

# Accounting (ACCT)

## 201 Financial Accounting for Decision Making

(3) This course is designed to help students appreciate the role of accountants in providing information helpful to decisions of investors, creditors, government regulators, management and others, and understand how that information can be used. Emphasis is on comprehending the meaning and value of the balance sheet, income statement, and statement of cash flows. *Prereq: Sophomore standing and MATH 140 or 160 or 185 or 210 or 251.*

**202 Managerial Accounting Information for Decision Making** (3) Uses of accounting information for managerial decision making to aid planning and control activities of managers in business enterprises. Topics include methods for determining the costs of products and services, for assessing product and project profitability, and for budgeting and monitoring of costs and profits. *Prereq: A grade of C or better in ACCT 201.*

## 300 Accounting for Non-Business Students

(3) Survey course in financial and managerial accounting with heavy emphasis on managerial use of accounting information. May not be taken for credit by business students. Credit may not be counted both for ACCT 201-202 and ACCT 300. *Prereq: Junior standing.*

**301 Intermediate Accounting I** (3) A professional level study of financial accounting theory and practice, designed to prepare students for careers in all areas of accounting. Beginning with a review of the conceptual framework and the accounting cycle, the course provides a detailed examination of the recording and reporting issues encountered by financial accounting professionals. *Prereq: Grade of C or better in ACCT 202 and CSCI 201.*

**302 Intermediate Accounting II** (3) Continuation of ACCT 301. *Prereq: Grade of C or better in ACCT 301.*

**321 Cost/Management Accounting** (3) Cost management emphasizing contemporary topics through an understanding of the underlying concepts and fundamental techniques involved in cost accounting for manufacturing and service enterprises. Job-order, process cost volume profit analysis, product pricing, budgeting, activity based costing and stan-

dard costing are examined. *Prereq: Grade of C or better in ACCT 202.*

## 401 Auditing and Assurance Services (3)

Introduction to auditing and assurance services. Course covers the auditing environment, the auditing process, and the application of auditing concepts to various types of audits, including financial, operational and compliance. *Prereq: Grade of C or better in ACCT 301 and MATH 210.*

**402 Financial Statement Auditing** (3) Application of the auditing process to the auditing of financial statements. *Prereq: Grade of C or better in ACCT 401.*

## 421 Advanced Cost/Management Accounting

(3) A continuation of ACCT 321 with an emphasis on inventory management, just in time costing, support-service costs, long-term capital investment decisions, performance analysis, pricing and incentive systems and performance measurement. *Prereq: Grade of C or better in ACCT 321.*

**431 Individual Taxation** (3) Introductory course in taxation with emphasis on individuals, including the study of gross income, exclusions, business and non-business deductions, credits, property transactions, accounting periods and methods, and deferred compensation. *Prereq: Grade of C or better in ACCT 202.*

## 432 Advanced Topics and Research in Tax

(3) Advanced course in taxation with coverage of corporations, partnerships, estates, trusts, gifts and developing research skills. *Prereq: Grade of C or better in ACCT 431.*

## 441 Advanced Financial Accounting (3)

Accounting practices and theories for business combinations and partnerships. *Prereq: Grade of C or better in ACCT 302.*

## 451 Governmental and Nonprofit Accounting

(3) An introduction to accounting and financial reporting of state and local governments and nongovernmental nonprofit organizations. Account structure and accounting for various fund types in governmental entities and restricted and unrestricted funds in nongovernmental nonprofit entities are emphasized in the course. *Prereq: Grade of C or better in ACCT 301.*

**461 Accounting Information Systems (3)** An introduction to information systems with emphasis on concepts of analysis, design, and implementation of accounting systems with attention to internal control and the audit trail. Students will be working with a computerized accounting software package. *Prereq: At least a grade of C in ACCT 301 and ACCT 321.*

**480 Internship in Accounting (1-9)** Supervised accounting work experience in business establishments, institutions, or other organizations matched to the student's curriculum. (May not be used to meet upper division accounting elective requirements.) *Prereq: Departmental approval required; at least junior standing. May be repeated for up to a total of 9 hours internship credit. A maximum of 6 hours may be used to fulfill degree requirements. Pass/Fail.*

**490 Independent Study in Accounting (3)** Special research projects undertaken individually under the supervision of the accounting faculty. Students are required to write research reports and give oral presentations. *Prereq: Senior standing and approval of department chairperson and accounting faculty.*

**491 Research in Accounting Theory (3)** An examination of accounting concepts, standards, conventions, principles, and practices with primary emphasis on the study of authoritative pronouncements comprising generally accepted accounting principles. *Prereq: At least a grade of C in ACCT 301.*

**701 Advanced Topics in Auditing (3)** In-depth study of auditing as it relates to financial statements of public companies and governmental agencies. *Prereq: One course in auditing.*

**710 Business Analysis Using Financial Statements (3)** Introduction to business analysis using financial statements. After a review of the basic statements, students are exposed to concepts and techniques of Financial Statement Analysis. Emphasis is on financial statement information to enhance decision making for a variety of users (management, corporate boards, equity investors, financial analysts, lenders, and regulators). *Prereq: ACCT 201 or 300 or 711.*

**711 Accounting for Managerial Decisions (3-4)** Study of accounting as it applies to the managerial function. Includes both managerial input into the accounting system and managerial use of accounting information. This course may not be used to meet MAC degree requirements. *Prereq: ACCT 201 or 300.*

**721 Advanced Topics in Cost Accounting (3)** Study of advanced topics in cost accounting with emphasis on recent developments in cost accounting and in application of quantitative methods in the cost area. *Prereq: One course in cost accounting.*

**731 Advanced Topics in Tax (3)** Intensified study of the tax laws with emphasis on the federal income tax. Heavy emphasis on research methodology. *Prereq: One course in federal income tax.*

**741 Advanced Problems in Accounting (3)** Study of advanced accounting problems, including standard setting, income determination, and disclosure issues. *Prereq: ACCT 301 or permission of instructor.*

**751 Accounting for Nonprofit Entities (3)** Study of nonprofit accounting with emphasis on governmental entities, schools, hospitals, and voluntary health and welfare organizations. *Prereq: ACCT 201 or ACCT 300 or ACCT 711.*

**780 Internship in Accounting (3)** Supervised accounting work experience in business establishments, institutions, or other organizations. Students are required to write reports and give oral presentations.

**790 Accounting Strategic Management and Business Policy (3)** An advanced case study, integrating accounting, economics, finance, management, and marketing of selected problems encountered in the management of typical organizations engaged in the production of goods and services. Problem analysis and decision-making skills are emphasized in the context of the existing international environment. MAC students must take this course during their last semester. Approval from the Graduate Coordinator is required before registering for this course. MBA students are not allowed to take this course for credit. *Prereq: Students must have a 3.00 graduate cumulative GPA with no "I" grades while enrolled in ACCT 790.*

**791 Accounting Theory (3)** Study of effective or proposed promulgations of accounting standards setting bodies. *Prereq: ACCT 301.*

**799 Individual Readings and Research in Accounting (3)** Special advanced research projects undertaken individually under the supervision of the faculty. *Prereq: Approval of faculty member and Coordinator of Graduate Studies in Business.*

## Agricultural Economics (AGEC)

**110 Introduction to Agricultural Business (3)** An introduction to the field of agricultural business and some of the basic tools and concepts of decision-making. Concepts are illustrated in terms of selected current social and economic issues in the industry of production agriculture, agricultural business, and the computer application of those concepts.

**271 Farm Management (3)** Principles and procedures of farm management. Farm records, accounts, budgets, and their uses. Farm tax law. Financing farm acquisition and expansion

**301-302 Special Problems (1, 1)** Independent study projects for students exhibiting special interest in applied areas of agricultural economics. Topics may be chosen from, but are not restricted to, production, marketing, management, policy, finance, and resource economics. Taught only by arrangement prior to registration.

**325 Agriculture and Natural Resource Policy (3)** Participants, issues, and the policy process. Historical development and current characteristics of commodity, credit, food, trade, environmental, and natural resource policy. Relationship between domestic and international agricultural and environmental policy.

**335 International Agricultural Trade (3)** Theory and practice in international trade in agricultural and food products. Trade policy, trade agreements, trade law, tariffs, customs practices, exchange rates, and their impact on trade in U.S. and world agriculture. *Prereq: AGECE 110.*

**345 Agribusiness and Scientific Sales (3)** Principles of selling products requiring scientific, agricultural, and engineering knowledge. Topics include feature/ benefit table design, technical product distribution, wholesale and retail financing, cooperative advertising, group selling, specification selling, personal selling, and technical business plans. How to apply technical and scientific skills toward agricultural and engineered product selling.

**364 Agricultural Marketing (3)** The American marketing system. Alternative market function of the marketing system. Commodity futures problems. Current marketing problems and possibilities for improvement. *Prereq: AGECE 110 or ECON 202.*

**375 Environmental and Agricultural Law (3)** Survey of law and its application to agricultural and natural resource management. Property, contracts, torts, drainage and water rights. Environmental law, land tenure, employment, forms of business organization, estate planning, regulatory law and other selected topics. (Same as NRM 375)

**385 Agribusiness Market Planning (3)** Preparation of an executive summary and presentation of an agribusiness marketing plan. The product can be used for competition at the local and national levels of the National Agri-Marketing Association. The agribusiness marketing plan involves a rigorous examination of a product, its market, the competition, the plan for market development, and a financial analysis of the plan's profitability. May be repeated for up to six hours of credit.

