (3 0 0)**
- 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.

NSCI—Natural Sciences

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

- NSCI 1371 Integrated Science: Physics. (3 2 2)** Concepts and activities in natural sciences for elementary school curriculum with emphasis on physics; structures and systems, energy transformations, changes over time, interactions and scientific world view. Fall, spring, summer I. Course fee \$15.
- NSCI 1372 Integrated Science: Chemistry. (3 2 2)** Concepts and activities in natural sciences for elementary school curriculum with emphasis on chemistry; structures and systems, energy transformations, changes over time, interactions and scientific world view. Fall, spring, summer II. Course fee \$35.
- 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. May not receive credit for both NSCI 2371 and GEOL 1401 or 1403. 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. May not receive credit for both NSCI 2372 and BIOL 1406. 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 Division of Nursing.)

- NURS 1171 Theories and Concepts of Professional Nursing. (1 1 0)** Introduction to philosophical, theoretical and historical perspectives on the practice of professional nursing. Theories and concepts integral to the practice of professional nursing are explored to prepare students for nursing roles of provider of care, designer/manager/coordinator of care and as a member of the profession. Course fee \$15.
- NURS 1322 Applications to Nursing: Nutrition. [BIOL 1322] (3 3 0)** Principles of normal nutrition, major food groups, sources, availability and costs. Elective for non-nursing majors.
- NURS 2271 Medication Administration Techniques. (2 1 2)**
Prerequisite: 1371, MATH 1314, CHEM 1411 or 1405/1405L, NSCI 1372. Techniques of safe medication administration, including calculations, terminology, route/site selection and manipulation of peripheral-intravenous delivery systems. Laboratory includes practice of techniques. Students are required to pass medication calculations examination to pass course. Course fee \$55.
- NURS 2374 Pharmacology for Professional Nursing. (3 3 0)**
Prerequisite: 2271, 2375, 2471. Nursing knowledge required for understanding concepts of pharmacology, pharmacokinetics, pharmacotherapeutics and pharmacodynamics with patients across the life span.
- Students are required to pass a safe dosage calculation exam to pass the course. Focus is on the role of the nurse as the provider of care. Course fee \$25.
- NURS 2375 Health Assessment Throughout the Life Span. (3 2 2)** Prerequisite: CHEM 1411 or 1405/1405L or NSCI 1372, BIOL 2401. Nursing assessment of the physical, cultural, psychological, socioeconomic, nutritional and spiritual components of the individual throughout the life span using Gordon's Functional Health Patterns. Course fee \$30.
- NURS 2471 Foundations to Professional Nursing Practice I. (4 1 9)** Prerequisite: 1371, BIOL 2401/2401L, CHEM 1411 or 1405/1405L or NSCI 1372, PSYC 2301. Nursing knowledge required for therapeutic communication, non-invasive nursing skills, and health-promotion strategies with patients and families across the life span, from diverse cultures and in a variety of settings. Focuses on the role of the nurse as a provider of care to individuals and families. Course fee \$60.
- NURS 2472 Foundations to Professional Nursing Practice II. (4 1 9)** Prerequisite: 2471, PSYC 2314, SOCI 1301, BIOL 2402/2402L. Expands on NURS 2471. Nursing knowledge required for performance of nursing skills, including invasive techniques with patients across the life span. Focuses on role of the nurse as a provider of care. Course fee \$75.
- NURS 3094 Directed Studies. (1-6 0 0)** Topic and mode of study are agreed upon by student and faculty.
- NURS 3304 Elementary Biostatistics in Health Care Research. (3 3 0)** Prerequisite: MATH 1314 or 1324. Emphasis on basic descriptive and inferential methods used in health sciences. Introduction to statistical package for social sciences (SPSS).
- 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.
- NURS 3310 Applications to Nursing: Pathophysiology. (3 3 0)** Prerequisite: BIOL 2420/2420L or 2572, NURS 2271, 2374, 2471, 2472. Human physiologic responses to pathological conditions across the life span. Leading causes of morbidity and mortality in the United States are highlighted. Focus on role of the nurse as provider of care.
- 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.
- NURS 3335 Clinical Reasoning in Health Assessment. (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.
- 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 3355–4693

- 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* is used as the framework of study.
- NURS 3360 Research in Nursing. (3 3 0)** Introduction to the research process as related to nursing. Course fee \$30.
- NURS 3431 Professional Nursing III: Adult/Gerian Acute Care and Mental Health. (4 4 0)** Prerequisite: BIOL 2420/2420L or 2572, NURS 2271, 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 3451 Professional Nursing IV: Maternal Child Acute Care and Mental Health. (4 4 0)** Prerequisite: 3310, 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.
- NURS 3532 Professional Practice III: Adult/Gerian Acute Care and Mental Health. (5 0 15)** Prerequisite: 2271, 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.
- NURS 3552 Professional Practice IV: Maternal Child Acute Care and Mental Health. (5 0 15)** Prerequisite: 3310, 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.
- NURS 4321 Professional Nursing with Groups/Populations. (3 3 0)** Prerequisite: 3310, 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. Course fee \$30.
- NURS 4322 Professional Practice with Groups/Populations. (3 0 9)** Prerequisite: 3310, 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 4331 Professional Nursing in Complex Situations. (3 3 0)** Prerequisite: 3310, 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. Course fee \$45.
- NURS 4332 Professional Practice in Complex Situations. (3 0 9)** Prerequisite: 3310, 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 3 0)** Prerequisite: all required junior-level courses, 4625 and RN licensure. Decision making for ethical dilemmas are examined, as well as legal, social, economic and political policies surrounding the current health-care delivery system.
- 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. Course fee \$45.
- NURS 4345 Professional Nursing Leadership/Management. (3 3 0)** Prerequisite: all junior-level nursing courses, 4625 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.
- 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. Prepares students for entry into practice. Students must pass a comprehensive, standardized examination to pass this course and to meet requirements for graduation. Course fee \$60.
- NURS 4355 Principles of Managed Health Care. (3 3 0)** Prerequisite: 2472 or consent of instructor. Comprehensive overview of managed care practices in the United States and the impact these practices have on the health-care delivery system. Focuses on issues affecting results of managed care and explores implications of managed care for nurses and other health-care providers.
- NURS 4365 Practice of Professional Nursing. (3 0 9)** Prerequisite: all junior-level nursing courses, 4625 and 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.
- NURS 4375 Applying Evidence in Nursing Practice. (3 3 0)** Prerequisite: 3325, 3355. Applying evidence in professional nursing practice utilizing critical thinking, clinical judgement and professional writing in synthesizing current trends and research. May be taken concurrently with 4345, 4365. Course fee \$10.
- NURS 4399 Honors. (3 0 0)** Advanced nursing experiences for the self-directed student with a GPA over 3.0. Course content is negotiable by student and selected faculty.
- NURS 4625 Nursing Decisions for Populations. (6 3 9)** Prerequisite: 3304, 3325, 3335, 3345 and 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* is used as the basis for materials presented.
- NURS 4693 Clinical Internship for Professional Nursing Practice. (6 0 18)** Prerequisite: 4321, 4322, 4331, 4332. Clinical practice experience in selected health-care settings. 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 \$45.

