

## Interior Design (INTD)

**100 Design Selection** (3) Study of interior design profession, design and color theory, design process and space planning techniques using appropriate technology and resources. Overview of aesthetic and functional selection of interior systems and design components with attention to human needs in the built environment.

**210 Interior Design Studio** (3) A basic interior drafting course emphasizing symbols, tools and techniques necessary for drawing interior house plans. Color coordination within the interior environment. One one-hour lecture and two two-hour labs. *Prereq: INTD 100 or instructor's approval.*

**302 Historic Furniture Design** (3) Tracing the development of furniture and interiors from ancient times to the present including recent adaptations and contemporary developments.

**303 Human Needs in Housing** (3) The social, psychological, economic and technological factors involved in fulfilling environmental needs of individuals and families.

**340 Interior Design Applications** (3) Studio problems in Interior Design. Emphasis placed on the development and application of skills for sketching and drafting the interior environment. Study of perspective techniques as means of visual communication. One one-hour lecture and two two-hour labs. *Prereq: INTD 210, ART 221 or instructor's approval.*

**410 Lighting** (1) A study of the theories of color and principles of lighting including residential and commercial applications. Lectures and activities provide practical application of the knowledge learned to problem-solving solutions.

**411 Materials and Finishes** (1) Technical knowledge and design attributes of materials and finishes for interior design. To include lectures, field trips and practical applications. Students will gain the understanding of the appropriate materials and finishes, as well as code requirements for commercial interiors.

**412 Professional Procedures** (1) A study of the business principles and practices for the interior design profession. To cover ethics, goal setting, legal issues, promoting practice, contract writing and presentations specific to the profession.

**442 Residential Interior Design** (3) Techniques for rendering presentation boards. Continued development of drafting applications and material selection relative to planning and furnishing the residential environment. One one-hour lecture and two two-hour labs. *Prereq: INTD 340 or instructor's approval.*

**443 Commercial Interior Space Planning** (4) A continuation of Residential Interior Design using various techniques for rendering commercial interior spatial designs. Critical assessment of students' collected creative works and development of individualized portfolios. Two three-hour labs and one independent studio lab. *Prereq: INTD 340 or instructor's approval.*

**450 Computer Applications in Interior Design** (3) Overview of computer applications in the field of interior design; basic terminologies associated with microcomputer hardware and software; development of projects using the computer as a basis for graphic communication. One one-hour lecture and two two-hour labs. *Prereq: INTD 340 or instructor's approval.*

## Japanese (JAPN)

**111 Elementary Japanese** (4) An introductory course emphasizing listening, speaking, reading and writing. May be used to remove a language deficiency or for students with no prior experience in the language. Three one-hour lectures and two one-hour labs.

**122 Elementary Japanese** (4) An introductory course emphasizing listening, speaking, reading and writing. Three one-hour lectures and two one-hour labs. *Prereq: JAPN 111 or the equivalent as determined by the department.*

**222 Intermediate Japanese** (4) Grammar review, reading, writing and conversation. Three one-hour lectures and two one-hour labs. *Prereq: JAPN 122 or equivalent as determined by the department.*

**250 Japan Today: The People and Culture of Japan** (3) An interdisciplinary study of Japan today, with emphasis on the life-styles, customs, mentality and overall culture of the Japanese people. Discussion of current trends in politics, education, media, religion, literature and the arts (including popular culture), especially as they illustrate important cultural values and attitudes. Consideration of the attitudes of Americans towards the Japanese people and vice versa. Taught in English.

**315 Intensive Reading in Japanese** (3) Emphasizes receptive skills. Readings from formal to informal written texts. Selection of contemporary written materials, including literary works, poetry and original texts from magazines, as well as newspapers, instructional business materials and technical explanations.

**341 Advanced Conversation** (3) Emphasizes conversational skills. Oral practice to extend range of topics, vocabulary, fluency and conversational strategies. Study of the phonetic system of the Japanese language and exercises to improve pronunciation. Grammar appropriate for oral Japanese. Discussions utilizing reading and electronic media such as videos and the Internet. Heritage speakers and those with near-native abilities in Japanese are not eligible to take this course. *Prereq: JAPN 222 or instructor's approval.*

**342 Advanced Composition** (3) Emphasizes composition skills. Written practice to extend range of topics, vocabulary, fluency and compositional strategies. Grammar and stylistics appropriate for written Japanese. Practice writing expository and creative prose, translations as well as use of Internet discussion lists. Emphasis on the customs, mentality and contemporary culture of Japan. *Prereq: JAPN 222 or instructor's approval.*

**360 Studies Abroad** (3) In-residence study of the literature, language, or civilization of the area visited. Relevant field trips. Must be approved in advance by the Chair of the Department of Modern Foreign Languages. *Prereq: JAPN 222 or department approval.*

**370 Travel Study [Topic Title]** (1-3) a combination of travel and study experiences in the U.S. or abroad designed to enrich students' knowledge

of the target foreign language and culture. May be taught as an organized study tour under faculty supervision or as an independent travel and study project with prior department approval. Topics, prerequisites and course requirements announced in advance. Students may repeat course with change of topic for a maximum of six hours credit. Chair of the Department of Modern Foreign Languages approval must be obtained for travel-study courses to count toward minor, major, or Certification of Proficiency. Not regularly offered.

## Leadership (LDSP)

**321 Leadership Through Film** (3) Provides students opportunities to combine the theory and practice of leadership through film. Course goals focus on issues of charismatic leadership, social learning theory, transactional and transformational leadership, types of leaders, power bases, misuse of authority, motivation, norms and status, diversity, American individualism, intrinsic and extrinsic motivation, creativity, ethical leadership, overcoming resistance to change, systems concepts and interdependencies, communication, managing paradox and the meaning of work.

**322 Leadership: Theory, Innovation and Policy** (3) This course provides a practical introduction to leadership. Special emphasis and understanding will be placed on the nature of leadership, understanding the theories behind their current and future political and economic environments, individualism vs. narcissism, researching the will and will power, free will and determinism, action and consequences, enthusiasm, honesty, liberty and responsibility, self-presentation and attitude, interpersonal relationships, creativity, and technology and advancement. Students will culminate this knowledge in regard to leading within their social, political and economic environment. Development of unique personal leadership initiatives within their discipline through research and design of a strategic leadership plan of action. *Prereq: LDSP 321 or consent of instructor.*

**323 Leadership Advancement, Action and Global Issues** (3) This course provides structured class dialogue where students discuss concepts related to leadership, action and current global events.

Course objectives include an ability to envision and implement advancement for the greater good, while using an informed perspective within context; as well as the application of leadership and organizational theories through real-world experience. *Prereq: LDSP 321, LDSP 322, or consent of instructor.*

## Library Service (LIBS)

### 414 (614) Librarianship and the Administration of the School Library and Media Center

(2) An introduction to the history and rules of libraries, media and information centers; consideration of the nature of the discipline of library and information science; current professional issues. Organization, services, functions and administration of the school media center.

**425 (625) Technical Services I** (2) Technical services, principles and techniques for operating a school library. Includes acquisitions, basic manual and computer cataloging using the Dewey decimal system, structures and use of library catalogs and basic subject organization.

**426 (626) Technical Services II** (2) Introduction to cataloging systems other than the Dewey decimal system, including the Library of Congress system, development of library records, vertical file, computer and manual cataloging of non-print materials, the development of policy statements, collection evaluation and weeding.

### 433 (633) Information Resources and Services

(2) Nature of information resources and reference services; study of all types of these materials in specific fields for schools and community use; content, evaluation, organization and utilization.

**451 (651) Children's Literature** (3) Survey of the history of children's literature and examination of materials suitable for children in grades K-9 to use for leisure time or classroom activities. Criteria for selecting books, magazines, recordings, films, videos and computer software. Story telling and other strategies for developing appreciation of literature.

**452 (652) Books and Non-Print Materials for Adolescents and Adults** (3) A survey and examination and study of print and non-print materials suitable for young adults in grades 5-12

with an emphasis on developing these materials for practical use in the classroom for leisure time or classroom activities and for adults' recreational and informational activities. Criteria for selecting books, magazines, recordings, films, videos and computer software. Strategies for encouraging literacy and principles of materials selection.