**386 Advanced Agribusiness Market Planning (3)** Preparation of an agribusiness marketing plan and actual presentation in competition at the local and national levels of the National Agri-Marketing Association. Includes trips to Memphis and the National Convention. The presentation includes many hours of rehearsal and refinement and preparation for answering questions of Judges. May be repeated for up to six hours of credit.

**395 Farm Real Estate Appraisal (3)** Methods of valuing and appraising farm real estate, farm real property law, and gathering appraisal data. Income capitalization, sales comparison or market value, inventory or cost approaches to farm valuation. Valuation of buildings, insurance, tax, farm loan, and condemnation appraisals, and estate planning.

**401-402 (601-602) Research Participation**

(3, 3) Application of the scientific method and techniques of research to investigation of problems in major subject areas of agricultural economics. Restricted to students with demonstrated ability to conduct a supervised research problem. Taught only by arrangement prior to registration.

**445 (645) Natural Resources Economics (3)**

Economic, social, and political factors involved in conservation and utilization of natural resources. Discussion of investment criteria including benefit-cost analysis, multi-objective planning externalities, and welfare economics. Impact of outdoor recreation, aesthetics, and other non-market considerations associated with resource development. Students are required to write reports and give oral presentations. *Prereq: ECON 202.*

**471 (671) Agricultural Management (3)**

Principles and procedures for determining most profitable farm organization and system of operation. Nature of managerial processes. Records and their uses and budgeting procedures. Operations of firms selling farm supplies and merchandising agricultural products. Application of microeconomic theory to the problems of resource allocation, enterprise selection, and scale of operation of agricultural firms. *Prereq: AGECE 110 or ECON 202.*

**485 (685) Mathematical Economics for Agriculture (3)**

Optimization, including mathematical programming, Lagrangean functions, and existence of optimal solutions. Static economic models, including input-output analysis, constrained production sets, nonlinear models, and general equilibrium models. Dynamic economic models, including balanced growth models, optimal growth models, and stability analysis. Course may include some instruction in underlying mathematics for models. Emphasis will be applications in agriculture. *Prereq: MATH 160; ECON 201, 202.*

**715 Advanced Farm Real Estate Appraisal (3)**

Problems and advanced topics in valuing farm real estate, including theory of value, present market value, legal description, property and real estate law, rights and limitations in the use of property, methodology and techniques of appraisal, including the impact of GPS on gathering appraisal data.

Analysis of income capitalization, sales comparison, and inventory cost approaches to appraisal and how differences in such appraisals can be reconciled. Dealing with complications from valuing buildings and improvements. Ethical considerations in performing appraisals for a specific purpose.

**735 Seminar in International Agricultural Trade (3)**

Theory and practice in international trade in agricultural and food products with emphasis on real world problems. Trade policy, trade law, customs practices, exchange rates and their impact on trade in U.S. and world agriculture. Developing real world export marketing plans including research, pricing, distribution systems, financing, and pro forma invoicing. Discussions of major global trade issues.

**745 Agricultural Production Economics (3)**

Resource allocation, production selection, scale of operation of agricultural firms including risk and uncertainty associated with agricultural production. *Prereq: MATH 160 and ECON 202 or instructor's approval.*

**750 Agricultural Risk Analysis and Decision Making (3)**

Application of current risk management techniques to issues specific to the U.S. agribusiness system. Elements include: production risk; crop insurance; diversification; contract production; integration of systems; market risk; futures and options; minimum price contracts; personal risk; estate planning; organizational concerns; interest rate risk; policy risk.

**751 Strategic Management Issues in Agriculture (3)**

Application of current strategic management techniques to agribusiness problems. Emphasis on viewing management from a broad organizational perspective through an integrated approach. The ability to assimilate and analyze information from all aspects of the organization (i.e. management, marketing, information systems, production, finance, accounting, etc.) to analyze complex problems, develop plans and propose recommendations on a top management perspective.

## Agricultural Education (AGED)

**310 Integrated Agricultural and Agriscience Education Studies** (3) Planning and supervision of agricultural experience programs, agricultural mechanics methods, agriscience methods, and the FFA organization. *Prereq: Admission to Teacher Education.*

**404 Student Teaching Grades 7-8** (6) Student teaching in grades 7-8 for a minimum of 7.5 weeks. Must be taken with TCED 401 and AGED 405. *Prereq: Admission to Teacher Education, TCED 301-302 and AGED 310.*

**405 Student Teaching in Grades 9-12** (6) Supervised student teaching in grades 9-12 for a minimum of 7.5 weeks. Must be taken with TCED 401 and AGED 404. *Prereq: Admission to Teacher Education, TCED 301-302 and AGED 310.*

**430-440 (630-640) Problems in Improvement of Instruction** (3, 3) Registration in special conferences, workshops, or inservice programs. These courses will be conducted by the Agricultural Education staff on campus or at selected off-campus centers and will be offered at times convenient to the students.

**450-460 (650-660) Problems in Agribusiness and Natural Resources Education** (3, 3) Registration in off-campus occupational experiences, short courses, or inservice programs. These courses will be conducted by the Agricultural Education staff on campus or at selected off-campus centers and will be offered at times convenient to the students.

**470 (670) Problems in Agricultural Education** (1-3) A course designed to deal with teaching and/or related problems. An elective course for seniors and graduate students. May be repeated for a maximum of 9 hours credit.

**740 Seminar in Vocational Agriculture for First Year Teachers** (3) Assistance in adjustment to situation in which employed. Seminars to be held in selected centers with visits by instructor to each student at his/her teaching station. Students to participate in special activities selected by the instructor. *Prereq: Employment as a vocational agriculture teacher.*

**741 Supervision of Student Teaching in Agriculture** (3) A study of the objectives and techniques of supervising student teachers; experiences to be provided; rewards; facilities; relationships.

**770 Program Development for Agricultural Mechanics Instruction** (3) Development of instruction and managerial competencies needed in conducting agricultural mechanics programs through an in-depth study of program components and activities related to each including skills development for FFA contest.

**771 Program Development for Future Farmers of America Instruction** (3) Development of instructional and managerial competencies needed in conducting Future Farmers of America programs including the related programs of Alumni and Young Farmers through an in-depth study of program components and activities related to each.

## Agricultural Engineering Technology (AGET)

**110 Introduction to Agricultural Engineering** (3) Survey of basic engineering principles and terms. Engineering applications in agriculture. Two one-hour lectures and one two-hour lab. *Prereq: Students must have satisfied entrance requirements in mathematics.*

**210 Internal Combustion Engines** (3) Design features and performance characteristics of internal combustion engines for agricultural applications. Survey of factors affecting performance of spark ignition and compression ignition engines. Operation, adjustment and repair of single cylinder spark ignition engines emphasized in laboratory. Two one-hour lectures and one two-hour lab. *Coreq: MATH 140.*

**220 Surveying and Soil and Water Engineering** (3) Fundamentals of surveying to include measurements of angles and distances, leveling, topographic surveys, and mapping. Application of surveying information to soil and water engineering. Integration of engineering hydrologic and agronomic information in planning facilities for soil and water conservation. Two one-hour lectures and one two-hour lab. *Coreq: MATH 140.*

**301-302 Special Problems** (1, 1) Independent study project in the areas of soil and water, power and machinery, structures, or electric power and processing. Emphasis on application of engineering principles for solution of a problem or design of a project of special interest to the student. Preparation of a written project outline and report of results required. Taught only by arrangement prior to registration.

**310 Food Engineering Technology** (3) Selected principles of thermodynamics and fluid mechanics pertaining to food processing operations; application of engineering principles to processing methods involving drying, evaporation, fluid handling, heating, cooling, and materials handling. Two one-hour lectures and one two-hour lab. *Prereq: MATH 140 and PHYS 211 or instructor's approval.*

**350 Agricultural Power and Machinery Management** (3) Functional analysis of agricultural machines and power units. Selection of machines. Machinery system performance. Approaches and procedures for making machinery management decisions. Two one-hour lectures and one two-hour lab. *Prereq: MATH 210.*

**370 Agricultural Mechanics Shop** (3) Organizing and planning agricultural shops. Tools, equipment and fabrication methodologies for wood, metals, and other common materials. One one-hour lecture and two two-hour labs.