- NURS 5355 Principles of Managed Health Care. (3 3 0)**
Comprehensive overview of managed care practices in the United States and the impact these practices have on the health care delivery system. Focuses on issues affecting results of managed care and explores implications of managed care for nurses and other health-care providers.
- NURS 5370 Standardized Assessment: Early Parent-Child Interactions. (3 3 0)** Reliable, valid observation and assessment of caregiver interactions with his or her young child (birth to three years) for the purpose of determining quality of communication patterns and dyad's relationship. Specific application on child abuse-neglect. Reliability certification from University of Washington in NCAST Feeding and Teaching Scales is offered.
- NURS 5371 Early Parent-Child Dyad Intervention. (3 3 0)**
Prerequisite: NCAST assessment training. Incorporation of NCAST assessments scales and various concepts and other tools assessing nurturing capabilities, child sleep-wake cycles, prenatal mental health, measurement of home environment, and parental life difficulties and networking skills. Intervention methodology emphasized to enhance early parent-child dyad relationship and healthy outcomes, including children with special needs.
- NURS 6094 Directed Studies. (1-6 0 0)** Topic and mode of study are agreed on by student and faculty.
- 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. Orem's Self-Care Deficit Nursing Theory introduced for use throughout the M.S.N. program. Skill development in written and oral communication is 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. Course fee \$25.
- 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 is 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 6)** 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. Course fee \$25.
- NURS 6311 Curriculum and Instructional Design. (3 3 0)**
Historical legacies in nursing education and their influence on curriculum designs. Principles from higher education and nursing education for design of instruction for nursing.
- 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.
- 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. Course fee \$25.
- NURS 6316 Issues: Nurse Practitioner Role Development. (3 3 0)**
Prerequisite: 6303, 6317, 6318. 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 2 2)** Prerequisite: 6306. Detailed study of logic, methods and techniques of the research process. Includes critical evaluation of published research and opportunities to participate in faculty or community research projects. Course fee \$25.
- NURS 6318 Nursing Populations and Settings. (3 3 0)** Prerequisite: 6303 and 6317. Defining characteristics of nursing populations and settings. Students will use principles of epidemiology, public health, computer-generated data sets, and community diagnosis in describing populations and settings. Self-Care Deficit Nursing Theory for multi-person units will be emphasized. Course fee \$15.
- NURS 6320 Pathophysiology. (3 3 0)** Scientific concepts of the disease processes and human responses to illness. Course fee \$25.
- NURS 6330 Family Nurse Practitioner I. (3 3 0)** Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Family nurse practitioner's role and functions in care of maternal and infant clients with emphasis on theoretical foundations, legal issues and critical skills for role implementation. Course fee \$30.
- NURS 6331 Family Nurse Practitioner II. (3 3 0)** Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Family nurse practitioner's role and functions in care of pediatric and adolescent clients with emphasis on theoretical foundations, legal issues and critical skills for role implementation. Course fee \$30.
- NURS 6332 Family Nurse Practitioner III. (3 3 0)** Prerequisite: 6303, 6315, 6317, 6318, 6320, 6384. Family nurse practitioner's role and functions in care of adult and gerian clients with emphasis on theoretical foundations, legal issues and critical skills for role implementation. Course fee \$30.
- NURS 6384 Pharmacotherapeutics. (3 3 0)** Drug indication and prescription, therapeutic administration and surveillance will be emphasized from a pharmacotherapeutic perspective. Course fee \$25.
- NURS 6399 Practicum in Teaching of Nursing. (3 0 6)** Prerequisite or co-requisite: 6312 or concurrent enrollment. Observation, participation and practice in teaching nursing. Seminars enable students to discuss problems related to teaching strategies and evaluation of nursing students in the clinical laboratory. Course fee \$25.
- NURS 6487 Nurse Practitioner Practicum: Maternal-Newborn. (4 0 0)** Co-requisite: 6330. Guided practice with a qualified preceptor in the role of nurse practitioner in maternal-newborn settings. Focus on pregnancy planning, antenatal and postpartum care; 120 hours includes practicum and on-campus clinical conference. Must be taken concurrently with 6330. Course fee \$50.
- NURS 6488 Nurse Practitioner Practicum/Seminar: Pediatric-Adolescent. (4 0 0)** Co-requisite: 6331.

NURS 6489–PHIL 4302

Guided practice with a qualified preceptor in the role of nurse practitioner in child-adolescent settings. Focus on health maintenance and promotion and health restoration of minor illnesses; 120 hours includes practicum and on-campus clinical conference. Must be taken concurrently with 6331. Course fee \$50.

NURS 6489 Nurse Practitioner Practicum/Seminar:

Adult-Gerian. (4 0 0) Co-requisite: 6332. Guided practice with qualified preceptor in role of nurse practitioner in adult-gerian settings. Focus on health maintenance and promotion and health restoration of chronic conditions and minor illnesses; 120 hours includes practicum and on-campus clinical conference. Must be taken concurrently with 6332. Course fee \$50.

NURS 6690 Capstone Clinical Practicum for Family Nurse Practitioners. (6 0 0)

Prerequisite: 6487, 6488, 6489. 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.

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. Course fee \$30.

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.

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 0 2) 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 and needful in fulfillment of objectives will be included. Course fee \$12.

PHED 1115 Racquetball. (1 0 2) History, rules and fundamentals to develop recreational skills in racquetball. Course fee \$15.

PHED 1116 Recreational Activities. (1 0 2) Seasonal recreational activities. Course fee \$5.

PHED 1117 Recreational Softball. (1 0 2) History, rules and fundamentals to develop recreational skills in softball. Course fee \$12.

PHED 1118 Recreational Basketball. (1 0 2) History, rules and fundamentals to develop recreational skills in basketball. Course fee \$12.

PHED 1119 Recreational Volleyball. (1 0 2) History, rules and fundamentals to develop recreational skills in volleyball. Course fee \$12.

PHED 1127 Tennis. (1 0 2) History, rules and fundamentals to develop recreational skills in tennis. Course fee \$12.

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 and (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. Course fee \$8.

PHED 1135 Weight Training. (1 0 2) History and fundamentals of scientific weight training. Course fee \$12.

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 used to meet one hour of sports and exercise sciences activity. Same as ANSC 1178. Course fee \$55.

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 western stock horse. Emphasis on control of the horse through use of primary and secondary aids. Welfare and communication considerations for effective horse-human relationships. The relationship of riding to physical and mental well-being. May be used to meet one hour of PHED activity. Same as ANSC 1274. Course fee \$70.

PHED 1275 English Riding and Jumping I. (2 0 4) Prerequisite: 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. May be used to meet one hour of required sports and exercise sciences activity. Same as ANSC 1275. Course fee \$70.

PHIL—Philosophy

(Offered through the Department of English 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 Ethical Theory. (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 and Medieval Philosophy. (3 3 0) History of the philosophical inquiry from seventh century BCE to 14th century CE. Fall.

PHIL 3302 Modern Philosophy. (3 3 0) History of philosophical inquiry from the 14th to 20th centuries. 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, Physical Sciences and Engineering.)

- PHYS 1401 General Physics I. (4 3 2)** Prerequisite: MATH 1314 or two years of high school algebra and one year of geometry. 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 Introductory Astronomy. (4 3 2)** Descriptive approach to planets, stars and galaxies. 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 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 2427 Engineering Physics III. (4 3 2)** Prerequisite: PHYS 2426/2426L. Free oscillations, forced oscillations, traveling waves, wave packets, interference and diffraction. Spring. Course fee \$20.
- 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, \$5 per hour.
- PHYS 3301 Solar Energy: Residence and Rural Systems. (3 3 0)** Alternative energy (solar, wind, biomass) for residence and rural application.
- 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.
- 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 electromagnetic waves. Fall of even years.
- 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. Schrodinger 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 4340 Mathematical Methods. (3 3 0)** Prerequisite: MATH 3340. Mathematical methods of physics: vectors, matrices, vector differential operators, differential equations, integral theorems, infinite series, eigenfunctions and numerical methods. Spring of odd years.
- PHYS 4350 Computational Physics. (3 3 0)** Prerequisite: 2427, CIS 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 4380 Observational Astronomy. (3 3 0)** Prerequisite: MATH 1314, 1324, or 1332; PHYS 1411 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.
- 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,

PHYS 6350–POSC 4352

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 History, 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 is limited to students who have completed a minimum of six SCH 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 \$10.

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 \$10.

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 3307 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.

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 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) Introduction to statistical techniques most commonly used in social sciences. Emphasis on nonparametric tests, correlation, sampling techniques and use of SPSS. Same as SOCI 3362, SOCW 3362 and CRJ 3362. Course fee \$10.

POSC 3365 Political Thought. (3 3 0) Introductory survey of the leading political ideas in the development of political thought. Course is strongly recommended as a background to other advanced courses.