### 475 (675) Introduction to Educational Media: Materials, Techniques and Preparation

(3) Designed to introduce prospective teachers to the problems of educational communication, the materials for use and the significant characteristics of these materials and competencies necessary for effective use of the media and technology. Special emphasis given to preparation of media materials.

### 476 (676) Advanced Educational Media

**Production** (3) The theory, art and technology of planning and producing visual and auditory materials for instruction. Emphasizes advanced production techniques for transparencies, slides, audio tape, graphics and video. Culminates in the production of multi-media self-instructional learning package.

## Management (MGT)

**300 Management and Behavior** (3) This is a study of managerial functions and decision-making and how these affect human behavior within organizations. This course also includes consideration of organizational structure and organizational dynamics relative to the environments.

**301 Organization and Management** (3) Management processes and functions in manufacturing and service organizations. Analysis of organization structure, management practices of planning and control. Motivation and leadership practices. Introduction to techniques and tools of decision processes. Students are required to write case reports and give oral presentations. *Prereq: ECON 201 or 202; ACCT 201 or 300.*

**303 Organizational Behavior and Theory** (3) An advanced study of analyzing, directing and changing organizational structure and organizational dynamics relative to the environment. *Prereq: MGT 301.*

**304 Introduction to Entrepreneurship (3)**

This course provides the student with fundamentals of entrepreneurship and covers the entrepreneurial process from conception to harvest of the new venture. The student will be involved in writing a business plan. It concentrates on identifying the attributes of entrepreneurs, the process of searching for opportunities, evaluating the viability of a new venture, financing, starting and operating the new venture. *Prereq: MGT 300 or 301 or instructor's permission.*

**307 Small and Family Operated Businesses (3)**

Course is designed for students interested in the issues, problems and unique concerns of family business involvement and management. Cases, videos, readings and guest lectures focus on critical aspects of family business management. Course is organized around the following themes: understanding the family business systems theory, culture and stages of evolution; individual development and career planning; management of family structure, conflicts and relationships; and organizational issues including succession and estate planning, strategic planning and formalizing the firm. *Prereq: MGT 304.*

**310 Operations Management (3)**

Management of business transformation processes. A survey of the basic concepts, principles and practices involved in the design, implementation, operation and control of business processes (operations) in contemporary business organizations. Emphasis is placed on the integration of the operation function with other disciplines to foster achievement of strategic and tactical goals in both manufacturing and service organizations. Topical coverage includes operations strategy, product/service design, process design, contemporary quality management, forecasting, capacity planning, facility location and layout, work design and scheduling, production planning and control with a broad emphasis on goal-driven process and productivity management and quality management. *Prereq: MATH 210 and MGT 301, or ENGR 210.* (Same as INEG 310)

**312 Introduction to Management Science (3)**

Introduction to quantitative methods used in business decision making. Topical coverage includes mathematical programming, dynamic and network programming, multi-objective decision modeling,

decision theory, simulation, inventory models and waiting lines. Computer software will be used to analyze application problems in business and economics. *Prereq: CSCI 201 and MGT 310, or INEG 310.* (Same as INEG 312)

**320 Data Analysis for Managerial Decision Making (3)**

Managerial decision making is emphasized based on the detection and evaluation of patterns in multiple factor databases related to particular managerial problems. Given the nature of the data, appropriate hypothesis tests and statistical tests of hypotheses will be applied including regression and correlation analysis, analysis of variance, crosstabs and multivariate regression. Use of standard computer programs to analyze the data will be incorporated. *Prereq: MATH 210 or equivalent.*

**330 Process Control and Improvement (3)**

A methodology for selecting, defining, measuring, stabilizing, evaluating and improving both production and service processes is presented. A variety of analytical methods are utilized in the sequence of instruction including the seven simple tools of quality, metrology, SPC, process capability analysis and experimental design. *Prereq: Junior standing.* (Same as INEG 330)

**340 Labor Relations Management (3)**

An analysis of the relationship between management of private and public sector enterprises and labor organizations. The examination of the development, government and functions of labor unions, the legal environment of labor relations, union organizing campaigns and the collective bargaining process. *Prereq: ECON 201-202.*

**350 Human Resource Management (3)**

Personnel principles, functions and practices, relating to managing human resources in organizations, the development of personnel practices and currently accepted practices in personnel management. *Prereq: MGT 300 or 301 or SPMG 305.*

**412 Applied Operations Management (3)**

Design, operation, control and continuous improvement of lean operations processes through methods analysis utilizing TOC, JIT and TQM principles. Emphasis is on the design, implementation and operation of integrated lean processes covering such functions as aggregate planning, master scheduling,

inventory planning and control, material requirements planning, production scheduling and control, capacity requirements planning and production and process layout and work design and flow. A project is required. *Prereq: MGT 310 or INEG 310.* (Same as INEG 412)

**430 Quality Management in Business (3)** A study of the continuous improvement process utilized in the management of quality in both production and service organizations. Emphasis will be placed on the involvement of all in the organization in planning, documenting, implementing quality assurance procedures and verifying that goods/services meet specified requirements while satisfying customers. Issues on Quality System Certification processes to meet industry and international standards will also be addressed. *Prereq: MGT 310.*

**440 Staffing and Performance Appraisal (3)** Analysis of the development of a qualified applicant pool and the selection of the applicants for positions or assignments. Additionally, analysis of establishing written standards of performance criteria and conformance to employment laws. *Prereq: MGT 350.*

**450 Compensation Management (3)** A study of the design and administration of compensation systems. Examination of job analysis, job evaluation, compensation research, pay structure design and employee benefits management. *Prereq: MGT 350.*

**461 International Management (3)** A study of the rapidly changing global environment and the ability of organizations to adapt to these changes. This study of changes includes developing countries, legal and political issues, ethical values and social responsibility, strategic and operational decisions and the role of culture in motivating and building an effective workforce. Students will complete projects and presentations that will demonstrate understanding and application of concepts and theories.

**470 Training and Development (3)** Analysis of a systematic process of changing the behavior, knowledge and motivation of present employees to improve the match between employee characteristics and employment requirements. *Prereq: MGT 350.*

**471-479 Topics in Management (3)** Selected topics in management offered on an occasional basis for qualified students. Admission by permission of instructor only.

**480 Internship in Management (3, 6, 9)** Supervised work experience in business establishments, institutions, or other organizations matched to the student's curriculum. *Prereq: Departmental approval required; at least junior standing. May be repeated for up to a total of nine hours credit.*

**481-482 Independent Study in Management (3, 3)** Special research projects undertaken individually under the supervision of the faculty. Maximum credit available for independent study courses is six hours. *Prereq: Senior standing.*

**490 Business Policy (4)** A capstone course focusing on policy, strategy and the integration of all business functional areas, including analysis of the implications and relevance of social, ethical, environmental, competitive and international considerations for top-level organizational decision making. Students are required to write case reports and give oral presentations. Additionally, professional preparation including; resumé building, interviewing skills and ethics will be included. This course may be taken only by students majoring in business disciplines. Students must take this course during their last semester of study. *Prereq: ACCT 201, 202; BLAW 201 or 301; ECON 201, 202; FIN 301; INFS 310 or ACCT 361; INFS 310, 351; MGT 300, 310; MKTG 301.*

**491 Current Issues in Human Resource Management (3)** Seminar in current issues in the human resource environment. Students are required to write reports, develop solutions for contemporary human resource issues and give oral presentations. *Prereq: Departmental approval required; MGT 350.*

**710 Organizational Theory and Design (3-4)** This course will address the theory of how organizations are structured. The course explores the behavioral side of organizations at both the macro and micro levels. The evolving body of empirical, literary, philosophical and case/experiential knowledge will be discussed to enhance appreciation for the role of human action in the design and function of organizations.

**720 Statistical Tools of Quantitative Analysis**

(3) Designed to give students the statistical skills necessary for advanced work in the functional areas of business administration.