**401-402 (601-602) Research Participation** (3, 3) Selection, analysis, solution, and report of a problem in soil and water, power and machinery structures, or electric power and processing with emphasis on the scientific methods of inquiry. Preparation of project outline and presentation of written and oral reports required. Taught only by arrangement prior to registration. *Prereq: Senior standing minimum GPA of 2.75.*

**450 (650) Agricultural Structures** (3) Functional planning of agricultural structures and utilities. Materials of construction and construction methods. Environmental control. Two one-hour lectures and one two-hour lab. *Prereq: MATH 210.*

**460 (660) Waste Management Technology** (3) Systems for utilization or disposal of waste. Waste characteristics and treatment methods. Pollution

control. Two one-hour lectures and one two-hour lab. *Prereq: MATH 160 and BIOL 120.*

**482 (682) Precision Technologies for Agriculture and Natural Resource Management** (3) Principles and applications of technologies supporting agriculture and natural resource data management and planning. Topics include global positioning systems (GPS), remote sensing, GIS, data layering, and software packages for management. Two hours lecture and two hours laboratory. *Prereq: consent of the instructor.*

**710 Safety and Ergonomic Sciences in Agriculture** (3) Designing, fitting, adjusting equipment and tools to suit individuals so that agricultural tasks can be done safely, efficiently, productively, and without discomfort, pain, injury, and disability; includes comfort and well-being.

**760 Comprehensive Nutrient Management Planning and System Design** (3) Application of agronomic sciences and engineering technology for developing Comprehensive Nutrient Management Plans (CMNPs) for livestock production. Elements include: environmental law and regulatory policy; watershed planning considerations; animal waste characteristics; role of soils; role of plants; geologic and ground water concerns; facilities location; waste treatment systems design; land application of wastes; and agricultural waste management system design.

**782 Advanced Precision Technologies for Agriculture and Natural Resources Management** (3) Principles and applications of technologies supporting farming and natural resource data management and planning. Topics include internet information access, positioning systems (GPS), remote sensing, yield monitoring and mapping, variable rate technologies, data sampling, automated guidance, GIS, data layering, and software packages for management. Three one hour lectures.

**784 Agricultural Systems Science** (3) Analysis and optimization of systems for agricultural production and processes; simulations by mathematical models of discrete and continuous biological and biochemical systems, single server queuing, mathematical programming, and search techniques for agricultural processes.

**785 Decision and Information Systems in Agriculture** (3) Computerized decision systems for agriculture, expert systems, decision support systems simulations, subjective probability and utility theory, and types of applications in agriculture. Impact of technology on the agricultural organization including topics of problem agricultural organization and complexity, database management, operation systems, data communication, and privacy.

## Agriculture (AGRI)

**120 Science & Technology of Agriculture and Natural Resources** (3) This course will provide an overview of career opportunities in agriculture and natural resources management; an identification of key principles of, and interrelationships between, agriculture and natural resources; and current science and technology applications within agriculture and natural resources management.

**180 Topics in Agriculture [Topic title]** (1-3) Study of special topics, laboratory, or field experiences at an introductory level. Topics include, but are not restricted to: Agricultural Economics, Animal Science, Plant and Soil Science, Agricultural Education, Agricultural Engineering Technology, Natural Resources Management, Chemistry, Physics, Biology. This course may be repeated for credit with advisor's approval. The course is graded pass/fail. Same as NRM 180.

**230 Travel Studies in Agriculture and Natural Resources** (1-3) Travel course to study topics in Agriculture and Natural Resources either domestic or international. Requires travel to another region or country, and presentation of oral and written reports. May be repeated one time for credit. (Same as NRM 230) *Prereq: Instructor's approval.*

**275 Agricultural Communications** (3) Introduction to the field of agricultural communications, journalism and public relations with a focus on programs, activities, careers, trends, publication development, layout, artwork, design and writing.

**295 International Food and Fiber Systems** (3) A study of the influence of food and fiber systems on the economy, environment, health, life style and political systems throughout the world. The impact of cultural differences, gender, and institutions on international food and fiber systems is discussed.

Course provides students with a global perspective on current issues related to international food and fiber.

**390 Career Planning in Agriculture** (2) Assessment of personal and academic potential for professional careers by the Agriculture and Natural Resources Management graduate. Efforts directed toward preparing for, interviewing, and securing a position. Critiques of related extra curricular events. Survey of the history, philosophy, and ethics of Agriculture and Natural Resources Management and crucial issues affecting agriculture and natural resources. Students are required to write reports and present professional oral presentations. *Prereq: Junior standing. (Same as NRM 390)*

**411 Fundamentals of Cooperative Extension** (3) History, philosophy and organizational structure of the Cooperative Extension Service, major areas of program emphasis, teaching methods used, and relationships with other educational agencies. (Same as FCS 411)

**420 Supervised Field Experience** (3, 4) Minimum of one semester (or two semesters for four hours credit) of supervised study and experience with a business or agency and/or a specific aspect of its operations is required. Prior approval of arrangements with cooperating employer is necessary. Joint evaluation by on-the-job and academic supervisors.

**441 Interpretation of Agricultural Research** (3) Statistical techniques for analysis and interpretation of agricultural data. Descriptive statistics, inference, tests of hypotheses, confidence intervals, analysis of variance, mean separation, linear regression and correlation. *Prereq: MATH 210.*

**450 (650) Dynamics and Development of Leadership in Natural Resources Management** (3) A study of the dynamics, strategies, and parliamentary procedure skills needed by leaders of occupational, civic, and social organizations. Practical approaches through group interactions and participation. A detailed examination of organizations and individuals within organizations. Students are required to write reports and give oral presentations. *Prereq: Junior standing. (Same as NRM 450/650)*

**701-702 Master's Thesis** (3, 3) Thesis proposal and research; thesis writing, presentation, and defense. May repeat enrollment. P/N only.

**732 International Travel Study** (3) International travel course to study topics in agriculture or natural resources. Requires travel to another country, oral and written reports.

**741 Statistical Methods in Agriculture and Natural Resources** (3) Statistical techniques used in design and analysis of experiments in agriculture and natural resources management. T-tests, analysis of variance, mean separation, regression and correlation, experimental design and analysis, interpretation of research results, analysis and interpretation of survey information. *Prereq: MATH 210 or equivalent or instructor's approval.*

**77- Topics in Agriculture and Natural Resources Management (Selected Area)** (1-6) Topics in selected areas of agriculture and natural resources. For graduate students in the Master of Science in Agriculture and Natural Resources Systems Management program. Can be used to meet requirements in the MSANR curriculum. The subject matter area is indicated by the third digit: 0 for Agriculture, 1 for Agricultural Economics, 2 for Agricultural Engineering Technology, 3 for Animal Science, 4 for Natural Resources Management, 5 for Plant and Soil Science. May repeat enrollment up to six credit hours. *Prereq: Graduate Coordinator and instructor's approval.*

**791 Research/Internship in Agriculture** (1-3) This will be either: 1) a major research project associated with agriculture, or 2) a supervised work experience in agriculture for a minimum of three months (requires weekly reporting from student and a final report from the immediate supervisor). Research projects shall include: a review of literature, data collection methodology, data presentation, and a final written report. May repeat enrollment. No more than three semester hours credit will be counted toward requirements for the MSANR degree. P/N only.

## Animal Science (ANSC)

**110 Introduction to Animal Science** (3) Fundamental principles of animal agriculture. Biological and scientific aspects of development, inheritance, and feeding. Animal products and scope of the animal industry.

### 119 Introduction to Animal Science

**Laboratory** (1) Provides a laboratory experience for training students in the basic concepts of livestock production and husbandry. Students will identify major breeds of livestock, determine daily feed requirements, study basic principles of livestock anatomy and external part nomenclature, and observe basic behavioral characteristics of animals produced for food, fiber and recreation. Includes principles of animal health and welfare. Field trips to commercial production facilities. One two-hour lab. *Coreq: ANSC 110.*

**121 Western Horsemanship** (3) A review of western horsemanship and horse safety. Includes instruction in handling, grooming, saddling, bridling, and mounting western horsemanship. Development of basic riding skills at the walk, jog and lope.

**210 Introduction to Horse Science** (3) An introductory course that surveys the breeds of horses and scope of the industry. Course modules will focus on selection, feeding, disease control, breeding and reproduction, health and welfare, tack and equipment, facilities, transportation and fundamental management practices. Two one-hour lectures and one three-hour lab.

**230 Exotic and Companion Animal Management** (3) A survey of the basic principles involved in the care and management of exotic and companion animal species. Particular emphasis will be on nutrition and feeding programs, breeding cycles, vaccination programs, and diseases of exotic and companion animals generally regarded as household pets. Two one-hour lectures and one two-hour lab.

**240 Live Animal and Carcass Selection and Evaluation** (3) Evaluation and selection techniques for live animals based on economic merit. Principles of selection and grading of beef, swine, and sheep. Relationship of live animal traits to carcass merit. Presentation of oral reasons. Students representing the University in the Spring Intercollegiate Livestock Judging Contests will be chosen from this course. Two three-hour labs.

**260 Behavior and Welfare of Farm and Companion Animals** (3) An introduction to animal behavior and welfare, and ethical issues in the animal industry. Behavioral topics will focus on the

development of behavior, communication, learning, social structure, and sexual, maternal, feeding, aggressive and stereotypic behaviors in domestic farm and companion animals. The second half of the course will focus on philosophies related to animal welfare, myths and facts, animal and human relationships, issues related to animal welfare and animal activism. Two one-hour lectures and one two-hour lab. *Prereq: ANSC 230.*

**301-302 Special Problems** (1, 1) Individually supervised project for students showing special interest in some phase of animal science. Topics may be selected from nutrition, breeding or selection, physiology, management, or meat science. Written project outline required. Maximum of one hour applicable to concentration requirements. Taught only by arrangement prior to registration.