POSC 4096 Readings. (1-3 0 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.

POSC 4098 Internship. (1-6 0 0) Prerequisite: consent of instructor. Practical application of administrative principles in the governmental process.

POSC 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.

POSC 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.

POSC 4335 American Constitutional Limitations. (3 3 0) American concept of limited government and various constitutional rights and protections under the American constitutional system.

POSC 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.

POSC 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.

POSC 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.
- POSC 4354 Public Personnel Administration. (3 3 0)** Development and role of public service; basic principles, practices and problems in public personnel administration.
- POSC 4355 Public Financial Administration. (3 3 0)** Budgeting problems and internal fiscal practices in American government. Problems of administrative organizations in fiscal activities.
- POSC 4357 Public Policy Formulation. (3 3 0)** Dynamics of public-policy formulation. Emphasis on analytical framework and substance of policy.
- POSC 4358 Comparative American Public Administration (3 3 0)** Theory relevant comparison of public administration, public policy and political science in the American states.
- POSC 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.
- POSC 4367 American Political Thought. (3 3 0)** Ideas from the colonial period to present.
- POSC 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.
- POSC 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.
- POSC 4371 American Foreign Policy. (3 3 0)** Evolution, objectives and special problems of American foreign policy with reference to developments since World War II.
- POSC 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.
- POSC 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.
- POSC 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.
- POSC 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, East and Southeast Asia; international relations involving the region.
- POSC 4380 European Parliamentary Governments. (3 3 0)** Organization, procedures and problems of parliamentary government in comparison with the presidential system of the United States. Based on study of governments of England, France and Germany.
- POSC 4392 American Politics. (3 3 0)** Designed to permit departmental staff members to develop a course which thoroughly examines some contemporary issue or problem in American politics. Students should check with the department for specific topic. May be repeated once when topics vary.
- POSC 4393 Honors Practicum in Political Science. (3-6 0 0)** Prerequisite: senior and honors standing; permission of Honors Program and instructor. Class will provide advanced honors political science students an opportunity for original research, field research and/or internship in political science. Students will work closely with a professor in preparation and presentation of work to a scholarly/professional audience. Fall, spring, summer.
- POSC 5307 Municipal Government. (3 3 0)** Organization, legal aspects, functions and administration of American municipality; relationship of the city to other units of government; current problems of city governments.
- POSC 5369 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.
- POSC 5370 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, imperialism and problems resulting from these factors; development of concepts of international cooperation of government.
- POSC 5371 American Foreign Policy. (3 3 0)** Evolution, objectives and special problems of American foreign policy with particular reference to developments since World War II.
- POSC 5374 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.
- POSC 5376 Former Soviet Union: Domestic and Foreign Policies. (3 3 0)** Survey of the Russian era before the 1917 communist revolution, the period of communist rule and the post-Soviet era. Equal emphasis on domestic political developments and foreign policy.
- POSC 5378 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, East and Southeast Asia; international relations involving the region.
- POSC 6096 Readings and Research. (1-3 0-3 0)** Directed individual and group readings and investigations in areas of government not covered in available courses. With consent of department head, may be repeated once when topics vary.
- POSC 6098 Graduate Internship. (3,6 0 0)** Practical application of governmental processes.
- POSC 6301 Thesis. (3 0 0)**
- POSC 6302 Thesis. (3 0 0)**
- POSC 6305 Problems in American National Government. (3 3 0)** Selected functions and processes of the American federal system. With consent of department head, may be repeated once when topics vary.

POSC 6306–PSES 3342

- POSC 6306 Advanced Topics in State and Local Government. (3 3 0)** Selected functions, institutions and processes of state and local governments in the United States. With consent of department head, may be repeated once when topics vary.
- POSC 6310 Seminar in Social and Political Theory. (3 3 0)** Topics vary from classical to modern theories. Emphasis on development of types and schools of theories. With consent of department head, may be repeated once when topics vary. Same as SOCI 6310.
- POSC 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 CRIJ/SOCI 6312.
- POSC 6335 Seminar in American Judiciary. (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 CRIJ 6335.
- POSC 6337 Advanced Studies in Criminal Law. (3 3 0)** Critical study of aspects of law that are relevant to the criminal justice system and its related processes, including theories of law, historical development, substantive and procedural laws, and administrative law. Same as CRIJ 6337.
- POSC 6340 The Criminal Justice System—An Overview. (3 3 0)** Intensive overview of the criminal justice system as a system, including theory, current issues and trends. Same as CRIJ 6340.
- POSC 6342 Seminar in Criminal Justice. (3 3 0)** Contemporary national, state and local problems in criminal justice. May be repeated once when topics vary. Same as CRIJ/SOCI 6342.
- POSC 6346 Seminar in Criminal Justice Administration and Public Policy. (3 3 0)** Advanced study of organizational theories with application to complex criminal justice organizations in the areas of human resource management, intergovernmental relations, planning and evaluation of programs. With permission of instructor, may be repeated once when topics vary. Same as CRIJ 6346.
- 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.
- 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. Course fee \$15.
- 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 administration.

- 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 6387 Seminar in Research Methods. (3 3 0)** Nonparametrics; measurement; surveys, research, design; scale construction; methodology. Same as CRIJ/SOCI 6387. Course fee \$8.
- POSC 6388 Statistics for Social and Criminological Research (3 3 0)** Prerequisite: undergraduate social statistics or equivalent. Statistical techniques most commonly used in criminal justice 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 Division of Agriculture.)

- PSES 1301 Principles of Horticulture. [HORT 1301] (3 2 2)** Prerequisite: 1307 or four hours of biology. 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 2371 Grain and Forage Crops. (3 2 2)** Prerequisite: 1307 or four semester hours of biology. Identification, distribution, production, harvesting, utilization, and improvement of grain and forage crops. Course fee \$12.
- 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 3342 Plant Breeding. (3 3 0)** Prerequisite: AGRI 3301 or BIOL 3301 or concurrent registration. Application of genetics to breeding and improvement of field crops. The role of seed certification in maintenance of varietal purity and production of quality seed.

- 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 4094 Directed Studies. (3-4 0 0)** Prerequisite: junior standing and consent of instructor. Individualized studies on current topics in plant and/or soil science.
- PSES 4097 Undergraduate Research. (2-4 0 0)** Prerequisite: consent of division head. Selected individual research problems. Completion of a problem which is more extensive than problems encountered in normal class work.
- PSES 4302 Range Management. (3 2 2)** Prerequisite: junior standing. Practical problems met in managing pasture and range lands, including studies of vegetation, reseeding, maintenance of production, utilization of forage, control of brush, and poisonous plants and methods of handling livestock on the range. Course fee \$12.
- 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 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 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 4393 Honors.**
- PSES 4398 Plant, Soil and Environmental Science Internship. (3 0 0)** Prerequisite: consent of division 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 Management. (3 2 2)** Problems in managing pasture and range lands, including studies of vegetation reseeding, maintenance of production, utilization of forage, control of brush and poisonous plants, proper stocking rates and methods of handling livestock on the range. Course fee \$12.
- 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 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. Course fee \$12.
- 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 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 7310 Advanced Plant Breeding. (3 3 0)** Prerequisite: one semester of genetics. Theory and practice of plant breeding, breeding methods, mutation breeding and cytogenetics in crop improvement.
- PSES 7315 Advanced Agronomy. (3 3 0)** Current agronomic research and practices designed to maximize yield and reduce cost in production of food, forage and fiber crops.
- 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 8301 Advanced Plant and Soil Management. (3 3 0)** Prerequisite: doctoral students only. Interrelationships between plants and soil under various management systems.
- PSES 8302 Plant, Soil and Environmental Resource Management Perspectives. (3 3 0)** Prerequisite: doctoral students only. 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.

PSYC—Psychology

(Offered through the Department of Behavioral Sciences.)