**730 Operations Management** (3) Introduction to major concepts, technologies and decision processes used by service and manufacturing firms with an emphasis on value creation through process identification, analysis and improvement. Mathematical techniques and computer-based analysis of integrated production and distribution of products and services will be stressed. Topics covered include: mathematical programming, simulation, operations strategy, operations decision making, forecasting, supply chain management, product/process design and selection, quality management, capacity planning, location/layout analysis, work system design, inventory systems, queuing theory and the lean enterprise. *Prereq: ACCT 201 or ACCT 300.*

**740 Management of Innovation and Technology** (3) Contemporary issues in development, introduction, justification, acquisition and maintenance of creativity, innovation and technology in small and large organizations.

**750 Human Resource Management** (3) An investigation of practices and problems associated with the management of people in contemporary organizations. Consideration is given to both individual and collective relationship situations. A case study approach is extensively utilized, including coverage of Human Resource Management Information Systems and union-management relations.

**790 Strategic Management and Business Policy** (3) An advanced case study, integrating marketing, management, economics, finance and accounting 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. M.B.A. students must take this course during their last semester. Approval from the Graduate Coordinator is required before registering for this course. This course may not be taken for credit by M.Ac. students. *Prereq: Students must have a 3.00 graduate cumulative GPA with no I grades while enrolled in MGT 790.*

# Marketing (MKTG)

**105 Introduction to Marketing** (1) A course designed to acquaint students with the role of marketing in society. Brief introduction to activities involved in product planning, distribution, promotion and pricing. Students may not take this course for credit after Principles of Marketing (MKTG 301).

**301 Principles of Marketing** (3) Introduction to the complexity of the modern marketing system—why it is essential and how it performs. Identification and examination of business activities involved in the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organization objectives. *Prereq: Junior standing.*

**302 Personal Selling** (3) Theories, concepts and practices essential for successful application of the personal selling function. Attention to sales-force management and sales-presentation techniques. *Prereq: Junior standing.*

**310 Retailing** (3) A study of the fundamentals of successful retail strategic management and merchandising. Topics addressed will include a consideration of the current retail environment, retail performance evaluation, store location decisions, merchandise management, store management and operations, store layout and visual merchandising. *Prereq: MKTG 301 and either ACCT 201 or 300.*

**320 Consumer Behavior** (3) An analysis of consumer buying behavior, including attitudes, perception, learning, involvement, personality, culture and subculture, reference group and family influence and group communication. These are studied in the context of marketing decision-making, particularly decisions about market segmentation, product positioning, advertising and research. *Prereq: MKTG 301.*

**330 Advertising and Promotion Management** (3) Study of the theory and practice of advertising and other promotion mix elements as they relate to the development of an integrated marketing communication program. Application of advertising theory to current advertisements. Emphasis on the use of advertising and the promotion mix in developing

marketing strategy from a managerial perspective. *Prereq: MKTG 301.*

**340 Logistics Supply Chain Management (3)** An introduction to logistics management. A study of the decisions involved in the flow and storage of goods, services and information from supplier to the end user. Topics include purchasing and materials management, transportation decisions, quality, customer satisfaction and the nature of relationships between firms within the channel of distribution. *Prereq: MKTG 301.*

**350 Service Marketing (3)** A study of marketing concepts and the extension of the marketing management process beyond the traditional role in the physical products area. To develop an understanding of the creative translation required in the supplemental and core marketing mix for services. Emphasis on the development of marketing strategy and analysis of the distinctive aspects of service marketing, including the role of internal relationships. *Prereq: MKTG 301.*

**360 Marketing Research (3)** A study of marketing research as an aid to marketing decision making. Emphasis will be placed on problem defining, data collection and analysis of data applied to the solution of marketing problems. Students are required to develop and present written marketing research reports and make oral presentations. *Prereq: Junior standing.*

**371 Forensic Marketing (1)** The study of the marketing failures which is beyond the traditional method of studying business or product success. The flawed development of marketing strategy which resulted in mistakes and failures will be analyzed. Emphasis on marketing decision making in a changing environment. A lecture/case analysis/ seminar format will be used. *Prereq: MKTG 301.*

**372 Sports Marketing I (1)** Addresses the application of strategic marketing within the sports industry. Topics include an examination of internal and external forces that impact sports marketing strategy development, market research, sports consumers and target market selection decisions. *Prereq: MKTG 105 and SPMG 305; or MKTG 301.*

**373 Sports Marketing II (1)** Addresses the application of the traditional “four Ps” of marketing (Product, Place, Promotion, Price) to sports marketing strategy development. *Prereq: MKTG 105 and SPMG 305; or MKTG 301.*

**374 Marketing and Society (1)** This course examines the interaction between marketing and society. The scope of marketing as a manager’s tool for achieving business goals in enlarged and placed in the context of the goals of a society. The reactions of society to marketing’s role in the economy are introduced, such as consumer responses or public policies. The roles of marketing in diffusing social goods as well as the de-marketing of social “bads” are considered. *Prereq: MKTG 301 or consent of instructor.*

**375 Travel and Tourism Marketing (1)** An examination of marketing applications within the travel and tourism industry. Topics include tourist market segmentation, intermediaries and distribution channels within travel and tourism, the tourism “product” (transportation, accommodations, attractions and entertainment, destinations) and service quality. *Prereq: MKTG 301.*

**376 Executive in Residence Seminar (2)** This course features interaction with business practitioners. Students will participate in small group discussions and hear presentations on current business topics. *Prereq: MKTG 301; MGT 301 or MGT 300; FIN 301. Course may be repeated once for credit.*

**377 Events Planning (1)** Principles surrounding events planning within organizations are discussed. The course covers event definition, theme selection, site selection and event management, as well as marketing and event promotions.

**410 International Marketing (3)** Emphasis on the problems and decisions facing managers of international marketing across national boundaries, the environment in which international marketing takes place and ways of integrating and coordinating marketing programs in many diverse markets. *Prereq: MKTG 301.*

**430 E-Commerce Marketing (3)** This course is a study of the foundations of doing business in a networked economy. Electronic commerce (E-commerce) can be defined as technology-mediated exchanges between parties as well as the electronically based intra-or inter-organizational activities that facilitate such exchanges. Focus is on what a future practitioner needs to know about Internet infrastructure, online consumer behavior, strategy formulation and implementation, technology concepts and public policy issues in order to make effective business decisions. Emphasis is on strategy and marketing issues in a technology-mediated environment, which are presented and compared with the “offline” economy. *Prereq: Junior standing.*

**440 Marketing, Business and Environmental Ethics (3)** To develop the ability to recognize ethical issues in business and the interrelationship of business ethics and social responsibility. To present guidelines and a framework which is designed to identify and analyze ethical issues in organizations. To CRITICALLY assess the different ethical theories used in business decisions and to consider individual diversity of values. To examine the consequences of individual business ethical situations through VCR and case analysis. *Prereq: MKTG 301.*

**450 Business to Business Marketing (3)** Exploration of the environment that businesses operate within when marketing to other businesses or distribution channel members. Includes an emphasis on organizational purchasing behavior, the global nature of the business marketplace and the processes involved in understanding, creating and delivering value for business customers. Dynamics of the marketing mix, strategy development and buyer-seller relationships are studied within this environment. Application oriented through the use of case analysis and/or computer simulation. Emphasis on group work and communication skills. *Prereq: MKTG 301.*

**460 Direct Marketing Management (3)** An examination of the concepts, strategies and applications involved in direct marketing, including direct mail, direct response advertising, telemarketing, catalogs, the Internet and infomercials. Measurability, accountability, list and database management and the integration of direct marketing programs into

the promotion mix and the marketing mix with an emphasis on marketing strategy. *Prereq: MKTG 301.*

**465 Marketing Management (3)** Application of analytical skills and strategic perspective in the development and implementation of marketing strategy and plans in a competitive environment using a computer simulation based on group competition. Emphasis on marketing concepts, competitive decision making, the development of marketing strategy and plans and group interactions in a changing environment. *Prereq: MKTG 301, MGT 301, ACCT 201, and senior standing.*

**471-476 Current Topics in Marketing (3)** Selected topics in marketing offered on an occasional basis. *Prereq: MKTG 301.*

**480 Internship in Marketing (1-9)** Supervised work experience in business establishments, institutions, or other organizations matched to the student's curriculum. *Prereq: Approval of the department chair and marketing faculty.*

**481-482 Independent Study in Marketing (3, 3)** Special research projects undertaken individually under the supervision of the faculty. Maximum credit available for independent study courses is six hours. *Prereq: Senior standing.*

**710 Marketing Strategy (3-4)** This course is a seminar in history of marketing thought and current perspectives with managerial application. Topics will include marketing theory and philosophy, the creation of value through integrating the conception, production, distribution and exchange of goods, services and ideas, marketing planning, market identification and environments, product strategy, price strategy, channels strategy, promotional strategy and marketing assessment and control.