**305-306 Practicum in Animal Science** (2, 2) Application of principles of livestock management, animal nutrition and animal breeding in cooperation with Martin Agricultural Experiment Station, the UT Martin Farm, and local private farms. Students will be required to work a minimum of six (6) hours per week under supervision of instructor and cooperating farms. Written report required. May not be substituted for any required Animal Science course. *Prereq: Junior standing and consent of instructor.*

**320 Farm Animal Health** (3) Principles of etiology, pathology, symptomatology, diagnosis, and suggested treatment as applied to common viral, bacterial, and parasitic diseases of livestock. Topics to be emphasized include herd immunization programs, sanitation, quarantine, herd health programs, and economic aspects of disease control. *Prereq: CHEM 112 or 122 and MBIO 251.*

**330 Basic Meat Science** (3) Principles of the science of muscle tissue and its conversion to fresh meat. Study of the anatomy and biochemistry of muscle tissue. Physiological function of muscle in the animal. Properties of fresh and processed meats. Preservation of meat and meat products and the fabrication of beef, pork, and lamb carcasses into retail cuts and selected processed cuts. *Prereq: BIOL 120 or 140 and CHEM 111 or 121 or concurrent enrollment.*

**350 Animal Nutrition** (3) A comprehensive course in animal nutrition. The course will focus on basic concepts in anatomy, physiology, and biochemistry as they relate to digestion, absorption, and metabolism of nutrients and other compounds in animal feedstuffs; and the use of feed additives to enhance nutrient utilization, animal health and well-being. The course will also focus on applied concepts related to feedstuff identification, feed processing, analysis, and use in practical diet formulation and feeding systems for livestock, horses, and companion animals. Three lecture hours. *Prereq: BIOL 120 or 140 and CHEM 112 or 122.*

**351 Animal Nutrition Laboratory** (1) Application of principles learned in Animal Nutrition (ANSC 350). This is a laboratory based course designed to give students some practical experience in feedstuff identification and utilization, feed processing and analysis, feed formulation, and feeding management as it relates to feeding livestock, horses, and companion animals. One two-hour laboratory. *Coreq: ANSC 350.*

**360 Breeding and Improvement of Farm Animals and Poultry** (3) Application of genetic principles to breeding and improvement of farm animals and poultry. Role of selection, inbreeding, outbreeding, and crossbreeding as related to development of breeding plans for each major species of farm animals and poultry. *Prereq: BIOL 110 or 130 or equivalent.*

**371 Anatomy and Physiology of Domestic Animals** (4) The study of the anatomy and physiology of domestic animals. Basic principles of physiological and functional organization of nervous, endocrine, muscular, respiratory, circulatory, renal, and immune systems. Control, regulation and manipulation of organ development and function in domestic animals will be studied as it relates to improving production efficiency, maintaining health and improving animal welfare. Written reports will be required. Three one-hour lectures and one two-hour lab. *Prereq: BIOL 110 and 120, or BIOL 130 and 140, or permission of instructor.*

**372 Applied Animal Reproduction** (3) Anatomy and physiology and reproduction including: endocrinology, reproductive cycles, fertilization, gesta-

tion, fetal development, parturition, and lactation. Techniques for improving reproductive efficiency include: semen evaluation, artificial insemination, synchronization of ovulation, pregnancy diagnosis and embryo transfer. Two one-hour lectures and one two-hour lab. *Prereq: BIOL 110 and 120, or BIOL 130 and 140, or permission of instructor.*

### **380 (580) Livestock Merchandising (3)**

Principles and activities involved in promoting and merchandising seedstock, including advertising, photography and ad copy layout, animal selection and preparation and utilization of performance records. Presentations by industry and breed association leaders. Includes field trips to seedstock operations and auctions. Two one-hour lectures and one two-hour laboratory. *Prereq: Junior standing and permission of instructor.*

### **400 International Studies in Animal Agriculture (3)**

A study of the relationship of American animal agriculture to similar enterprises in Great Britain and other members of the European Common Market. Particular emphasis on marketing strategies for red meat and poultry products and differences in consumer attitudes. Includes field trips to production farms, processing facilities, markets and governmental agencies. Opportunity to experience and visit historical sites of interest, especially origin of common breeds of meat animals. Investigations into influence of European attitudes toward animal welfare practices and diet-health issues. Requires five-week summer study session in Great Britain for completion and credit. Enrollment by permission of instructor only. May be repeated once for credit.

### **401-402 (601-602) Research Participation**

(3, 3) Research project involving supervised independent study in a specialized area. Topics may be selected from nutrition, breeding or selection, physiology, management or meat science. Maximum of three hours applicable to concentration requirements. Presentation of written project outline and written and oral reports of results required. Taught only by arrangement prior to registration. *Prereq: Senior standing, minimum GPA of 2.75.*

**410 (610) Beef Sciences (3)** Feeding, management, and health of the beef herd. Emphasis on production records, marketing technology, and

consumer affairs. Two one-hour lectures and one three-hour lab. *Prereq: Junior standing in Animal Science or Pre-Vet options or permission of instructor.*

**420 (620) Swine Science (3)** Programs in breeding, feeding, management, marketing, and methods of production. Trends in production, processing, and consumption. Research results. Trips to swine farms, feeding operations, and markets. Progressive look at the swine industry focusing on management programs in areas of production including selection, breeding, feeding, health, facilities, environmental management; and strategies utilized in contracting, marketing and the value-added processing of pork. Information on consumer food preferences, current swine research, societal concerns and industry practices will be used along with trips to swine farms and related industries to reinforce best management practices in the swine industry. Two one-hour lectures and one three-hour lab. *Prereq: ANSC 350. Junior standing in Animal Science or Pre-Vet options or permission of instructor.*

**430 Stable Management (3)** Integration of principles of anatomy and physiology, nutrition, genetics, reproduction, and ethology into a comprehensive, advanced program of horse production and stable management. Aspects of stable management will relate to practical horse care, management strategies for different equine enterprises, record keeping, equine insurance and legal issues, and business promotional strategies. Course will include visits to, and analysis of regional equine businesses. Students will participate in management of the UT Martin teaching farm stable. Two one-hour lectures and one two-hour laboratory. *Prereq: Junior standing or permission of instructor.*

### **440 (640) Sheep and Goat Production (3)**

Principles of nutrition, management, genetics, reproduction, and health of sheep and goats. Emphasis on production records, marketing technology and consumer affairs. Information on current sheep and goat research, social concerns and industry practices will be used along with trips to sheep and goat farms and related industries. Two one-hour lectures and one three-hour lab. *Prereq: junior standing in Animal Science or Pre-Vet options or permission of instructor.*

**441 Advanced Meat Animal Evaluation and Livestock Selection** (3) Techniques of evaluation of market swine, beef cattle, and sheep. Selection of breeding animals for functional efficiency. Selection of working horses for function. Use of performance records in selection of breeding stock. Keep/cull selection and live animal evaluation and pricing. Field trips and presentation of oral reasons. Two one-hour lectures and one three-hour lab. Prereq: ANSC 240 and instructor's approval.

**442 Advanced Meat Animal Evaluation and Livestock Selection** (3) Advanced techniques of evaluation of market swine, beef cattle, and sheep. Selection of breeding animals for functional efficiency. Use of performance records in selection of breeding stock. Livestock judging team coaching techniques and techniques used in judging livestock shows will be discussed. Preparation for the National Intercollegiate Livestock Judging Contest. Field trips and presentation of oral reasons. Two one-hour lectures and one three-hour lab. Prereq: ANSC 441 and instructor's approval.

**451 Equine Selection and Evaluation** (2) Techniques related to the selection and evaluation of working and pleasure horses. Includes analysis for functional efficiency and presentation of oral reasons. Requires numerous field trips and participation in Intercollegiate Horse Judging Competitions. One three-hour lab. May be repeated one time. Prereq: *Permission of instructor and eligibility for intercollegiate competition.*

**470 Poultry Science** (3) Principles of production and management of the poultry flock, including broilers, layers and turkeys. Incubation and hatchery management, brooding and rearing, houses and equipment, feeding, health, processing, marketing, breeding, records, waste management. Current research results, field trips. Two one-hour lectures and one two-hour laboratory. Prereq: *Junior standing in Animal Science or Pre-Vet options or permission of instructor.*

## Anthropology (ANTH)

**101 Introduction to Anthropology** (3) An overview of anthropology including the four major subdivisions of the discipline: archaeology, linguistics, physical anthropology, and social/cultural anthropology.