- PSYC 2170 Psychology Seminar. (1 1-0 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. Course fee \$10. At least spring.
- PSYC 2301 General Psychology. (3 3 0)** Introduction to psychology as a science. Course fee \$10. Year round.
- PSYC 2314 Child Development. (3 3 0)** Findings and theory concerning child development within the context of culture and environment. Course fee \$25. Fall, spring.
- 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. Course fee \$5. Fall, summer.
- PSYC 3311 Experimental Psychology. (3 2 2)** Prerequisite: 2301, 3310. Experimental methods of psychology and use in study of psychological processes. Course fee \$15. At least spring.
- PSYC 3320 Biological Psychology. (3 3 0)** Prerequisite: 2301. Physiological mechanisms underlying basic psychological functions. Course fee \$10. Spring.
- 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. Course fee \$10.
- PSYC 3335 Cognitive Processes. (3 3 0)** Prerequisite: 2301. Basic cognitive processes: attention, memory, concept formation, reasoning and information processing. Course fee \$15. Fall, summer.
- 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. Course fee \$15.
- PSYC 3355 Theories of Personality. (3 3 0)** Prerequisite: 2301. Major theories of personality development. Course fee \$10. Fall, summer.
- PSYC 3360 Abnormal Psychology. (3 3 0)** Prerequisite: 2301. Personality abnormalities; description, causation and treatment. Course fee \$5. Year round.
- 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. Course fee \$10.
- PSYC 3375 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. Course fee \$10. fall of odd years.
- 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 3430 Psychology of Learning. (4 3 2)** Prerequisite: 2301. Current research and issues on reinforcement, punishment, extinction, generalization, discrimination learning, transfer and retention. Concurrent human and animal laboratory exercises. Course fee \$15.
- PSYC 4319 History and Systems of Psychology. (3 3 0)** Prerequisite: 2301. Survey of history and major systems of psychology. Course fee \$10.
- PSYC 4324 Drugs and Behavior. (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 \$10.
- 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. Course fee \$10.
- 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 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 4371 Principles of Psychological Testing. (3 2 2)** Prerequisite: 2301. Principles of psychological testing and measurement. Introduction to administration and interpretation of representative psychological measures. Course fee \$20. Spring.
- 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 Drugs and Behavior. (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. Course fee \$25.
- PSYC 5350 Social Psychology. (3 3 0)** Review of theories and research relating to individual behavior in the social environment. Same as SOCI 5350.
- 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. Course fee \$5. Year round.
- PSYC 5361 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 5375 Theories of Counseling. (3 3 0)** Survey of major counseling theories and related techniques, and introduction to current ethical and professional issues for the beginning human-services worker. Fall of odd years.
- PSYC 5392 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 coursework 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. Course fee \$50.
- PSYC 6099 Practicum in Psychology and Counseling. (3-6 0 0)** Prerequisite: good standing in the graduate program and approval of instructor. May be taken for a maximum of six semester hours.
- 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 statistical designs and analyses in psychology.
- PSYC 6311 Research and Experimental Design in Psychology. (3 3 0)** Prerequisite: 3310. Complex research designs, including factorial, factorial and incomplete block. Coverage of parameter estimation in psychology.
- PSYC 6312 Professional Seminar in 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 identify formation, attributions, aggression, emotions, conformity, attitudes and gender. Fall. Course fee \$25.
- 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. Course fee \$20. Fall.
- 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 \$100.
- 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 \$100.
- PSYC 6360 Advanced Psychopathology. (3 3 0)** Prerequisite: 3360/5360 or permission of instructor. Dynamics of basic psychopathological disorders. Fall.
- 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)** Psychological techniques applied to counseling and clinical situations.
- PSYC 6374 Marriage and Family Counseling. (3 3 0)** Intervention for marriage and family crises.
- PSYC 6376 Psychological Interventions. (3 3 0)** Introduction to theory and practice of conducting brief psychological interventions. Focus on the implementation of empirically validated individual, group and case management 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 \$25.
- PSYC 6378 Program Evaluation. (3 3 0)** Prerequisite: three semester hours of undergraduate statistics. Social research procedures to systematically investigate the effectiveness of social intervention programs which include history of program evaluation, terminology, methodology and applications. 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 0-3 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.

QBA—Quantitative Business Analysis

(Offered through the Department of Computer Information Systems.)

- QBA 2342 Statistics for Business and Economics.** [MATH 2342] (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. Course fee \$20.
- QBA 3350 Intermediate Statistics with Computer Applications.** (3 3 0) Prerequisite: 2342 or equivalent. Regression analysis, experimental design and non-parametric statistics. Emphasis on problem formulation, selection of statistical method and interpretation of computer output. Course fee \$20.
- QBA 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. Course fee \$15.
- QBA 4352 Business Forecasting .** (3 3 0) Prerequisite: 2342 or equivalent. Measurement of business conditions. Development of trends, seasonals, 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.
- QBA 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.
- QBA 4364 Introduction to Quantitative Economics and Finance.** (3 3 0) Prerequisite: 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 ECON 4364. Course fee \$20.
- QBA 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.
- QBA 6300 Statistical Methods in Business and Economics.** (3 3 0) Prerequisite: MATH 1325 or equivalent, graduate standing and consent of department head. Probability distributions, estimation, testing, hypotheses, sample survey methods, experimental designs, time-series analysis, correlation and regression analysis. Course fee \$20.
- QBA 6305 Quantitative Analysis in Business.** (3 3 0) Prerequisite: 6300 or equivalent and 12 semester hours of upper-division CIS and/or business administration. Application of quantitative techniques to business, including statistics, linear programming and simulation. Techniques in decision making and their relation to information systems. Fall, spring. Course fee \$20.

QBA 6320 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 AGBE 6320. Course fee \$20.

QBA 6362 Advanced Business Forecasting. (3 3 0) Prerequisite: 6305 or equivalent. An analysis of forecasting techniques and business theories, the interconnection between forecasting methods and the conditions under which each are used is examined. The similarities and differences between forecasting for an industry and for the firm are identified. Same as ECON 6362. Course fee \$20.

RELI—Religion

(Offered through the Department of English 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 1372 New Testament Studies.** (3 3 0) History, literature and teaching of the New 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.

SCOM—Speech Communication

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

- SCOM 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. Course fee \$5.
- SCOM 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.
- SCOM 1321 Business and Professional Communication.** [SPCH 1321] (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. Fall, spring.
- SCOM 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.
- SCOM 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 \$20.

- SCOM 2335 Argumentation. (3 3 0)** Skills necessary for persuasive speech development. Basic argument formation, speaker credibility and research concerns. Practice critical-thinking skills and persuasive techniques through class presentations. Fall.
- SCOM 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.
- SCOM 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.
- SCOM 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.
- SCOM 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.
- SCOM 3301 Advanced Public Speaking. (3 3 0)** Prerequisite: 1315 or 1321. Development of a marked degree of skill in composition and delivery of various types of speeches. Spring of even years.
- SCOM 3302 Advanced Performance of Literature. (3 3 0)** Oral interpretation of literature with emphasis on experimental forms, character delineation, use of dialect and duo performance. Spring of odd years. Course fee \$10.
- SCOM 3303 Communication in the Legal Process. (3 3 0)** Prerequisite: 1315 or 1321 or instructor's consent. 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.
- SCOM 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.
- SCOM 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.
- SCOM 3325 Communication for the Classroom. (3 3 0)** Means to analyze, develop and facilitate communication behaviors. Theoretical and pragmatic approaches to classroom communication.
- SCOM 3331 Organizational Communication. (3 3 0)** Prerequisite: 1315 or 1318 or 1321. 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.
- SCOM 3341 Persuasion. (3 3 0)** Theory of human motivation as it operates in individuals and groups. Analysis of persuasive materials and development of persuasive strategies, preparation and presentation of persuasive appeals. Fall, spring. Web-based.
- SCOM 3345 Discussion and Small-Group Communication. (3 3 0)** Prerequisite: 1315 or 1318 or 1321. 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.
- SCOM 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. May intersession. Course fee \$5.
- SCOM 3392 Special Topics in Communication. (3 3 0)** In-depth study and discussion of current issues in communication research. May be repeated once for credit.
- SCOM 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 theory. May be repeated once for credit. Fall, spring. Same as IDS 3399.
- SCOM 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.
- SCOM 4301 Introduction to Rhetorical Criticism. (3 3 0)** Prerequisite: 1315 or 3331 or 3341 or instructor's consent. 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. Fall.
- SCOM 4305 Research Practicum. (3 0 0)** Prerequisite: junior standing, 3315, consent of adviser. Participation in faculty research projects, data analysis and bibliographic research. Spring.
- SCOM 4310 Communication Training and Development. (3 3 0)** Prerequisite: 2376, 3331 or 3345. 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. Fall.
- SCOM 4330 Storytelling and Puppetry. (3 3 0)** Storytelling activities designed for use with children. Fall, spring. Course fee \$5.
- SCOM 4370 Presidential Rhetoric. (3 3 0)** Prerequisite: 1315 or 1321 or consent of instructor. American presidency with specific regard to its role in public persuasion on significant public issues. Spring of even years. Course fee \$5.
- SCOM 4373 Methods in Competitive Speech. (3 0 0)** Study and application of performance theories. Students design and implement performance activities through teaching experience in conjunction with speech camp. Summer I.