**720 Services Marketing Management (3)** A study of the marketing management process designed to identify both commonalities and distinctive aspects of service and physical product marketing as they affect service marketing strategy development and implementation. Attention is given to the creative balance of all elements of the core and supplemental marketing mix and marketing concepts related to successful marketing of services, including health care and social causes. Extensive case studies and

presentations are utilized to illustrate appropriate decision making skills and strategies in a seminar environment.

**730 Channel Strategy and Business Market Management** (3) An application-oriented study of alternative marketing strategies available to manufacturers, Emphasis on the relationships between channel members, from supplier to end user. Studies will include an investigation of the impact of customer analysis, competitor analysis and marketing mix components on decisions related to channel development and management, channel strategy and organizational marketing. Extensive use of computer simulation and readings. *Prereq: MKTG 301 or MKTG 710.*

## Mathematics (MATH)

**070 Developmental Algebra I** (3) (TBR: DSPM 0800) Linear equations and inequalities. Exponents, roots and radicals. Polynomials. Rational expressions. *May not be counted toward any degree requirements, but may be substituted for one unit of high school Algebra I.*

**080 Developmental Algebra II** (3) (TBR: DSPM 0850) Quadratic equations and inequalities. Graphing and straight lines. Systems of linear equations. Inverse, exponential and logarithmic functions. *May not be counted toward any degree requirements, but may be substituted for one unit of high school Algebra II. Prereq: Appropriate mathematics placement OR completion of MATH 070.*

**090 Developmental Geometry** (3) (TBR: MATH 0990) Selected topics from unified geometry. *May not be counted toward any degree requirements, but may be substituted for one unit of high school Unified Geometry. Prereq: Algebra I or MATH 070.*

**130 The Nature of Mathematics** (3) Selected topics from algebra, geometry, number theory, logic, probability, statistics, management science, finance, computing and numerical techniques. Modeling and problem solving techniques will be illustrated to give students insight into what mathematics is, what mathematics attempts to accomplish and how mathematics is used to solve real life problems. *May not be used to satisfy degree requirements for the B.S. degree. May not be taken for credit by any*

*student who has successfully completed a higher-numbered mathematics course. Prereq: One unit of high school geometry and either two units of high school algebra and a satisfactory score on the placement test or MATH 080.*

**140 College Algebra and Elementary Functions** (3) (TBR: MATH 1710) Functions (e.g., polynomial, exponential and logarithmic). Zeros of polynomials. Solutions of systems of equations and inequalities. Triangle trigonometry. Selected topics from algebra such as matrices and determinants and arithmetic and geometric sequences. *Prereq: Two units of high school algebra, and appropriate mathematics placement OR completion of MATH 080.*

**160 Calculus for Business and Life Sciences** (3) (TBR: MATH 1830) Average and instantaneous rates. The derivative and its application to curve tracing and max-min theory. Antiderivative, area under a curve, fundamental theorem. Natural logarithm and its application to interest, growth and decay. *Prereq: MATH 140 or 185 or appropriate mathematics placement.*

**185 Precalculus** (5) Algebraic properties of real numbers. Solutions of equations and inequalities. Logarithmic and exponential equations. Survey of conics. Trigonometric functions, identities, graphs and equations. Trigonometric applications. *Prereq: Two units of high school algebra, one unit of high school geometry, and appropriate mathematics placement.*

**191-192 Principles of Mathematics** (3, 3) (TBR: MATH 1410-1420) Algorithms for four basic operations, systems of whole numbers and integers. Relations and functions. Greatest common factor and least common multiple. Fractions, decimals, percent, ratio and proportion. Statistics and probability. Metric system, measurement, area, volume, informal plane and solid geometry. These are manipulative and activity based courses. Courses must be taken in sequence. *Prereq: MATH 140 or 185 or 251.*

**210 Elementary Statistics and Probability** (3) (TBR: MATH 1530) Descriptive measures, elementary probability, sampling, random variables. Discrete probability distributions, normal probability distributions and introduction to inference theory. *Prereq: MATH 140, 185, or 251 or appropriate mathematics placement.*

**251-252 Calculus I, II** (4, 4) (TBR: MATH 1910-1920) Limits and continuity. Derivatives and integrals of polynomial, exponential, logarithmic, trigonometric and hyperbolic functions. Techniques of integration, conics, parametric and polar equations, indeterminate forms and improper integrals. Infinite series, including Taylor's series. Must be taken in sequence. *Prereq: Two units of high school algebra, one unit high school geometry, 1/2 unit high school trigonometry, and appropriate mathematics placement OR completion of MATH 185. A grade of C or better in MATH 251 is required to enroll in MATH 252.*

**291 Special Topics in Mathematics** (1-3) Lectures and/or lab work relating to specialized topics in mathematics. Course may be repeated with total credits not to exceed six (6) hours. May be offered on a Pass/Fail basis. *Prereq: Departmental approval.*

**310 Linear Algebra** (3) Vectors, matrices, systems of linear equations, determinants, inverses of matrices, vector spaces, linear transformations, eigenvalues and eigenvectors. *Prereq: MATH 160 or 251 or 314.*

**314 Foundations of Mathematics** (3) Proof techniques, sets, propositional calculus, functions, relations and properties of integers. *Prereq: MATH 140 or 160 or 185 or 210 or 251.*

**320 Multivariate Calculus** (4) (TBR: MATH 2110) Vector-valued functions, functions of several variables. Differentials, gradients and extremes. Multiple integrals, line and surface integrals. *Prereq: A grade of C or better in MATH 252.*

**330 Differential Equations** (3) (TBR: MATH 2120) Setting up and solving first order equations, applications of first order equations. Wronskians, use of operators and the exponential shift theorem, solutions of higher order equations with constant coefficients, systems of first order equations, solutions in series, Laplace transform methods. *Prereq: MATH 252.*

**340 (540) Numerical Analysis** (3) Formulation of numerical problems for solution on a digital computer. Error analysis and control, nonlinear equations, differentiation, integration, systems

of equations, differential equations, curve fitting and eigenvalue problems. *Prereq: CSCI 221 and MATH 252; CSCI 301 or MATH 310.* (Same as CSCI 340/540)

**350 Number Theory** (3) The integers: well-ordering, different bases, divisibility, primes and factoring. The fundamental theorem of arithmetic and the division algorithm. Diophantine equations and applications of congruences. Pseudorandom numbers, pseudoprimes and cryptography. *Prereq: MATH 314.*

**410 (610) Geometry** (3) Euclidean geometry (Birkhoff's and Hilbert's Postulates), non-Euclidean geometries (hyperbolic and elliptic), finite geometries, transformational geometry and theory of area. *Prereq: MATH 314.*

**420 (620) History of Mathematics** (3) Study of the development of mathematics from ancient to modern times through problem solving. The investigation of the lives and works of specific mathematicians with particular attention to the development of ideas, notation and the influence of mathematics on society. *Prereq: MATH 160 or 251.*

**430 (630) Complex Variables** (3) Algebraic operations and geometry of complex numbers, definitions of limit, continuity and analytic functions, differentiation, mapping of simple functions, line integrals, Cauchy integral formula, Laurent series, evaluation of real integrals using residue theorem. *Prereq: MATH 320.*

**451 (651) Applications and Modeling** (3) Practical applications of mathematics including optimization, interpolation and best fit, simulation, dimensional analysis and graph theory. Mathematical model building including problem identification, model construction or selection, fine tuning and validation. *Prereq: MATH 310 and 320.*

**471 (671) Abstract Algebra I** (3) Equivalence relations and partitions. Properties of the integers. Elementary theory of groups and rings. Polynomial rings, integral domains, divisibility, unique factorization domains, fields, vector spaces and linear transformations. Students are required to submit written work and make an oral presentation. Must be taken in sequence with MATH 472. *Prereq: MATH 310 and 314.*