**300 Cultural Anthropology** (3) An examination of theory and method in cultural anthropology as used in the analysis of multicultures. Case studies from different ethnographic settings provide the primary source material. Prereq: ANTH 101, SOC 201, or instructor's approval. (Same as SOC 300)

**304 (504) Race, Class, and Power** (3) Description of stratification patterns, functions and dysfunctions of such patterns, conflicts generated by race and class, and possible ways of resolving problems associated with race/class differences. Prereq: SOC 201. (Same as SOC 304 /504)

**306 (506) Religion and Society** (3) Interrelationships of society, culture, and religion. Prereq: SOC 201. (Same as SOC 306/506 and RLST 306)

**341 (541) Men and Women: Gender Roles in American Society** (3) An examination of how gender is socially produced, and the implications of gender for individuals, social processes, and social structure. Prereq: SOC 201. (Same as SOC 341/541 and WMST 341)

**381 (581) Special Topics** (3) Selected topics of current interest in sociology and/or anthropology. Course may be repeated with different topics. Maximum of six hours of topics/courses can be counted toward the major or minor. (Same as SOC 381/581)

**400 Culture and Industry** (3) An examination of industrial systems in non-Western societies. Emphasis will be placed upon identifying significant cultural traits and assumptions that operate to distinguish Western and non-Western industry. Prereq: ANTH 101, SOC 201, or instructor's approval. (Same as SOC 400)

**404 Social Stratification** (3) An emphasis is made upon the class system of the United States with some comparisons to stratification systems of other times and societies. Theory and research appropriate to the analysis of structured social inequality are surveyed. Prereq: SOC 201 or ANTH 101, and SOC 202 or 208. (Same as SOC 404)

**455 Anthropology Travel Study [Selected Topics]** (1-3) A course designed as an educational travel experience in Anthropology within the United States or internationally under the supervision of a university instructor. May be taught as an organized study-tour or as an independent travel and study

project. Topics, prerequisites, and course requirements announced in advance. May be offered on a pass/fail basis. Students may repeat course with different topics. Not regularly offered. *Requires instructor's approval.*

**485 Directed Reading and Research (3)** A systematic sociological/anthropological study of a selected topic through supervised reading of pertinent substantive and methodological literature, primary data collection or use of secondary data and statistical analysis of data by a Sociology/Anthropology faculty. Maximum of 6 hours of primary topic research or different topics can be counted toward major or minor. By arrangement only. *Prereq: ANTH 101 or SOC 201, an additional 3 credit hours sociology/anthropology course, minimum cumulative GPA of 3.00, and instructor's approval of topic and research methods. (Same as SOC 485)*

**495 (695) Comparative Family Systems (3)** An examination of families both cross-culturally and historically. Attention is directed to understanding the variation and similarities in family structures, marital arrangements, premarital relations, gender roles, and socialization. *Prereq: SOC 201. (Same as SOC 495/695 and WMST 495)*

**497 (697) Senior Seminar (3)** Readings, discussion of problems, and presentation of papers. This course must be taken the semester prior to graduation. *Prereq: Sociology major or Anthropology minor. (Same as SOC 497/697)*

## Art (ART)

**110 Understanding Visual Art (3)** (TBR: ART 1030) An introduction to the aesthetic principles of visual art as exemplified in selected masterpieces.

**110H Honors Understanding Art (3)** An introduction to the visual arts through studying terminology, history, theory and criticism. For students in good standing in Honors Programs.

**221 Two-Dimensional Design (3)** Application of basic principles in creating two-dimensional designs. Planning and rendering displays, graphic design, and lettering.

**222 Three-Dimensional Design (3)** Studio projects are concerned with the elements and composition of form and mass in three-dimensional space. *Prereq: ART 221, 241.*

**241 Drawing (3)** Placement, scale, perspective, composition, and other problems involved in representing forms and objects in two dimensions.

**242 Drawing II (3)** Advanced study of placement, scale, perspective, composition, and other problems involved in representing forms and objects in two dimensions. May be repeated for credit. *Prereq: ART 241.*

**260 Using Color (3)** Effective use of color in two- and three-dimensional design. Interaction of color as well as historical and psychological aspects. *Prereq: ART 221.*

**305 Photography (3)** Introduction to camera and darkroom techniques for small format, black and white photography. Lecture and lab.

**310 Fibers (3)** Introduction to a variety of fibers techniques including paper making, felting, hand looms, and basic floor loom weaving. Creativity, experimentation of design, and quality of craftsmanship are emphasized.

**311 Painting (3)** Skills and techniques in the use of oils, acrylics, and water colors. *Prereq: ART 221, 241, and 260.*

**312 Painting II (3)** Advanced skills and techniques in the use of oils, acrylics, and water colors. May be repeated for credit. *Prereq: ART 311.*

**322 Professional Issues in Visual Art (3)** Professional aspects of art, and the pursuit and management of a career in art. A study of galleries, museums, and art fields dealing with aspects of exhibiting and selling work and portfolio development.

**331 Jewelry (3)** Techniques in jewelry design and finishing.

**335 Ceramics (3)** Methods of structuring clay objects including hand-build and wheel-throwing techniques, glazing, and firing methods.

**351 Sculpture (3)** Compositional study of three-dimensional form with emphasis on basic sculptural concepts, terminology, and techniques. *Prereq: ART 221 and 222 or instructor's approval.*

**352 Sculpture II (3)** Advanced study of three-dimensional form with emphasis on refining an understanding of sculptural concepts, terminology, and techniques. May be repeated for credit. *Prereq: ART 351.*

**360 Clay Sculpture (3)** Exploration of various clay sculpture processes. Advanced hand-building techniques, glaze and surface techniques. Makes use of slab roller extruders. Students will participate in kiln firing and glaze mixing.

**365 Clay Sculpture II (3)** Advanced study of sculptural concepts, terminology, and techniques as related to clay. Focus on mold-making and figurative work. May be repeated for credit. *Prereq: ART 360.*

**391 (591) Special Topics in Art (3)** Selected media and/or genre for intensive study. Topics and prerequisites to be announced. May be repeated for credit.

**411 Mixed Media (3)** Development of wet and dry mixed media techniques to include collage, painting, printmaking and other methods of combining media to expand the student's conceptual and technical abilities. *Prereq: ART 260.*

**412 Advanced Mixed Media (3)** Advanced techniques to express the student's intent. Media may include wet and dry media, collage, construction, installations and performance. *Prereq: ART 411.*

**420 Printmaking (3)** An introduction to basic concepts and techniques of printmaking. *Prereq: ART 221 and 242.*

**425 Advanced Printmaking (3)** Advanced studio exploration in various printmaking media to include working beyond the printed image. *Prereq: ART 420.*

**435 Advanced Ceramics (3)** Advanced studio work in specific ceramics skills involving handbuilding, throwing, glaze techniques, calculations and firing. Research in ceramics history and criticism. May be repeated for credit. *Prereq: ART 335.*

**441 Weaving (3)** Understanding the weaving process including threading a loom, winding a warp, draft reading, loom assembly, and the weaving of experimental patterns.

**445 Glaze Calculations for the Potter (3)** Glaze chemistry, theory and calculation. Formulating, mixing and testing a variety of glaze formulas on various clays. *Prereq: ART 335.*

**451 Figure Drawing (3)** Drawing from live human models in charcoal, pencil, and other materials. *Prereq: ART 241, 242.*

**452 Figure Drawing II (3)** Advanced study of drawing from live human models in charcoal, pencil, and other materials. *Prereq: ART 451.*

**460 Senior Thesis Exhibition (3)** The preparation for and exhibition of works produced as a culmination of the student's studies at UTM, focusing on their area of emphasis. Course will include portfolio and resume development, and juried exhibition participation. The exhibit will be scheduled during the senior year under the supervision of the art faculty.

## Art Education (ARTE)

**211 Introduction to Teaching Art (2)** A comprehensive view of art teaching as a profession including requirements, challenges, and opportunities. The stages of children's development in art will be covered, as well as lesson plan writing. Includes 8 clock hours of clinical laboratory experiences, directed observations, and limited participation in classroom settings.

**360 Teaching Art in the Public School (3)** Approaches to art studio experiences appropriate for both elementary and secondary students, including work developing an art curriculum. Includes 12 clock hours of clinical laboratory experiences, directed observations, and limited participation in classroom settings. *Prereq: ARTE 211.*

**400 Senior Seminar in Art Education (3)** Current issues in the profession of art education, review of national standards, and the relationship of aesthetic education to the overall development of young people. Historical, philosophical, psychological, and social aspects of art in the curriculum. Measurement and evaluation of art instruction. Includes 10 clock hours of clinical laboratory experiences, directed observations, and limited participation in classroom settings. The senior exhibit for art education emphasis students will be a component of this course. *Prereq: ARTE 360.*

**471 Student Teaching in Art - Grades K-6**

(6) Supervised student teaching of art in grades K-6 in off-campus centers for a minimum of 7.5 weeks. Must be taken concurrently with ARTE 473. (Normally taken concurrently also with ARTE 472.)  
*Prereq: Admission to Teaching Education, TCED 301-302 and all other required courses in the Professional Education core.*

**472 Student Teaching in Art - Grades 7-12**

(6) Supervised student teaching of art in grades 7-12 in off-campus centers for a minimum of 7.5 weeks. Must be taken concurrently with ARTE 473. (Normally taken concurrently also with ARTE 471.)  
*Prereq: Admission to Teacher Education, TCED 301-302 and all other required courses in the Professional Education core.*

**473 Seminar in Teaching Art** (1) Structured seminar for advanced discussion of instructional and classroom management, variety in methodology, discipline, school law, professionalism, and related topics. Emphasis will be placed on oral expression and written communication. *Coreq: ARTE 471-472 (student teaching courses.)*

## Art History (ARTH)

**210-211 The History of Art** (3, 3) (TBR: ART 1010-1020) These two courses provide a global perspective in the development of visual art, through a survey of representative cultures, styles, artists and works. 210: Paleolithic era through the 16th Century. 211: 17th Century to the present.