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- SCOM 4393 Senior Thesis. (3 0 0)** Prerequisite: senior standing, 3315, consent of adviser. Completion of senior thesis. Fall, spring, summer I, summer II.
- SCOM 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.
- SCOM 5341 Persuasion. (3 3 0)** Theory of human motivation as it operates in individuals and groups. Analysis of persuasive materials and development of persuasive strategies. Fall, spring. Web-based.
- SCOM 5345 Discussion and Small Group Communication. (3 3 0)** Prerequisite: 1315 or 1318 or 1321 plus three hours advanced speech. Research and analysis of small-group communication patterns. Emphasis on training techniques to improve existing small groups and methods of conducting small-group research. Spring.
- SCOM 5370 Presidential Rhetoric. (Inactive.)** Course fee \$5.
- SCOM 5373 Methods in Competitive Speech. (3 0 0)** Study and application of performance theories. Students design and implement performance activities through teaching experience in conjunction with speech camp.
- SCOM 6301 Thesis. (3 0 0)** Prerequisite: completion of core and 18 graduate hours. Fall, spring, summer I, summer II.
- SCOM 6302 Thesis. (3 0 0)** Fall, spring, summer I, summer II.
- SCOM 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.
- SCOM 6304 Research Project in Corporate Communication. (3 0 0)** Prerequisite: 6315 and 6331. Study and application of theory in designing and implementing a communication research project in an organization. Fall, spring, summer I, summer II.
- SCOM 6305 Research Project in Mass Communication. (3 0 0)** Prerequisite: 6380, 6315, 6395. Study and application of theory in designing, implementing and programming a communication research project in or for an organization. Fall, spring, summer.
- SCOM 6306 Seminar in Oral Interpretation. (3 3 0)** The art of storytelling. 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.
- SCOM 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. Course fee \$15.
- SCOM 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. Web based. Fall.
- SCOM 6320 Seminar in Intercultural Communication. (3 3 0)** Raises consciousness about cultural differences, helps students become more competent in intercultural communication and develops strategies for researching intercultural communication. Intercultural communication is the process through insight provided by different perspectives and experiences is gained. Web based. Fall. Course fee \$5.
- SCOM 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. Fall, spring.
- SCOM 6331 Seminar in Organizational Communication. (3 3 0)** Review of theories of organizational communication, in-depth study of consulting techniques and research methods in organizational communication.
- SCOM 6332 Seminar in Family Communication. (3 3 0)** Focus on communication phenomena within the family. Goal of course is to help students understand how, through communication, we develop, maintain, enhance or disrupt family relationships. Students will learn verbal nonverbal skills which help promote effective family communication. Fall. Course fee \$15.
- SCOM 6340 Seminar in Public Communication. (3 3 0)** Methods of disseminating information in society. Survey of human relations theory, public relations and community relations. Fall.
- SCOM 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.
- SCOM 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. Course fee \$5.
- SCOM 6360 Seminar in Gender Communication. (3 3 0)** Research in communication literature about how men and women communicate, with emphasis on describing this communication rather than evaluating. Allows students to develop more versatile communication choices in a variety of societal contexts. May intersession. Course fee \$5.
- SCOM 6380 Introduction to Graduate Communication Studies (3 3 0)** Prerequisite: undergraduate degree. 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. Course fee \$5.
- SCOM 6381 Seminar in Quantitative Research Methods (3 3 0)** Prerequisite: 6380 or consent of instructor. Methodology, organization and participation in quantitative/statistical communication research. Spring. Course fee \$5.
- SCOM 6382 Qualitative Research Methods. (3 3 0)** Prerequisite: 6380. 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.
- SCOM 6383 Internship in Mass Communication. (3 0 0)** Prerequisite: 6380 or consent of instructor. 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. Fall, spring, summer.

- SCOM 6384 Internship in Corporate Communication Research. (3 0 0)** Prerequisite: 6381 or 6382. 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.
- SCOM 6385 Communication Instruction at the College Level. (3 3 0)** Investigation and evaluation of techniques and methods of teaching in various communicative arts. Fall.
- SCOM 6388 Performance Theory. (3 3 0)** Exploration of performance theory and application of theory in solo performances staged by students. Spring, fall.
- SCOM 6392 Current Issues in Communication. (3 3 0)** Prerequisite: approval of instructor. Special seminars designed to discuss current issues. May be repeated once for credit.
- SCOM 6395 Problems in Public Communication. (3 0 0)** Prerequisite: approval of department head. May be repeated once with approval of department head. Fall, spring, summer I, summer II.
- SCOM 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.
- SCOM 6399 Speech Performance Field Experience. (3 0 0)** Students will be assigned to a profit or non-profit organization to assist with the organization's mission, particularly in development of programs in performance studies. Fall, spring, summer I, summer II.

SES—Sports and Exercise Sciences

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

- SES 1301 Foundations and Principles. [PHED 1301] (3 3 0)** Scientific principles involved in understanding biomechanical foundations of movement and physiology of exercise and fitness with historical background and psychological/sociological implications of sport. Course fee \$10.
- SES 1306 First Aid/CPR. [PHED 1306] (3 3 0)** First aid and responding to emergency injuries and illnesses. Involves lecture presentations and practical experiences. Course fee \$17.
- 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 is 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 2373 Coaching and Officiating Track/FD/Cross-Country. (3 3 0)** Coaching fundamentals and analysis of the duties and responsibilities of officials in track with practical experience in officiating. Course fee \$12.
- SES 2374 Coaching and Officiating Football. (3 3 0)** Coaching fundamentals and analysis of the duties and responsibilities of officials in football with practical experience in officiating. Course fee \$12.
- 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. Course fee \$12.
- 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. Course fee \$12.
- 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. Course fee \$12.
- 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. Course fee \$12.
- 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 \$15.
- SES 3303 Safety. (3 3 0)** Foundations of safety focusing on accident prevention and injury control in home, workplace and community. Course fee \$10.
- SES 3304 Measurement and Evaluation Techniques. (3 3 0)** Basic statistical designs, skill test administration, data collection and principles of evaluation. Course fee \$17.
- 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. Course fee \$10.
- SES 3311 Organization and Planning Techniques. (3 3 0)** Practical skills and techniques of professional development. Unit and lesson planning, class management, teaching aids, implementation and evaluation of lessons in a laboratory setting. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$12.
- SES 3325 Programming for Health and Wellness of Children. (3 2 2)** Contemporary issues, research, practices and resources related to comprehensive school health education programs. Content will include health promotion, consumer health, environmental health, communication and interpersonal relationships, goal-setting and