**472 (672) Abstract Algebra II** (3) Equivalence relations and partitions. Properties of the integers. Elementary theory of groups and rings. Polynomial rings, integral domains, divisibility, unique factorization domains, fields, vector spaces and linear transformations. Students are required to submit written work and make an oral presentation. Must be taken in sequence with MATH 471. *Prereq: MATH 310 and 314.*

**481-482 (681-682) Real Analysis I, II** (3, 3) Sets and countability. The real number systems. Sequences, limits, infinite series, metric spaces, continuous functions, uniform continuity and convergence. Riemann and Lebesgue integration. Students are required to submit written work and make an oral presentation. Must be taken in sequence. *Prereq: MATH 314 and 320.*

**491-492 (691-692) Special Topics [Topic title]** (1-3) Selected topics in mathematics, student research, or seminar. Course may be repeated with total credits not to exceed six hours. *Prereq: MATH 320 and departmental approval.*

**498 Undergraduate Research Experience I** (2) Introduction to research methodologies and tools including LaTeX and MathSciNet. Presenting mathematics in written and oral formats. Ethics in research. This course includes substantial directed individualized study leading to the preparation of a significant paper. *Prereq: consent of the department chair. Cannot receive credit for both MATH 498 and STAT 498. Grading on a pass or fail basis.*

**499 Undergraduate Research Experience II** (1) The presentation of mathematics works in both oral and written formats. This course will finalize the significant paper begun in MATH/STAT 498 and based on the student's individual research. This will require that it be presented at a regional or national meeting. *Prereq: MATH 498 and consent of the department chair. Graded on Pass/Fail basis.*

**710 Selected Topics in Arithmetic for Teachers** (3) Selected topics in arithmetic through student research, seminars, or workshops. *Prereq: Departmental approval.*

**720 Selected Topics in Algebra for Teachers** (3) Selected topics in algebra through student research, seminars, or workshops. *Prereq: Departmental approval.*

**730 Selected Topics in Geometry for Teachers** (3) Selected topics in geometry through student research, seminars, or workshops. *Prereq: Departmental approval.*

## Microbiology (MBIO)

**251 General Bacteriology** (4) (TBR: BIOL 2230) Fundamentals of microbiology with emphasis on morphology, classification, nutrition, mechanisms of pathogenesis and body defenses. Meets the needs of all programs requiring one course in microbiology. Three one-hour lectures and one two-hour lab. Students may not receive credit for both MBIO 251 and MBIO 310.

**310 General Molecular Microbiology** (4) An introductory, molecular oriented course dealing with bacterial structure, nutrition and growth, metabolism of heterotrophic bacteria and bacterial and bacteriophage genetics. Meets the needs of all programs requiring one course in microbiology. Three one-hour lectures and one two-hour lab. Students may not receive credit for both MBIO 251 and MBIO 310. *Prereq: BIOL 110 or 140; CHEM 111-112 or 121-122.*

**311 Public Health Microbiology** (4) Public health microbiology dealing with epidemiology, sterilization and disinfection, common pathogenic bacteria and viruses, mechanisms of pathogenesis, methods of isolation and identification of pathogens, mechanisms of action of selected antibiotics and water and food microbiology pertaining to public health problems. Three one-hour lectures and one two-hour lab. *Prereq: MBIO 251 or 310.*

**401 (601) Immunology** (3) An introductory course dealing with the functions and effects of the immune system. Emphasis on humoral immunity, cellular immunity, serology, hypersensitivities, autoimmunity and immunodeficiency. Three, one-hour lectures. *Prereq: MBIO 251 or MBIO 310.*

**402 (602) Immunology Laboratory (1)** A lab course designed to introduce students to commonly-used immunologic techniques, including antibody purification, immunodiffusion, SDS-polyacrylamide gel electrophoresis, western blotting and enzyme-linked immunosorbent assay. One two-hour lab. *Prereq/coreq: MBIO 401.*

**410 Microbiology of Foods (4)** Microorganisms in natural and processed foods; their origin, nature and effect on foods. Foodborne pathogens, toxins and food spoilage. Inhibition and destruction of bacteria in foods. Three one-hour lectures and one two-hour lab. *Prereq: MBIO 251 or MBIO 310.*

**420 Virology (3)** The fundamental principles of virology, classification and general characteristics of bacterial, animal, human and plant viruses. Three one-hour lectures. *Prereq: MBIO 251 or MBIO 310 or BIOL 337 or instructor's permission.*

**453-454 (653-654) Research Participation (2, 2)** Experience in active research projects under 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.*

## Military Science and Leadership (MSL)

**101 Foundations of Officership (3)** Examines the unique duties and responsibilities of officers, discusses organization and the role of the Army, reviews basic life skills pertaining to fitness and communication and analyzes Army values and expected ethical behavior. Three hours lecture/lab. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section. Prerequisite for entry into advanced program unless waived by the Professor of Military Science.

**102 Basic Leaderships (3)** Presents fundamental leadership concepts and doctrine, practices effective skills that underlie problem solving, applied active listening and feedback skills, examines factors that influence leader and group effectiveness and examines the officer experience. Three hour lecture/

lab. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section. Prerequisite for entry into advanced program unless waived by the Professor of Military Science.

**201 Individual Leadership Studies (3)** Develops knowledge of self, self-confidence and individual leadership skills. Develops problem solving and critical thinking skills and applies communication, feedback and conflict resolution skills. Two 50-minute lectures and one two-hour lab. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section. Prerequisite for entry into the advanced program unless waived by the Professor of Military Science.

**202 Leadership and Teamwork (3)** Focuses on self-development guided by knowledge of self and group processes. Challenges current beliefs, knowledge and skills. Provides equivalent preparation for the ROTC Leader Development and Assessment Course and the Leader's Training Course. Two 50-minute lectures and one two-hour lab. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section. Prerequisite for entry into the advanced program unless waived by the Professor of Military Science.

**291 Leader's Training Course (6)** Training normally is taken during the summer between the second and third years by those students who have not completed basic military training or the required basic military science courses for advanced course enrollment. Training is conducted at a designated U.S. Army installation and includes hands-on, practical leadership training with intensive counseling and feedback. The course focuses on confidence, leadership and team building, along with training skills in basic rifle marksmanship and land navigation. The highlight of the course is a six-day field phase where students will experience a series of challenging leadership opportunities while being mentored and counseled by cadre. The student must register for this course following successful camp completion in order to receive the appropriate credit. A letter grade will be awarded by the Professor of Military

Science based on camp results. *Prereq: Approval of the Professor of Military Science.*

**301 Leadership and Problem Solving (4)**

Examines basic skills that underlie effective problem solving, analyzes the role officers played in the transition of the Army from Vietnam to the 21st century, reviews the features and execution of the Leadership Development Program, analyzes military missions and plans military operations and executes squad battle drills. Two 75-minute lectures, one two-hour lab and three hours physical training. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section.

**302 Leadership and Ethics (4)** Probes leadership responsibilities that foster an ethical command climate, develops leadership competencies, prepares for success at the ROTC National Advanced Leadership Camp, recognizes leader responsibility to accommodate subordinate spiritual needs and applies principles and techniques of effective written and oral communication. Two 75-minute lectures, one two-hour lab and three hours physical training. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section.

**310 American Military History (3)** American military history from the American Revolution to the present. Evaluation of significant battles from the viewpoints of the participants, their resources, decision-making techniques and the nine principles of war. Discussion of all of America's wars. Emphasis on the Civil War, World War I, World War II, Korea and Vietnam. (Same as HIST 310)

**401 Leadership and Management (4)** Builds on the National Advanced Leadership Camp experience to solve organizational and staff problems and discusses staff organization, functions and processes. Analyzes counseling responsibilities and methods, examines principles of subordinate motivation and organizational change and applies leadership and problem solving principles to a complex case study/simulation. Two 75-minute lectures, one two-hour lab and three hours physical training. Students must meet enrollment and continuation requirements

outlined in the Department of Military Science and Leadership section.