**320 History of Graphic Design** (3) Studies in the Development of Visual Language and Communication through Graphic Arts and Design. This course will concentrate on Graphic Design through various historical periods.

**330 Visual Traditions of Non-Western Cultures** (3) An examination of the visual traditions of numerous historical and contemporary non-Western cultures. Primary attention will be paid to the art of Africa, Asia, and the Americas.

**340 Art of the Classical World and Western Traditions** (3) An investigation of the European classical tradition beginning with the ancient Greeks and Romans. This course will also look at the revival of the classical in 18th century and 19th century Europe and the United States.

**350 Women in the Arts** (3) A specialized study of women artists and their work in a historical context. Issues impacting the role of women artists, women as art subjects and the question of a feminine aesthetic will be analyzed. (Same as WMST 350)

**391 Special Topics in Art History** (3) Selected topics for intensive study. Topics and prerequisites to be announced. May be repeated for credit.

## Astronomy (ASTR)

**201-202 Astronomy** (4, 4) An introduction to astronomy with a laboratory to illustrate data collection and analysis in astronomy. 201: theories of the solar system from models for ancient calendars to data from recent space probes and an introduction to the optics of the eye and telescope. 202: evolution of main sequence stars, neutron stars, black holes, structure of the galaxy, and theories of cosmology. It is recommended that the courses be taken in sequence. Three hours of lecture and two hours of lab.

## Athletic Training (ATRN)

**300 (500) Prevention of Athletic Injuries** (3) Development of a basic understanding of athletic injuries to include pre-participation examination guidelines, risk factors, strength, endurance, body composition, environmental conditions, protective devices, maintenance of athletic equipment and facilities. *Prereq: Admission to the Athletic Training Education Program; ZOOL 201 or 251 or permission of the instructor. Taught only in the fall.*

**301 Evaluations of the Lower Body** (3) Evaluation of injuries that occur to the lower body to include a review of the associated anatomy, etiology, special tests for differential assessment, immediate action plan, and a referral plan. *Prereq: ATRN 302, ZOOL 201 or 251 or permission of instructor. Taught only in the fall.*

**302 Evaluations of the Upper Body** (3) Evaluation of injuries that occur to the upper body to include a review of the associated anatomy, etiology, special tests for differential assessment, immediate action plan, and a referral plan. *Prereq: ATRN 300, ZOOL 201 or 251 or permission of instructor. Taught only in the spring.*

**307 (507) Athletic Training Techniques (3)**

This course is an introduction to prevention and care techniques from the profession of athletic training. The student will develop the skills to perform taping, wrapping and splinting procedures, be exposed to protective equipment, monitoring vital signs, wound care, and application of modalities.

**310 Athletic Training Clinical-Level I (1)** This course is designed to offer student clinical and laboratory experiences which emphasize the entry level Athletic Training Educational Competencies addressed in ATRN 300 and other required classes. A minimum of 200 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: Admission to the Athletic Training Education Program and student must be a Department of Health and Human Performance major.*

**311 Athletic Training Clinical-Level II (1)**

This course is designed to offer student clinical and laboratory experiences which emphasize the entry level Athletic Training Educational Competencies addressed in ATRN 302 and other required classes. A minimum of 200 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: ATRN 310 Program and student must be a Department of Health and Human Performance major.*

**312 Athletic Training Clinical-Level III (1)**

This course is designed to offer students clinical and laboratory experiences which emphasize the entry level Athletic Training Educational Competencies addressed in ATRN 301 and other required classes. A minimum of 200 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: ATRN 311 Program and student must be a Department of Health and Human Performance major.*

**313 Athletic Training Clinical-Level IV (1)** This course is designed to offer students clinical and laboratory experiences which emphasize the entry level Athletic Training Educational Competencies addressed in ATRN 400, 401, and other required classes. A minimum of 200 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: ATRN 312 Program and student must be a Department of Health and Human Performance major.*

**400 (600) Therapeutic Exercise (3)** Development of the knowledge and the application of programs and techniques for rehabilitation of injuries to physically active people. *Prereq: ATRN 301 or permission of instructor. Taught only in the spring.*

**401 Therapeutic Modalities (3)** Development of knowledge and use of therapeutic modalities in the treatment of injuries to physically active people. *Prereq: ATRN 301 or permission of instructor. Taught only in the spring.*

**402 Health Care Administration/Professional Development and Responsibility (3)** This course is geared toward athletic training health care administration; includes medical records and documentation, legal and ethical issues, OSHA guidelines, organizational structure, drug testing and protocols, purchasing equipment, inventory, insurance, certification examination preparation, NATA background and information. *Prereq: ATRN 400 or permission of instructor. Taught only in the spring.*

**491 Athletic Training Internship-Pathology (3)**

This course is designed to offer students clinical and laboratory experiences which emphasize the pathological conditions associated with athletic injury and illness. A minimum of 250 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: ATRN 313.*

**492 Athletic Training Internship-Senior Capstone (3)**

This course is designed to offer students clinical and laboratory experiences which emphasize the review of athletic training skills and procedures to accentuate the critical thinking and independent application of previously completed competencies and proficiencies. A minimum of 250 hours must be completed under the direct supervision of an Approved Clinical Instructor. *Prereq: ATRN 491.*

## Biochemistry (BCHE)

**411-412 (611-612) Cellular and Comparative Biochemistry (3, 3)** Structure and function of biomolecules, properties of enzymes, enzyme kinetics, energy transformations, intermediary metabolism, biosynthesis of macromolecules, and the regulation of cellular processes and functions. Must be taken in sequence. *Prereq: CHEM 341, 342 and an introductory course in biology.*

**419 (619) Biochemistry Laboratory (1)** Laboratory exercises related to topics covered in BCHE 411. *Prereq or Coreq: CHEM 320 and BCHE 411.*

## Biology (BIOL)

### **110 Introductory Cell Biology and Genetics**

(4) (TBR: BIOL 1110) An introductory course that emphasizes plant and animal cell structure, cellular processes, and genetics. Three one-hour lectures and one two-hour lab. Students may not receive credit for both BIOL 110 and BIOL 140.

### **120 Introductory Plant and Animal Biology**

(4) (TBR: BIOL 1120) A course in organismal biology with emphasis on the structure and function of plants and animals, including an introduction to the principles of ecology and evolution. This course requires field work involving physical activity. Three one-hour lectures and one two-hour lab. Students may not receive credit for both BIOL 120 and BIOL 130.

**130 Principles of Biology I (4)** An introductory course designed for science majors that investigates the ecology, evolution and diversity of form and function of the organisms primarily in the Kingdoms Animalia and Plantae. Laboratory experiences include the collection, analysis, and interpretation of zoological and botanical data. This course requires field work involving physical activity. Three one-hour lectures and one two-hour lab. Students should not attempt BIOL 130 unless the results of mathematics testing indicate placement in MATH 140 or a higher level course. Students may not receive credit for both BIOL 130 and BIOL 120.

**140 Principles of Biology II (4)** An introductory course designed for science majors that investigates cell and molecular biology including biochemical processes, cellular function, genetics, and the biology of microbes. Laboratory experiences include the collection, analysis, and interpretation of cellular and molecular data. Three one-hour lectures and one two-hour lab. *Prereq: BIOL 130. Students may not receive credit for both BIOL 140 and BIOL 110.*

**180 Special Topics in Biology (1-4)** Lectures, field and/or laboratory work, discussions and readings in restricted topics in biology. Topics to be announced. Permission of instructor required.

**300 Medical and Scientific Vocabulary (2)** The study of word derivations, especially as it relates to technical terms. The use of common prefixes, suffixes, and combining forms to understand and effectively use scientific vocabulary. *Prereq: Completion of at least one lab science sequence and junior standing.*

**331 General Ecology (3)** The study of the interactions of organisms with their physical environment and with each other. (This course is designed as a writing intensive course to meet the "writing across the curriculum" requirement.) Students will be required to use standard word processing, spreadsheet, and presentation software in course assignments. *Prereq: BIOL 110-120 or BIOL 130-140.*

**336 Introductory Genetics (3)** Basic concepts of Mendelian and molecular genetics. *Prereq: BIOL 110-120 or BIOL 130-140.*

**337 Cell Biology (3)** Principles and concepts underlying the physiological and ultrastructural nature of bacterial, plant and animal cells. Cell organization and differentiation, osmotic relations, membrane transport, energy relations. Enzymes and basic intermediary metabolism, nucleic acids. Protein synthesis, excitability and mechanical work, meiosis and cytogenetic regulation of cellular activity and evolution of the cell. Three one-hour lectures. *Prereq: BIOL 110-120 or BIOL 130-140, CHEM 121-122 and either CHEM 341 or CHEM 310 (and 319).*

**338 Cell Biology Laboratory (1)** Experiments using current techniques to study different aspects of the cell and its function. Techniques include basic tissue culture, centrifugation, spectrophotometry, hemocytometry, histochemical staining, protein and DNA extraction and electrophoresis, and column chromatography. One three-hour lab. *Coreq/prereq: BIOL 337.*

**391 Organic Evolution (3)** The history of evolutionary thought, the evidence for evolution, and the nature of evolutionary processes. (This course is designed as a writing intensive course to meet the "writing across the curriculum" requirement.) Students will be required to use standard office suite software including word processing, spreadsheet, and presentation programs in course assignments. Three one-hour lectures. *Prereq: BIOL 110-120 or BIOL 130-140; BIOL 336 recommended.*

**410-411 Seminar in Biological Sciences (1, 1)**

Presentation of selected topics in advanced biology. Subject determined by the instructor. Active student participation including oral presentation of papers. Students will be required to use standard office suite software including word processing, spreadsheet, and presentation programs in course assignments. Prereq: Junior standing, major in Biology or major in Secondary Education with endorsement in biological sciences, or instructor's approval.