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- decision-making, and safety and injury prevention. Course fee \$12.
- SES 3340 Sport Nutrition. (3 2 2)** Review of knowledge associated with nutritional strategies used to enhance sport and exercise performance. Course fee \$15.
- SES 3341 Physiology of Exercise. (3 2 2)** Physiological adaptations made by the human body in adjusting to various activities. Course fee \$10.
- SES 3345 Stress Management. (3 3 0)** Stress management and its relationship to health, disease and motor performance. Analysis of everyday stressors and intervention strategies for managing stress effectively. Course fee \$10.
- SES 3350 Theory and Practice of Football/Track and Field. (3 3 0)** Skills, techniques, strategies and rules required for performance in football and track and field. Application of movement principles, including components of motor learning, exercise physiology and biomechanics in football and track/field. Course fee \$15.
- SES 3351 Theory and Practice of Basketball/Baseball/Softball. (3 3 0)** Skill techniques, strategy and rules required for performance in basketball, baseball and softball. Application of movement principles, including components of motor learning, exercise physiology and biomechanics. Course fee \$15.
- SES 3353 Theory and Practice of Archery/Golf. (3 3 0)** Skill techniques, strategy and rules required for performance in archery and golf. Application of movement principles, including components of motor learning, exercise physiology and biomechanics. Course fee \$17.
- SES 3354 Theory and Practice of Soccer and Volleyball. (3 3 0)** Skill techniques, strategy and rules required for performance in soccer and volleyball. Application of movement principles, including components of motor learning, exercise physiology and biomechanics. Course fee \$15.
- SES 3356 Theory and Practice of Strength Training and Conditioning. (3 3 0)** 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. Course fee \$15.
- SES 3374 Principles of Nutrition. (3 3 0)** 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. Course fee \$5.
- SES 3382 Outdoor Living. (3 3 0)** Knowledge, techniques and skills for safe enjoyment of family and individual camping. Course fee \$12.
- SES 3392 Special Topics.** Course fee \$5.
- 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. Course fee \$5.
- SES 4301 Programming Leadership. [TECA 1318] (3 3 0)** Prerequisite: completion of 30 hours of SES. Introduction to operational techniques of designing, developing, implementing and evaluating instructional, recreational and leisure, and physical activity programs (athletics, intramural, club) and alternative athletic programs such as health clubs, corporate fitness centers and community centers for all populations. Course fee \$10.
- 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. Course fee \$15.
- SES 4322 Programming for Secondary Kinesiology. (3 2 2)** Prerequisite: 3311 or department head approval. Instructional and curricular applications as they relate to middle and high school population activity engagement in recreation leisure, physical education and athletic settings. Course fee \$10.
- 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. Course fee \$15.
- 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. Course fee \$10.
- SES 4330 Organization and Administration. (3 3 0)** Efficient and effective organization and administration of instruction and intramural programs in physical education. Legal liability, budget and facilities.
- 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 4341 Sport Biomechanics. (3 2 2)** Prerequisite: 3302. Principles of mechanics to the study of human motion. Emphasis on theory and quantitative analysis. Course fee \$25.
- 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. Course fee \$5.
- SES 6301 Thesis. (3 0 0).** Course fee \$5.
- SES 6302 Thesis. (3 0 0).** Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$15.

- 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. Course fee \$15.
- 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. Course fee \$15.
- 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. Course fee \$15.
- 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 \$17.
- 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 \$18.
- 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. Course fee \$10.
- SES 6360 **Physical Activity Epidemiology. (3 3 0)** Introduction to physical activity epidemiology. Intended to provide a detailed prospective on the role of physical activity or fitness with well-established risk factors for CHD, stroke and cancer, as well as an introduction to the pathogenesis of atherosclerosis and type-2 diabetes.
- SES 6392 **Special Topics. (3 3 0)** Prerequisite: department head approval. Exploration of an emerging, unique or special topic in sports and exercise sciences. May be repeated once for credit. Course fee \$15.
- SES 6396 **Readings and Research in Sports and Exercise Sciences.** Prerequisite: department head approval. In-depth readings and/or related research addressing a specialization in the sports and exercise domain. May be repeated once for credit.
- SES 6399 **Practicum. (3 0 0)** Prerequisite: student must submit a formal practicum proposal; permission of department head. 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—Sociology

(Offered through the Department of Behavioral Sciences.)

- SOCI 1301 **Introduction to Sociology. (3 3 0)** Fundamental concepts of sociology and introduction to analysis of social problems in both collective and individual aspects. Course fee \$10.
- SOCI 1306 **Social Problems. (3 3 0)** General survey of major social trends and contemporary social problems in American society. Course fee \$10.
- SOCI 3094 **Independent Study. (1-3 0 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 POSC 3311.
- SOCI 3342 **Juvenile Delinquency. (3 3 0)** Causes and manifestations of delinquency and the problem of the juvenile offender, agencies for delinquency adjustment, evaluation of penal methods. Course fee \$10.
- 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. Course fee \$5.
- 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 POSC 3362, SOCW 3362 and CRIJ 3362. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- SOCI 3374 **Victimology. (3 3 0)** Introductory course exploring the role, treatment and remedies of crime victims in the criminal justice system. Same as CRIJ 3374. Course fee \$10.
- 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. Course fee \$10.
- 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

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- crime and treatment of the criminal, programs and facilities for crime prevention. Course fee \$10.
- SOCI 4304 Community Corrections. (3 3 0)** Prerequisite: 1301. 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. Course fee \$10.
- 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. Course fee \$10.
- SOCI 4311 Contemporary Families. (3 3 0)** Prerequisite: 1301. 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. Course fee \$10.
- 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)** Prerequisite: SOCW/PSYC 2315 or permission of instructor. 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 43320. Course fee \$10.
- 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. Course fee \$10.
- 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. Course fee \$10.
- SOCI 4330 Sociology of Education. (3 3 0)** Social origins of goals and curricula, theories of change and control, nature of achievement in education and educational policy.
- SOCI 4341 The Community. (3 3 0)** Prerequisite: SOCW 2361 or SOCI 1306 or permission of instructor. 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. Course fee \$10.
- SOCI 4345 Health Care Policy and Planning. (3 3 0)** Comprehensive overview of major issues in health care practices and policy in the United States. Same as SOCW 4345. Course fee \$10.
- SOCI 4351 Sociology of Religion. (3 3 0)** Nature of religious movements and the role of religion in society.
- SOCI 4361 Sociological Theory. (3 3 0)** Prerequisite: 1301. Basic concepts and theories of modern sociology and examination of assumptions which underlie them.
- SOCI 4362 Social Research. (3 3 0)** Prerequisite: 1301. Logic and techniques of social research. Relationship of social theory and method. Same as SOCW 4362. Course fee \$5.
- SOCI 4385 Sociology of Law. (3 3 0)** Prerequisite: 1301. Social control functions of law and legal institutions in civil, criminal, family and social welfare laws.
- SOCI 4396 Readings and Research. (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.
- SOCI 5302 Criminology. (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. Course fee \$5.
- SOCI 5304 Community Corrections. (3 3 0)** Origins, functioning and effectiveness of probation and parole with emphasis on the problem of pre-sentence/pre-release investigations and supervision.
- SOCI 5311 Contemporary Families. (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.
- SOCI 5321 Research in 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 5325 Sociology of Gender Roles. (3 3 0)** Male and female gender roles in American society; evolution of gender roles; and contemporary challenges to traditional gender roles in society.
- SOCI 5330 Sociology of Education. (3 3 0)** Social origins of goals and curricula; theories of change and control; nature of achievement in education and educational policy.
- SOCI 5342 Research in Juvenile Delinquency. (3 3 0)** Causes and manifestations of delinquency and the particular problem of the juvenile offender, agency for delinquency adjustment; evaluation of penal methods.
- SOCI 5345 Health Care Policy and Planning. (3 3 0)** Comprehensive overview of major issues in health care practices and policy in the United States.
- SOCI 5361 Sociological Theory. (3 3 0)** Concepts and theories of modern sociology and examination of assumptions which underlie them.
- SOCI 5362 Social Research. (3 3 0)** Logic and techniques of social research. Relationship of social theory and method.
- SOCI 5385 Research in the Sociology of Law. (3 3 0)** Social control functions of law and legal institutions with attention to civil, criminal, family and social welfare laws.
- SOCI 6099 Advanced Field Practicum. (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.
- SOCI 6310 Seminar in Social and Political Theory. (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.