**402 Officership (4)** Capstone course exploring topics relevant to second lieutenants entering the Army. Describes legal aspects of decision making and leadership, analyzes Army organization for operations from the tactical to strategic level, assesses administrative and logistics management functions, discusses reporting and Permanent Change of Station process, performs platoon leader actions and examines leader responsibilities that foster an ethical command climate. Two 75-minute lectures, one two-hour lab and three hours physical training. Students must meet enrollment and continuation requirements outlined in the Department of Military Science and Leadership section.

**421 Contemporary Developments in the U.S. Army (3)** A survey of current programs and issues affecting readiness of the Army today. Included is mobilization and deployment of reserve component forces, force modernization and combined arms operations. Student presentations on selected subjects. Three hours lecture/conference. *Prereq: Approval of the Professor of Military Science.*

**442 Nurse Summer Training Program (6)** Provides Army ROTC nurse cadets with clinical experience in a hospital setting while introducing them to the duties, roles, responsibilities and expectations of an Army Nurse Corps officer. Exercises leadership skills in a hospital environment by planning, organizing, decision making, implementing and being accountable for the outcome of nursing care. Encourages students to develop leadership strategies through learning experiences throughout this clinical program. Collaborate with health care professionals on decisions related to patient care, management, unit issues and strategies utilized in the provision of medical care to a select population. A minimum of 40 hours per week for three weeks. *Prereq: Contracted cadet; completion of MSL 301, 302 and 491; enrolled in the nursing program; and approval from the Nursing Department Chair and the Professor of Military Science and Leadership.*

**491 National Advanced Leadership Camp (6)** Training program normally taken during the summer between the MS III and MS IV years. Training is required by all contracted cadets seeking enrollment as an MS IV student. The student must register for this course following successful completion of camp in order to receive the appropriate credit A letter grade will be awarded by the Professor Military Science based on camp results. *Prereq: Approval of the Professor of Military Science.*

## Music (MUS)

**100 Topics in Music Theory (1)** A review of basic theory skills, including music notation, scales, key signatures, triads, intervals and rhythms. *Prereq: permission of Department Chair.*

**108 Introduction to Technology in Music (1)** An introduction to computer software for use in music.

**111 Masterpieces of Music (3)** (TBR: MUS 1030) A survey of world masterpieces of music from the Baroque period to the present.

**111H Honors Masterpieces of Music (3)** A survey of world masterpieces of music from the Baroque period to the present for students in good standing in Honors Programs.

**112 Music in Our Time (3)** A study of contemporary music in various cultures. For students in curricula other than music. May not be used toward a major in music.

**112H Honors Music in Our Time (3)** A study of contemporary music in various cultures for students in good standing in Honors Programs. For students in curricula other than music. May not be used toward a major in music.

**113 Survey of Western Masterpieces and World Music (3)** A survey of significant and historical Western Masterpieces and World Music designed for the music major and minor where students listen to, describe and respond aesthetically to musical works. Students will develop a personal aesthetic perspective of music through studying its function in various cultures and societies, especially as music relates to humanity's ability to represent cultural values through musical expression. Students are expected to be able to read music.

**120 Fundamentals of Music Theory (3)** Basic music theory skills, including music notation, scales, key signatures, triads, intervals and rhythms.

**121 Music Theory I (3)** Sequential study of music fundamentals, harmonic progression, part-writing procedures and stylistic elements. *Prereq: Passing grade on music theory entrance exam or grade of C or better in MUS 120.*

**122 Music Theory II (3)** Continued sequential study of music fundamentals, harmonic progression, part-writing procedures and stylistic elements. *Prereq: MUS 121.*

**123 Aural Skills I (1)** Should be taken concurrently with MUS 121.

**124 Aural Skills II (1)** Should be taken concurrently with MUS 122. *Prereq: MUS 123.*

**161-162 Diction for Singers I and II (1, 1)** English and Italian diction (161) German and French diction (162) and their special requirements as related to the singing voice. For applied voice students. Other students must have the instructor's approval. Must be taken in sequence.

**191, 192, 193 Topics in Music (1, 2, 3)** Specific selected topics in music. Topics and prerequisites to be announced. May be repeated for credit.

**221 Music Theory III (3)** Part writing and analysis in the standard harmonic vocabulary. *Prereq: MUS 122.*

**222 Music Theory IV (3)** Advanced part writing and analysis in the standard harmonic vocabulary. *Prereq: MUS 221.*

**223 Aural Skills III (1)** Continued development of sight-singing and aural skills needed by musicians. Should be taken concurrently with MUS 221. *Prereq: MUS 124.*

**224 Aural Skills IV (1)** Continued development of sight-singing and aural skills needed by musicians. Should be taken concurrently with MUS 222. *Prereq: MUS 223.*

**225 Composition (1)** May be repeated for credit. *Prereq: instructor's approval.*

**320 Orchestration and Arranging (3)** Scoring for small instrumental combinations, full band and orchestra and vocal-instrumental combinations. Special focus on 20th century practices and techniques. *Prereq: MUS 222 or permission of Department Chair.*

**333-334 Piano Literature (1, 1)** Standard piano repertoire from early keyboard works customarily played on the piano today to the present.

**335-336 Vocal Literature (1, 1)** Repertoire for the solo voice from 1600 to the present Includes opera and oratorio, but with particular emphasis on the art song. Practice and interpretation illustrated by recordings, class members and instructor. *Prereq: Upper-division standing or instructor's approval.*

**337-338 Instrumental Literature (1, 1)** Repertoire for brass, woodwind, or percussion from the earliest music currently performed on these instruments to the most recent. Specific instruments designated by section.

**341 Music History and Literature I (3)** A survey of the development of music from earliest known examples through the middle of the 18th century. Students are required to write reports and give oral presentations. For music majors and minors. *Prereq: MUS 122.*

**342 Music History and Literature II (3)** A survey of the development of music from the middle of the 18th century to the present. Students are required to write reports and give oral presentations. For music majors and minors. *Prereq: MUS 341.*

**343 History of Church Music and Liturgical Practices (3)** History of music in the church and related liturgical practices from the tenth century to the present. History and practices relevant to major contemporary Christian denominations.

**344 Hymnody, Sacred Repertoire and Church Music Techniques (3)** The practices and sources of sacred hymnody from its origins in the fifteenth century to the present. Examine music which would be appropriate for use in church. Discuss and explore techniques relevant to directing a church music program.

**353 Beginning Choral Techniques, Literature and Conducting (3)** The development of the fundamentals of conducting; selection and teaching of choral literature for typical school and/or church ensembles; sequencing and teaching curriculum for the choral ensemble. This course includes a minimum of 10 hours of field experience. *Prereq: MUS 221.*

**354 Beginning Instrumental Ensemble Techniques, Literature and Conducting (3)** The development of the fundamentals of conducting; selection and teaching of instrumental literature for typical school ensembles; sequencing and teaching curriculum for the instrumental ensemble. This course includes a minimum of 10 hours of field experience. *Prereq: MUS 221.*

**363-364 Piano Pedagogy (1, 1)** Materials and methods for class piano and studio teaching.

**365 Voice Science and Pedagogy (2)** The mechanics of respiration, phonation and articulation as related to singing and care of the voice. Methods and materials used in the teaching of singing and a survey of various national schools of singing styles.

**366-367 Instrumental Pedagogy (1, 1)** Materials and methods for teaching brass, woodwind, or percussion. Specific instruments designated by section.

**391, 392, 393 Topics in Music (1, 2, 3)** Selected topics in music. May be repeated for credit. Topics and prerequisites may be announced.

**401 Independent Study (3)** Directed reading or research by arrangement. May be repeated for credit. Permission of department chair required.

**417 Marching Band Procedures (3)** Developing instrumental marching units and designing show productions. This course includes a minimum of 10 hours of field experience.

**420 Form and Analysis (3)** Units of structure, song forms and single movement forms representing a variety of musical idioms, styles and periods. Special focus on 20th century practices and techniques. *Prereq: MUS 222.*

**425 (625) Composition** (1) May be repeated for credit. *Prereq:* MUS 222 or instructor's approval.

**430 Internship in Church Music** (3) Supervised experience with a practicing church music director.

**431 Larger Choral Works and Rehearsal Strategies** (3) Selection and rehearsal of extended choral forms suitable for school or church settings; understanding the working of instruments; rehearsal strategies for choral literature accompanied by instrumental ensembles. *Prereq:* MUS 453. *Coreq:* MUS 432.