**412 Wildlife Biology Seminar (1)** Presentation of selected topics in Wildlife Biology with emphasis on waterfowl management. Active student participation including oral presentation of papers. Students will be required to use standard office suite software including word processing, spreadsheet, and presentation programs in course assignments. Prereq: Junior standing, major in Biology or major in Wildlife biology, or instructor's approval.

**413 Wildlife Biology Seminar (1)** Presentation of selected topics in Wildlife Biology with emphasis on fisheries management. Active student participation including oral presentation of papers. Students will be required to use standard office suite software including word processing, spreadsheet, and presentation programs in course assignments. Prereq: Junior standing, major in Biology or major in Wildlife biology, or instructor's approval.

**418 (618) Limnology (3)** An introduction to the study of inland waters and factors and processes that affect the nature of water. This course requires field work involving physical activity. Two one-hour lectures and one two-hour lab. Prereq: BIOL 110-120 or BIOL 130-140, CHEM 111-112 or 121-122.

**432 (632) Developmental Biology (3)** Principles and concepts of fertilization, embryogenesis, organogenesis, prenatal development and postnatal development. Emphasis is on animal systems. Three one-hour lectures. Prereq: BIOL 110-120 or BIOL 130-140, CHEM 121-122.

**436 Molecular Biology (3)** Molecular mechanisms and controlling elements of replication, transcription, and translation as they relate to gene expression in prokaryotic and eukaryotic organisms. Special emphasis will be placed on the biological and social implications of technology, including the identification, cloning, and recombination of genes.

Prereq: CHEM 341 or CHEM 310 (and 319) and BIOL 336.

**437 Molecular Biology Lab (2)** Experiments designed to illustrate some of the basic principles of molecular biology, including sterile techniques for the handling of bacteria and bacteriophages, replica plating, DNA restriction analysis, bacterial transformation and recombination, purification of plasmid and bacterial DNA. Two two-hour labs. Prereq or Coreq: BIOL 436.

**443 Ecological Methods (3)** Introduction to common field techniques used to collect and analyze ecological data in terrestrial and aquatic ecosystems. This course requires field work involving physical activity. Prereq: BIOL 130-140 or BIOL 110-120; BIOL 331, BOT 431, or ZOO 441.

**444 Conservation Biology (3)** An interdisciplinary introduction to conservation biology focusing on ecosystem conservation and restoration. This course will incorporate information from many areas in science including genetics, organismal biology, ecology, and biogeography. Prereq: BIOL 110-120 or BIOL 130-140.

**451-452 Research Participation (2, 2)** Experience in active research projects under the supervision of faculty members, Taught by arrangement. Prereq: Junior or Senior standing, minimum average grade of 3.00, and research supervisor's approval prior to enrollment.

**462-463 (662-663) Special Topics in Biology (1-3, 1-3)** Intensive lectures and/or laboratory work on special topics in biology. Prereq: Junior standing and instructor's approval.

**475 Field Investigations in Biology (3)** Field work in selected environments with emphasis placed upon the interaction of the flora and fauna with that environment. Extended field trip utilizing facilities such as the Gulf Coast Research Laboratory. This course requires field work involving physical activity. Prereq: BIOL 110-120 or BIOL 130-140.

## Botany (BOT)

**301 Foundations of Botany (3)** A study of the structure, function, diversity and significance of photosynthetic organisms from the cyanobacteria through the vascular plants, as well as major repre-

sentatives of the fungi. Two hours lecture and two hours lab. *Prereq: BIOL 110-120 or BIOL 130-140.*

**302 Plant Morphology (3)** A study of the major groups of photosynthetic organisms with respect to comparative anatomy, reproductive patterns, development, and phylogenetic relationships. Two hours lecture and two hours lab. *Prereq: BIOL 110-120 or BIOL 130-140.*

**303 Plant Taxonomy (3)** Principles of plant taxonomy. Classification of selected vascular plant families and the use of keys to identify common Tennessee species of vascular plants. This course requires field work involving physical activity. Two one-hour lectures and one three-hour lab. *Prereq: BIOL 110-120 or BIOL 130-140.*

**421 (621) Plant Function and Development (3)** Interrelations between function and structure of vascular plants including nutrition, transpiration, transport, photosynthesis, respiration, flowering, growth and development, and senescence. Two one-hour Lectures and one two-hour lab. *Prereq: BIOL 110-120 or BIOL 130-140; CHEM 111-112 or CHEM 121-122.*

**431 (631) Plant Ecology (3)** Relations of plants to their environment with emphasis on climate and biotic factors influencing their structure, growth, behavior, and distribution. *Prereq: BIOL 110-120 or BIOL 130-140.*

**432 (632) Plant Ecology Laboratory (1)** Laboratory and field studies in the methods and principles of plant ecology. This course requires field work involving physical activity. One two-hour lab. *Coreq: BOT 431.*

## Business Administration (BADM)

**444 Practicum in Business (3)** Field research of such topics as ongoing accounting system evaluation, financial management and control, personnel evaluation and administration, and market and market analysis. Students are expected to diagnose organizational problems and recommend a business plan of action. *Prereq: Senior or graduate standing.*

**480 Internship in Business Administration (1-9)** Supervised experience in business establishments, institutions, or other organizations matched to the student's curriculum. *Prereq: Dean's approval; at least junior standing. May be repeated for up to a total of 9 hours internship credit. A maximum of 6 hours may be used to fulfill degree requirements.*

**495 Executive Seminar (1)** A study of current social and economic issues related to business. The course is taught by a company executive or high ranking official of an organization.

**701 Research Methods and Communications (3)** A project-oriented course focusing on philosophy, practical research methods, and effective communication techniques. Includes qualitative and quantitative communication.

**710 International Study (3)** A travel study course emphasizing the problems and decisions facing managers of international businesses, the environment in which these businesses operate, and ways of integrating the coordinating programs in diverse markets. Particular emphasis is placed upon recognition of relevant cultural factors which affect the manager's decisions.

**790-798 Special Topics in Business (3)** An intensive study of selected topics of contemporary interest in the field of business. Maximum credit available for this course is six hours.

**799 Independent Study in Business Administration (3)** Special advanced research projects undertaken individually under the supervision of the faculty. Maximum credit available for this course is nine hours.

## Business Education (BUED)

**430 Instructional Strategies in Business Subjects (3)** Materials, methods, and evaluation procedures in accounting, basic business, data processing and office technology. *Prereq: TCED 301 and 302 and admission to Teacher Education.*

## Business Law (BLAW)

**201 Legal Environment of Business (3)** A survey of law comprising the legal environment of the business community. Legal ethics, constitutional and administrative law, anti-trust law, product liability law, labor law, environmental law, and international law.

**301 Business Law I (3)** Basic principles of the law of contracts, including the elements of a valid contract, performance, and remedies for breach of contract. The law of agency. The law of partnerships. Emphasis on the Uniform Commercial Code.

**302 Business Law II (3)** Fundamental laws and concepts relating to corporations, sales of property, secured transactions, commercial paper, and bankruptcy. Relevant provisions of the Uniform Commercial Code. *Prereq: At least a grade of C in BLAW 201.*

**311 Employment and Labor Law (3)** Analysis of the many federal, state, and local laws which regulate the recruitment, selection, employment, promotion, pay, and dismissal of employees.

**401 Real Estate Law I (3)** Legal nature of property and rights therein. Real estate contracts, deeds, leases, mortgages, and other real estate instruments. Testate and intestate transfers of property. A comprehensive course covering all common legal problems involved in real estate ownership and various phases of the real estate business. Excellent in preparing for state licensing examinations.

**701 Advanced Business Law (3)** Advanced study of legal concepts and the legal environment governing business organizations and professional firms. Includes material concerning governmental regulation, business ethics, professional liability, licensing requirements, and fiduciary relationships. *Prereq: BLAW 301 or equivalent.*

**711 Legal and Ethical Environment of Business (3)** Today's managers are expected to make decisions that comply with legal and ethical principles. This course increases awareness of ethical, legal and regulatory controls, problems and responsibilities that impact business dealings with government agencies, consumers, employees, competitors, investors, and society. Students will develop the ability to identify and address major legal and ethical issues so as to avoid potential liability and to maintain ethical integrity in a competitive global marketplace.