- SOCI 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 CRIJ/POSC 6312.
- SOCI 6342 Seminar in Criminal Justice Administration. (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.
- SOCI 6362 Seminar in Criminology and Social Policy. (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.
- SOCI 6364 Seminar in Deviance. (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.
- SOCI 6366 Seminar in Juvenile Delinquency and Juvenile Justice. (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.
- SOCI 6378 Program Evaluation. (3 3 0)** Social research procedures to systematically investigate the effectiveness of social intervention programs which include history of evaluation, terminology, methodology and applications. Same as PSYC 6378.
- SOCI 6387 Seminar in Research Methods. (3 3 0)**
Nonparametrics; measurement; surveys, research design; scale construction; methodology. Same as CRIJ/POSC 6387. Course fee \$8.
- SOCI 6388 Statistics for Social and Criminological Research. (3 3 0)** Prerequisite: undergraduate social statistics or equivalent. Statistical techniques most commonly used in criminal justice with emphasis on probability, estimation, hypothesis methods, sample techniques and use of SPSS. Same as CRIJ/POSC 6388.
- SOCI 6392 Advanced Issues in Sociology and Social Policy (3 3 0)** Prerequisite: 1301. 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.
- SOCI 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.
- SOCI 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 Behavioral Sciences.)

- 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. Course fee \$10.
- SOCW 2379 Practicum in Social Work. (3 0 0)** Prerequisite: 2361, 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 3098 Field Instruction I. (1-6 0 0)** Prerequisite or concurrent enrollment: 2.25 overall GPA, 3383 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. May be repeated once with approval of instructor. Course fee \$35.
- SOCW 3301 Social Welfare: Structure and Process. (3 3 0)**
Historical and social forces and their impact on the social welfare institution in the United States. Course fee \$5.
- SOCW 3362 Statistics for the Social Sciences. (3 3 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 CRIJ 3362. Course fee \$10.
- SOCW 3380 Human Behavior in the Social Environment. (3 3 0)**
Prerequisite: 2315 and 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.
- SOCW 3381 Social Policy and Planning. (3 3 0)** Prerequisite: 2361 and SOCI 1306 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, 3381 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.
- SOCW 4098 Field Instruction II. (1-6 0 0)** Prerequisite: 2.25 overall GPA, 3383, 3098 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. May be repeated once with approval of instructor. Course fee \$35.
- SOCW 4121 Practice Methods with Diverse Populations. (1 0 2)**
Various disenfranchised groups and application of practice techniques appropriate to their populations. Values, ethics

SOCW 4303–6599

and self-exploration related to diverse populations. Course fee \$10.

SOCW 4303 Social Services for Children and Families. (3 3 0)

Prerequisite: Permission of instructor. Child welfare service, including historical perspective; supportive services such as family service and child-guidance clinics; supplementary services such as day care, homemaker and protective; substitute services such as foster-family adoption and child-care institutions.

SOCW 4305 Social Services and the Aging. (3 3 0)

Prerequisite: permission of instructor. 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 SOCI 4305. Course fee \$10.

SOCW 4310 Group Processes. (3 3 0)

Prerequisite: permission of instructor. Understanding the nature of groups, process of group development and relevance of group work in different settings. Same as SOCI 4310. Course fee \$10.

SOCW 4320 Loss and Grief. (3 3 0)

Prerequisite: PSYC/SOCW 2315 or permission of instructor. 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 SOCI 4320. Course fee \$10.

SOCW 4341 The Community. (3 3 0)

Prerequisite: SOCI 1306 or permission of instructor. 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 SOCI 4341. Course fee \$10.

SOCW 4345 Health Care Policy and Planning. (3 3 0)

Comprehensive overview of major issues in health care practices and policy in the United States. Same as SOCI 4345. Course fee \$10.

SOCW 4362 Social Research. (3 3 0)

Logic and techniques of social research. Relationship of social theory and method. Same as SOCI 4362. Course fee \$5.

SOCW 4375 Theories of Counseling. (3 3 0)

Survey of major counseling theories and related techniques and introduction to current ethical and professional issues for the beginning human services worker. Same as PSYC 3375. Course fee \$10.

SOCW 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 and future trends in community treatment. Same as CRJ 4376.

SOCW 4395 Current Issues in Social work (3 3 0)

Topics of interest in the field of social work. Emphasis on recent advances, emerging trends and contemporary perspectives. May be repeated once for credit when topic varies. Course fee \$10.

SOCW 6305 Integrative Seminar. (3 3 0)

Prerequisite: completion of all other M.S.W. coursework; 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. Required of all non-thesis students in their final semester of coursework. A grade of "B" or better must be earned in this seminar. Course is offered once for each cohort of M.S.W. students approximately every four years. Fall.

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 6319 Technology Use in Social Work Practice. (3 3 0)

Introduction of basic computer concepts, spreadsheets, word processing, assessment and intervention software, graphics packages and statistical packages and their applications in social work. Course is offered once for each cohort of M.S.W. students approximately every four years. Fall.

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. Course is offered once for each cohort of M.S.W. students, approximately every four years. Spring.

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. Major 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 once for credit when topics vary. Course is offered once for each cohort of M.S.W. students approximately every four years. Summer. Course fee \$10.

SOCW 6498 Applied Social Work Practice II. (4 0 0)

Prerequisite: 6599. Builds on experience gained from ASWP I. 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 \$6.

SOCW 6499 Applied Social Work Practice III. (4 0 0)

Prerequisite: 6599. Builds on experience gained from ASWP I and II. 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 \$6.

SOCW 6599 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 \$15.

SPAN—Spanish

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

- SPAN 1411 Elementary Spanish I. (4 3 2)** Development of fundamental skills in speaking, listening, reading, writing and grammar. Fall, spring, summer. Course fee \$10.
- SPAN 1412 Elementary Spanish II. (4 3 2)** Prerequisite: 1411 or equivalent. Continuation of 1411. Fall, spring, summer. Course fee \$10.
- SPAN 2311 Intermediate Spanish I. (3 3 0)** Prerequisite: 1412 or equivalent. Strengthens skills in speaking, listening, reading, writing and grammar. Fall, spring, summer.
- SPAN 2312 Intermediate Spanish II. [SPAN 2312] (3 3 0)** Prerequisite: 2311 or equivalent. Strengthens skills in speaking, listening, reading, writing and grammar. Fall, spring, summer.
- SPAN 2371 Spanish for Professionals. (3 3 0)** Prerequisite: 1412 or equivalent and consent of instructor. Topics include business Spanish, medical Spanish, Spanish for law enforcement. May be repeated once for credit. Fall.
- SPAN 3094 Individual Study. (1-3 0 0)** Individual study designed to meet needs and interests of the student.
- SPAN 3301 Advanced Spanish. (3 3 0)** Prerequisite: 2312 or equivalent. Enrichment of vocabulary and enhancement of skills in speaking, listening, reading and writing. Preparation for TOPT. Fall.
- SPAN 3307 Advanced Conversation. (3 3 0)** Prerequisite: 2312 or equivalent. Oral practice and presentations. Spring of odd years.
- SPAN 3308 Vocabulary Building and Composition. (3 3 0)** Prerequisite: 2312 or equivalent. Development of advanced vocabulary in speaking, listening, reading and writing.
- SPAN 3314 Latin American Culture and Civilization. (3 3 0)** Prerequisite: 2312 or equivalent. The geography, history, indigenous cultures, politics, literature and art of Latin America. Fall of even years.
- SPAN 3315 Spanish Culture and Civilization. (3 3 0)** Prerequisite: 2312 or equivalent. The geography, history, ancient cultures, politics, religion, literature and art of Spain. Fall of odd years.
- SPAN 3340 Language Arts for Bilingual Students I. (3 3 0)** Prerequisite: 2312 or equivalent. Language acquisition theories, developmental theories and history of bilingual education in the United States. Summer.
- SPAN 3341 Language Arts for Bilingual Students II. (3 3 0)** Prerequisite: 2312 or equivalent. Methodologies and Spanish vocabulary for major subject areas at elementary school level. Summer.
- SPAN 4320 Advanced Spanish Grammar. (3 3 0)** Prerequisite: 2312 or equivalent. Advanced grammatical structures in reading, writing, listening and speaking. Fall of odd years.
- SPAN 4330 Spanish Phonology. (3 3 0)** Prerequisite: 2312 or equivalent. The sound system of the Spanish language. Spring of odd years.
- SPAN 4340 Spanish in the Southwest. (3 3 0)** Prerequisite: 2312. Southwest Spanish dialects, including phonology, regional expressions and borrowed vocabulary. Spring of even years.
- SPAN 4355 Spanish American Literature. (3 3 0)** Prerequisite: 2312 or equivalent. Selected works by major Spanish American writers. May be repeated once for credit when topics vary. Every second or third year.