**432 Laboratory in Rehearsing Choral Works** (1) Practical skills in rehearsing and conducting choral works. This course includes a minimum of 10 hours of field experience. *Prereq:* MUS 453. *Coreq:* MUS 431.

**440 Senior Project in Music** (1) Culminating project for music majors in the Bachelor of Arts degree with a Major in Music. Taken by arrangement with a faculty member approved by the Chair of the Department of Music.

**453 Advanced Choral Techniques, Literature and Conducting** (3) Advanced concepts of teaching, rehearsing and administrating a choral program; advanced conducting techniques in choral conducting and rehearsing; selection of appropriate literature for choral groups. This course includes a minimum of 10 hours of field experience. *Prereq:* MUS 353 and MUED 260.

**454 Advanced Instrumental Ensemble Techniques, Literature and Conducting** (3) Advanced concepts of teaching, rehearsing and administrating an instrumental program; advanced conducting techniques in instrumental conducting and rehearsing; selection of appropriate literature for instrumental groups. This course includes a minimum of 10 hours of field experience. *Prereq:* MUS 354, MUED 260.

**463 Practicum in Piano Teaching** (1) Supervised teaching in the piano class and private studio. May be repeated for credit.

**466 Practicum in Instrumental Teaching** (1) Supervised teaching in brass, woodwind, percussion, or guitar. Specific instruments designated by section. May be repeated for credit.

**481-482 Piano Tuning and Technology** (2, 2) Physical properties of tuning and temperament, tuning technique, action regulation, voicing, stringing and rebuilding. *Prereq:* MUS 122 or instructor's approval.

**701-702 Independent Study in Music** (3, 3) Directed reading or research.

**791, 792, 793 Topics in Music** (1, 2, 3) The study of selected, specific topics in music. Topics and prerequisites to be announced.

## Music, Applied (MUAP)

*Non-music majors may not enroll in applied music classes, either class or private instruction, without approval from the department chair.*

### Class Instruction

**Lower-division** (two class hours per week.)

**101-102, 201-202 Piano Class**

(1 credit per semester)

**103-104, 203-204 Voice Class**

(1 credit per semester)

**Upper-division** (two class hours per week.)

**301 String Class** (1)

**302 Woodwind Class** (1)

**303 Brass Class** (1)

**304 Percussion Class** (1)

### Private Instruction

*Study of technique and repertoire appropriate to the instrument or voice including improvisation studies. Lesson and practice requirements for each major are as follows:*

### Bachelor of Arts in Music, Minor in Music

1/2 hour of instruction and five hours individual practice per week. (Register for MUAP courses ending in 1.)

### Bachelor of Music, Music Education Option

1 hour of instruction and 10 hours individual practice per week. (Register for MUAP courses ending in 2.)

**Bachelor of Music, Performance Option**

**Instrumental Emphasis, Piano Emphasis, or Voice Emphasis:** 1 hour of instruction and 20 hours individual practice per week. (Register for MUAP courses ending in 4.)

**Instrumental Pedagogy Emphasis or Piano**

**Pedagogy Emphasis:** 1 hour of instruction, 20 hours of individual practice per week for lower-division study and 15 hours of individual practice per week for upper-division study. (Register for MUAP courses ending in 4 for lower-division study and MUAP courses ending in 3 for upper-division study.)

Permission from the faculty is required for students to advance to the upper-division level. A Bachelor of Music major may not study more than six semesters in the lower-division of the major applied voice or instrument. Students from non-music curricula must have permission of the instructor to register for private instruction. May be repeated for credit. Applied music fee required.

**Minor in Music**

- 111, 311 Piano (1)
- 121, 321 Voice (1)
- 141, 341 Flute (1)
- 151, 351 Double Reed (1)
- 161, 361 Clarinet (1)
- 171, 371 Saxophone (1)
- 181, 381 Trumpet (1)
- 191, 391 French Horn (1)
- 211, 411 Trombone (1)
- 221, 421 Baritone Horn (1)
- 231, 431 Tuba (1)
- 251, 451 Percussion (1)
- 261, 461 Harpsichord (1)
- 271, 471 Organ (1)

**Bachelor of Arts in Music, Bachelor of Music, Music Education Option**

- 112, 312 Piano (1)
- 122, 322 Voice (1)
- 142, 342 Flute (1)
- 152, 352 Double Reed (1)

- 162, 362 Clarinet (1)
- 172, 372 Saxophone (1)
- 182, 382 Trumpet (1)
- 192, 392 French Horn (1)
- 212, 412 Trombone (1)
- 222, 422 Baritone Horn (1)
- 232, 432 Tuba (1)
- 252, 452 Percussion (1)

**Bachelor of Music, Performance Option**

**Instrumental Emphasis, Piano Emphasis, or Voice Emphasis**

- 114, 314 Piano (2)
- 124, 324 Voice (2)
- 144, 344 Flute (2)
- 154, 354 Double Reed (2)
- 164, 364 Clarinet (2)
- 174, 374 Saxophone (2)
- 184, 384 Trumpet (2)
- 194, 394 French Horn (2)
- 214, 414 Trombone (2)
- 224, 424 Baritone Horn (2)
- 234, 434 Tuba (2)
- 254, 454 Percussion (2)

**Instrumental Pedagogy Emphasis or Piano Pedagogy Emphasis**

- 114, 313 Piano (2)
- 124, 323 Voice (2)
- 144, 343 Flute (2)
- 154, 353 Double Reed (2)
- 164, 363 Clarinet (2)
- 174, 373 Saxophone (2)
- 184, 383 Trumpet (2)
- 194, 393 French Horn (2)
- 214, 413 Trombone (2)
- 224, 423 Baritone Horn (2)
- 234, 433 Tuba (2)
- 254, 453 Percussion (2)
- 264, 463 Harpsichord (2)
- 274, 473 Organ (2)

## Recital

**110, 310 Recital** (1, 1) Exploration of musical repertoire and recital performance practices including those from non-Western cultures. Attendance at all weekly student recitals and twelve or two-thirds (whichever is fewer) of the evening concerts sponsored by the Department of Music each semester. Required of all music majors. Pass-Fail. Music majors and minors only.

**395 Junior Recital** (1-2) Preparation of a solo public performance. Final approval for presentation will be given by the faculty. Student will receive upper-division private instruction during the term in which the performance is given.

**495 Senior Recital** (1-2) Preparation of a solo public performance. Final approval for presentation will be given by the faculty. Student will receive upper-division private instruction during the term in which the performance is given.

## Music Education (MUED)

**260 Introduction to Music Education** (3) Exploration of the field of music education and basic concepts in the musical education of children and adults. Philosophical, psychological and social aspects of music as a basic part of the intellectual and physical development of children. This course includes a minimum of 10 hours of field experience observations and five hours of community service.

**310 General Music** (3) Skills and methodologies utilized by specialists in the teaching of general music in classroom settings. Includes traditional western music as well as music of diverse, non-western sources. This class requires a field experience (i.e., practicum) that occurs BEFORE the fall semester. This course includes a minimum of 10 hours of field experience. *Prereq: MUED 260.*

**391, 392, 393 Topics in Music Education** (1, 2, 3) Selected topics in music education. Topics and prerequisites to be announced. May be repeated for credit.

**400 Senior Seminar in Music Education** (3) Current issues in the profession of music 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 music in the curriculum. Measurement and evaluation of music instruction. This course includes a minimum of 10 hours of field experience. *Prereq: MUED 310.*

**401 Independent Study** (3) Directed reading or research by arrangement. May be repeated for credit. Permission of department chair required.

**461 Internship in Teaching Music** (12) Supervised experience (one semester) of music in off-campus centers. Must be taken concurrently with MUED 462. *Prereq: Admission to Teacher Education, TCED 301, 302 and all required music methods courses. (Application for internship must be filed no later than two semesters prior to enrolling.)*

**462 Seminar in Teaching Music** (3) Philosophical and social aspects of music as a part of basic education and intellectual development. Organization, structure and evaluation of sequential music curricula. Professional organizations and continual professional growth. Implications of the Tennessee Instructional Model and the Tennessee Career Development Program for Music Education. Evaluations about music and specific techniques to produce expressive performances. Must be taken concurrently with MUED 461.