## Chemistry (CHEM)

**111 Introduction to Chemistry I: General and Inorganic Chemistry (4)** (TBR: CHEM 1010-1011) Fundamental laws of chemistry including topics such as atomic and molecular structure, stoichiometry, chemical bonding, reaction equilibria, acids and bases, kinetics, and nuclear chemistry. Experimental techniques in general and inorganic chemistry comprise the laboratory component. Three hours lecture and one three hour laboratory. A student should be registered for or have completed MATH 140 or a higher numbered mathematics course before registering for CHEM 111. CHEM 111 does not fulfill prerequisite requirements for any upper-division chemistry courses.

**112 Introduction to Chemistry II: Organic and Biochemistry (4)** (TBR: CHEM 1020-1021) Basics of organic and biological chemistry, including topics such as the study of functional groups, amino acids, lipids, carbohydrates, nucleic acids, enzymes, and biochemical pathways. Experimental techniques in organic and biochemistry comprise the laboratory component. Three hours lecture and one three hour laboratory. *Prereq: CHEM 111, or CHEM 121 and the consent of instructor. A student should have completed MATH 140 or higher numbered mathematics course before registering for CHEM 112. CHEM 112 does not fulfill prerequisite requirements for any upper-division chemistry courses.*

**121-122 General Chemistry (4, 4)** (TBR: CHEM 1110-1120) Elementary concepts and applications of the chemical sciences. Three lecture hours and one three-hour laboratory. CHEM 121 *Prereq/Coreq: MATH 140 or a higher numbered mathematics course. CHEM 122 Prereq: MATH 140 or a higher numbered mathematics course; and either CHEM 121, or CHEM 111 with an A or B and the consent of instructor.*

**310 Chemistry (3)** Elements of organic chemistry and biochemistry. Physiological chemistry. Digestion and metabolism. CHEM 310 may not be counted toward either a major or a minor in chemistry and may not be substituted for CHEM 341. *Prereq: CHEM 121, 122.*

**319 Organic and Biochemistry Laboratory (1)** Laboratory exercises related to topics covered in CHEM 310. Laboratory includes typical food

analyses. CHEM 319L may not be counted toward either a major or a minor in chemistry and may not substitute for the laboratory portion of CHEM 341. Coreq: CHEM 310.

**320 (520) Quantitative Analysis (4)** Theory and applications of stoichiometry, equilibria, and oxidation-reduction. Fundamentals of spectrophotometry and separations. Three lecture hours and one three-hour laboratory. *Prereq: CHEM 122.*

**341-342 (541-542) Organic Chemistry (4, 4)** (TBR: CHEM 2010-2020) A study of the compounds of carbon. Three lecture hours and one three-hour laboratory. Must be taken in sequence. *Prereq: CHEM 122.*

**350 Organic Chemistry of Drugs (3)** A study of the organic synthesis of several major drug groups and the ten most highly prescribed drugs. Emphasis is placed on organic chemical reactions and traditionally accepted reaction mechanisms. Some pharmacology and related physiology of these drugs is discussed. *Prereq: CHEM 342.*

**351-352 (551-552) Physical Chemistry (3, 3)** 351: Behavior of gases. First, second, and third laws of thermodynamics. Chemical and phase equilibria. Introduction to electro-chemistry. 352: Kinetic theory of gases. Kinetics of chemical reactions. Introduction to quantum mechanics and spectroscopy. *Prereq: MATH 252.*

**359 (559) Physical Chemistry Laboratory (2)** Experiments and computer utilization to study topics listed in CHEM 351 and CHEM 352. Preparation of written technical reports and oral presentation of experimental findings. Two three-hour labs. *Prereq: CHEM 320 and credit for, or registration in, CHEM 351 or CHEM 352.*

**365 Green Chemistry and the Environment (2)** Green chemistry, the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances, addresses the need to produce the goods and services that society depends on in a more environmentally benign manner. The emphasis is on atom economy and reduction of chemical resource and energy consumption at the source rather than subsequent pollution remediation. The practice of green chemistry as applied to aspects of analytical, biological, inorganic,

organic, and polymer chemistry in real-world cases will be investigated. *Prereq: CHEM 320 and 341.*

**390 Internship in Chemistry (1-3)** Application of chemical skills and knowledge in a supervised workplace environment. Student may or may not be paid. Evaluation by both supervising instructor and on-the-job supervisor. *Prereq: CHEM 342 and CHEM 320. Cannot be counted toward upper-division hours required for a chemistry minor.*

**410 (610) Physical Inorganic Chemistry (3)** Inorganic chemistry, systematic chemistry of the elements and chemical periodicity considered in the context of modern theories of atomic structure and chemical bonding. Includes written and oral presentations by students of summaries and analyses of contemporary research in and applications of inorganic chemistry. *Prereq: CHEM 351.*

**420 (620) Analytical Methods (4)** Advanced theory and practice of analytical chemistry including instrumental approaches to separation and analysis. Three lecture hours and one three-hour laboratory. *Prereq: CHEM 320 and 351.*

**430 (630) Spectrometric Methods (3)** Modern physical and chemical methods for the isolation and identification of compounds and mixtures. Spectrometric techniques available include IR, NMR, and GC/MS. One lecture hour and two labs. *Prereq: CHEM 320 and 342.*

**440 (640) Polymer Chemistry (3)** Chemistry of synthetic polymers including mechanisms of polymerization and relations of molecular structure to bulk properties of polymers. *Prereq: CHEM 342 and 352.*

**450 (650) Advanced Physical Chemistry (3)** A further study of the application of quantum mechanics to simple systems, studies of molecular spectroscopy and molecular structure including consideration of symmetry and group theory, introduction to statistical mechanics. *Prereq: CHEM 352 and MATH 320.*

**455 (655) Applied Nuclear Chemistry (2)** Nuclear structure, terminology, and reactions. Emphasis on applications including energy from fission and fusion, dosimetry, tracer techniques, gamma spectroscopy, x-ray fluorescence, neutron activation analysis, and related topics. One hour lecture each week at UT Martin with 2-1/2 days of intensive instruction and laboratory work utilizing facilities

of Oak Ridge Associated Universities. A final written report is required. *Prereq/Coreq: CHEM 352.*

**460 (660) Advanced Synthesis** (3) Laboratory course in the application of modern experimental techniques to the synthesis and characterization of organic and inorganic compounds. One lecture hour and two labs. *Prereq: CHEM 320 and 342.*

**480 Special Topics** (1-3) The courses will consist of intensive lectures and/or laboratory work on special topics in chemistry. Course may be repeated with total credits not to exceed three hours. Topics and prerequisites will be announced.

**490 Research in Chemistry** (3) Research to be directed by a staff member assigned by the department chairman and to be on a subject of interest to the student as well as to staff members. Open only to well qualified juniors and seniors. May not be substituted for any of the specific course requirements of the chemistry major.

**700 Directed Studies in Chemistry** (3) Survey of chemical principles including their applications to the development of experimental activities for elementary school students.

**710 Selected Topics in Chemistry** (1-3) Topics to be announced.

## Child and Family Studies (CFS)

**100 Lifespan Human Development** (3) Study of human needs and developmental processes across the lifecycle. Examination of individual and family well-being using a systems perspective. (Same as WMST 100)

**211 Child Growth and Development** (3) Growth and development of children from birth to adolescence in the context of family life. Includes laboratory observations.

**303 Family Relationships** (3) Factors affecting relationships within families throughout the life cycle. Focus on current lifestyles, changing family forms, cultural diversity, and theoretical perspectives. (Same as WMST 303)

### **311 Developmentally Appropriate Activities**

(3) Planning, implementing, and evaluating activities for selected developmental stages in the human life cycle. Emphasis on physical, cognitive, social, emotional, and creative activities for young children.

### **312 Parenting Fathers, Mothers, and Children**

(3) Parent-child relationships. Emphasis on the uniqueness of parent-child relations at different stages of the life cycle, implications for child guidance, and current issues related to parenthood. *Prereq: CFS 100 or instructor's approval.*

### **313 Child Guidance and Discipline**

(3) Principles of guidance applicable to family and group situations involving children (all ages into adolescent years, with emphasis on early childhood years). Creating a desirable environment conducive to learning and behavioral development of the child as an individual member of the family and society. *Prereq: CFS 100 or instructor's approval.*

**411 Preschool Laboratory Practicum** (4) Student guidance of children in preschool setting under supervision of the program director. Development of teaching techniques, planning, implementation, and evaluation of creative group activities. *Prereq: CFS 100 or CFS 211.*

### **412 Early Childhood Program Administration**

(3) Developmentally appropriate administration and management of programs for young children. *Prereq: CFS 100 or instructor's approval.*

**421 Adult Development** (3) Development from early through late adulthood, using a human systems perspective. *Prereq: CFS 100 and 303 or permission of instructor.*

### **442 (642) Developmental Disabilities in Children**

(3) Etiological factors affecting young children with developmental delays. Cultural, familial, educational, and legal implications. Behavioral characteristics of children observed in early intervention programs. *Prereq: Six hours in child development. (Same as SPED 490/690 when title is the same)*

### **443 (643) Community Care and Curriculum Planning for Developmentally Disabled Preschool Children**

(3) Resources available for community care of children and families, differentiating individual needs, curriculum planning for home and center based intervention, laboratory experience.