- SPAN 4365 Spanish Literature. (3 3 0)** Prerequisite: 2312 or equivalent. Selected works by major Spanish writers. May be repeated once for credit when topics vary. Every second or third year.
- SPAN 4375 Hispanic Writers in the U.S. (3 3 0)** Prerequisite: 2312 or equivalent. Literary works of Hispanic heritage writers in the U.S., with emphasis on contemporary authors. Every second or third year.
- SPAN 4385 Hispanic Film. (3 3 0)** Prerequisite: 2312 or equivalent. Films from Spain and Spanish America. Analysis of cultural issues (social, political and historical) within films. Taught in Spanish.
- SPAN 4393 Honors. (3 0 0)** Prerequisite: senior status and approval of department head. 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.
- SPAN 4395 Mexican Literature and Culture. (3 3 0)** Prerequisite: 2312 or equivalent. 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, máscaras mexicanas, and figures such as Angeles Mastretta and Carlos Fuentes. Fall of odd years.
- SPAN 5340 Language Arts for Bilingual Students I. (3 3 0)** Prerequisite: 2312 or equivalent. Language acquisition theories, developmental theories and history of bilingual education in the United States. Summer.
- SPAN 5341 Language Arts Bilingual Students II. (3 3 0)** Prerequisite: 2312 or equivalent. Methodologies and Spanish vocabulary for major subject area at elementary school level. Summer.

THRE—Theatre

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

- THRE 1120 Drama Workshop Practicum. [DRAM 1120] (1 0 2)** 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.
- THRE 1310 Introduction to Theatre Arts. [DRAM 1310] (3 3 0)** 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. Course fee \$12.
- THRE 1330 Stagecraft. [DRAM 1330] (3 3 0)** Planning and techniques of constructing stage settings and special scenic units for all types of productions. Spring. Course fee \$25.
- THRE 1341 Make-Up. [DRAM 1341] (3 3 0)** Relationship between stage characterization and stage make-up. Each student gains practical experience in applying make-up. Spring, fall. Course fee \$60.
- THRE 1351 Acting I: Basic Techniques. [DRAM 1351] (3 3 0)** Development of basic acting skills and introduction to foundational theories. Emphasis on physical expression. Fall.
- THRE 1352 Acting II: Character Development. [DRAM 1352] (3 3 0)** Prerequisite: 1351. Further development of basic acting skills with emphasis on character development. Discovery, discussion and exercise of inner-action. Connection of physical and emotional expression. Spring.

THRE 1371–6396

- THRE 1371 Dramatic Criticism. (3 3 0)** Basics of critiquing dramatic and theatrical texts, live theatrical productions and filmed performances from a performance viewpoint. Fall. Course fee \$15.
- THRE 1373 Theatre Design Concepts. (3 3 0)** Principles and practices of theatre design concepts in areas of set, light and costume design. Spring. Course fee \$40.
- THRE 2074 Individual Problems. (1-3 0 0 0)** Individual study designed to meet needs and interests of the student. May be repeated. Fall, spring.
- THRE 2076 Summer Theatre I. (1-3 0 0-6)** May be repeated for a total of six semester hours. A maximum of three semester hours may count toward the major. Summer I, summer II.
- THRE 2331 Concepts in Technical Production. (3 3 0)** Prerequisite: 1373. Survey of theatre technology and production crafts. Topics include drafting, scenic construction, properties, rigging, scenic painting, metal work, electricity and audio. Course fee \$25.
- THRE 2374 Actor's Voice and Movement. (3 3 0)** Use and training of the voice and body for the stage. Vocal process, regional dialect control, physical centeredness, expression and versatility. Fall of odd years. Course fee \$20.
- THRE 3076 Summer Theatre II. (1-3 0 0-6)** Prerequisite: six semester hours of theatre, English or education. May be repeated for a total of six semester hours. A maximum of three semester hours may count toward the major. Summer I, summer II.
- THRE 3094 Individual Problems. (1-3 0 0 0)** Individual study designed to meet needs and interests of the student. May be repeated. Fall, spring. Course fee \$4.
- THRE 3199 Advanced Drama Workshop Practicum. (1 0 2)** Prerequisite: 1120 (three hours). Advanced experience and instruction in the theatrical production process. May be repeated up to a total of six semester hours. Fall, spring. Course fee \$25.
- THRE 3312 Play Direction I. (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. Fall of even years.
- THRE 3335 Concepts in Light Design. (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. Course fee \$50.
- THRE 3340 Computer-Aided Drafting for Theatre. (3 2 2)** Principles and techniques of a computer-aided drafting program and of a stage-lighting spreadsheet for the performing arts student. Every other year. Course fee \$50.
- THRE 3351 Acting III: Styles in Acting. (3 3 0)** Prerequisite: 1352. Various acting periods in the historical genre of theatre. Exploration of period mannerisms, physicality, etiquette, social environment and behavior. Fall of even years.
- THRE 3370 Theatre Fundamentals. (3 3 0)** Prerequisite: 1371, 3312. Synthesis of theatre subjects, processes and theories for presentation and demonstration. Integration of acting, directing, history, technical theatre and design.
- THRE 3374 Actor's Voice and Movement II. (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. Spring of even years. Course fee \$25.
- THRE 3392 Special Topics in Theatre. (3 3 0)** Specialized study in theatre as necessary due to advances in technology, research or performance. May be repeated once.
- THRE 4312 Play Direction II. (3 3 0)** Prerequisite: 3312. Application of research and analysis through auditioning, casting, rehearsing and producing a studio one-act play. Application of directing theory, policy and procedure. Spring of odd years. Course fee \$40.
- THRE 4335 Concepts in Scenic Design. (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/or modeling and technical drawings. Course fee \$50.
- THRE 4345 Stage Management. (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. Course fee \$5.
- THRE 4351 Acting IV: Advanced Acting. (3 3 0)** Prerequisite: 3351. Advanced study of acting with emphasis on classical material and professional preparation. Spring of even years.
- THRE 4361 Theatre History I. (3 3 0)** Development of theatre from its beginnings through the 1500s. Chronological study of theatre as a worldwide institution. Fall of even years.
- THRE 4362 Theatre History II. (3 3 0)** Development of theatre from 1600 through the present. Chronological study of theatre as a worldwide institution. Spring of odd years.
- THRE 4393 Honors. (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. Fall, spring.
- THRE 6321 Special Problems in Acting and Directing. (3 0 0)** Problems, projects and advanced exploration developed around graduate-level performance opportunities in acting and directing. May be repeated once.
- THRE 6335 Special Problems in Theatre Design and Technology. (3 0 0)** Problems, projects and advanced exploration developed around advanced theatre technology and graduate-level design. May be repeated once.
- THRE 6396 Readings and Research in Theatre. (3 0 0)** Intensive readings and research in theatre history, theatre criticism or other areas of theatrical specialization. May be repeated once.