**471 Student Teaching in Music-Grades K-6** (6) Supervised student teaching of music in grades K-6 in off-campus centers for a minimum of 6.5 weeks. Must be taken concurrently with MUED 473. (Normally taken concurrently also with MUED 472.) *Prereq: Admission to Teacher Education, TCED 302 and all other required courses in the Professional Education core.*

**472 Student Teaching in Music-Grades 7-12** (6) Supervised student teaching of music in grades 7-12 in off-campus centers for a minimum of 6.5 weeks. Must be taken concurrently with MUED 473. (Normally taken concurrently also with MUED 471.) *Prereq: Admission to Teacher Education, TCED 302 and all other required courses in the Professional Education core.*

**473 Seminar in Teaching Music** (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: MUED 471-472 (student teaching courses).*

**701-702 Independent Study in Music Education** (3, 3) Directed reading or research.

**791, 792, 793 Topics in Music Education** (1, 2, 3) Selected topics in music education. Topics and prerequisites to be announced.

## Music Ensembles (MUEN)

*Study and performance of music appropriate to each ensemble including both traditional repertoire and music of diverse cultures. Membership is open by audition to all students. May be repeated for credit.*

- 151, 351 Marching Band** (1, 1)
- 152, 352 Wind Ensemble** (1, 1)
- 153, 353 Concert Jazz Band** (1, 1)
- 154, 354 Brass Ensemble** (1, 1)
- 155, 355 Woodwind Ensemble** (1, 1)
- 156, 356 Percussion Ensemble** (1, 1)
- 158, 358 Concert Band** (1, 1)
- 160, 360 Piano Ensemble** (1, 1)
- 161, 361 Accompanying** (1, 1)
- 162, 362 University Singers** (1, 1)
- 163, 363 Choral Society** (1, 1)
- 164, 364 Collegiates** (1, 1)
- 165, 365 New Pacer Singers** (1, 1)
- 166, 366 Treble Choir** (1, 1)
- 167, 367 Lyric Opera Theatre** (1, 1)
- 168, 368 Chamber Ensemble** (1, 1)

## Natural Resources Management (NRM)

**100 Introduction to Natural Resource Management** (3) Survey of natural resources management career opportunities; a history of resource

management; forests, wildlife, soils and recreation components; government and private management entities; commercial, conservation and preservation philosophies of land management discussed.

**101 Wildlife, Conservation and Environmental Issues** (3) This course is intended for students enrolled in curricula other than Natural Resources Management who are interested in wildlife and conservation issues. Includes a review of wildlife and resource history and a survey of current resources at global, national and regional scales. Issues will be discussed including biological diversity and endangered species, pollution and habitat loss, values of natural resources to humans and human philosophies and perspectives on conservation. Not intended for Natural Resources Management majors.

**180 Topics in Natural Resources Management [Topic title]** (1-3) Study of special topics, lab, 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 AGRI 180)

**200 Interpretive Tours—Practicum** (2) Application of interpretive methods off campus in cooperation with other agencies such as Tennessee State Parks, Tennessee Wildlife Resources Agency, Historical Society, National Park Service, etc. Students will assist in giving conducted tours and work on special projects and reports. *Prereq: Instructor's approval.*

**210 Mediating Environmental Conflicts** (3) A communications and critical thinking course involving current conservation issues—relating to forestry, wildlife, fisheries, agriculture (and other land use), human population growth, air and water pollution, as well as other natural resource concerns. This course will involve interpersonal, oral and thinking skills leading to mediating environmental conflicts. There will be active group interaction and student participation during class. Open to all students, regardless of major.

**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. *Prereq: Instructor's approval. (Same as AGRI 230)*

**301-302 Special Problems** (1, 1) Independent study projects for students exhibiting special interest and abilities in selected subject areas. Written project outline and report of results required. Taught only by arrangement prior to registration.

**350 Environmental Regulation** (3) Students will be introduced to environmental regulation and the role of environmental professionals in the workplace. Emphasis will be placed on the interrelationships among businesses, federal and state regulatory programs. Examples will come from current regulatory programs and emerging areas on concern. The perspective will be that of environmental professionalism including responsibilities and ethics. *Prereq: Junior standing.*

**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 AGECE 375)

**390 Career Planning in Natural Resources Management** (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 AGRI 390)

**401-402 (601-602) Research Participation** (3, 3) Application of the scientific method of inquiry to

solution of problems through student involvement with faculty in research projects. Presentation of written project outline and written and oral reports required. Taught only by arrangement prior to registration. *Prereq: Senior standing and minimum GPA of 2.75.*

**410 (610) Nonindustrial Private Forestry** (3) Principles of forestry and management of small private tracts of forestland. Multiple uses of these forests and how to market and harvest products from them. How to protect them, improve their quality and keep records. (Same as PLSC 410/610.)

**420 Supervised Field Experience** (3, 4) Minimum of one semester (or two semesters for four hours credit) of supervised study and experience cooperative with approved university biological stations, governmental agencies, or private enterprises at off-campus locations. Term paper describing application of resource management techniques required. Joint evaluations by on-the-job and academic supervisors. *Prereq: Instructor's approval.*

**430 Natural Resources Research** (3) Foundations and application of the scientific method in natural resources studies. Hypothesis formation, literature review, experimental and sampling design, pilot studies and power analysis, data collection, analysis and interpretation of results, written and oral presentation components. *Prereq: PRAD 200 or MATH 210 and junior standing.*

**440 (640) Regional Studies in Natural Resources Management** (3) Evaluation of natural resources and administration on a regional basis by visits to selected public, private and commercial agencies and lands.

**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 AGRI 450/650)

**461 Selected Topics in Natural Resources**

**Management** (1) Current and historical topics in natural resources management. Review of literature on classic natural resource issues. Subjects determined by instructor. Active student participation including oral and written presentations. This course cannot be substituted for BIOL 410-411.

*Prereq:* Major in Natural Resources Management, or Biology, or have instructor's approval.

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

**722 Production of Biorenewable Resources**

(3) An exploration of plant species with potential as crops for industrial uses including biofuels. An overview of the chemistry of plant products and extraction techniques for useful products including biofuels, unique fatty acids and pharmaceuticals from new and existing crops. Will include a review of fundamental concepts in bioenergy and biobased products including engineering thermodynamics and organic chemistry. (Same as PLSC 722)

**724 Advanced Grazing Management Techniques**

(3) An in depth discussion of the integral biological and physical components of pasture systems. Students will learn how soil chemical and physical properties interact with plant growth in the production of forage crops. The focus of the course will be to examine the impact of management practices on the ecology of grazing livestock in pasture systems. Students will evaluate grazing systems and develop a management plan as a part of the course activities. A paper dealing with pasture ecology will be a required component of the course. (Same as PLSC 724)

**730 Advanced Natural Resources Economics**

(3) Economic principles associated with natural resource use and preservation. Emphasis on economic analysis and policy decision making tools for natural resources and non-market goods. Valuation techniques such as benefit cost analysis, willingness to pay, willingness to accept, hedonic pricing, travel cost models, intertemporal substitution and issues related to economic and social efficiency will be discussed.

**760 Management of Interpretive Resources**

(3) Principles of interpretation and an examination of the resources used for interpretive services. There will be an overview of the application of management principles to interpretive services. Sociological concepts, relevant innovations, resource inventory and master planning will be explored. Emphasis will be placed on the role of interpretation to accomplish an organization's mission. (Same as PRAD 760)

**765 Conservation and Preservation of Historic Structures**

(3) Principles and methods related to the use, preservation and interpretation of historic structures. This will include the application of technology for the identification and cataloging of structures that have historical significance. Relevant laws and regulations will be reviewed. Special attention will be given to construction methods and materials as they apply to preservation. (Same of PRAD 765)

**770 Topics in Natural Resources Management**

(1-6) Topics in selected areas of natural resources management. 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.

**791 Research/Internship in Natural Resources Management**

(1-3) This will be either: 1) a major research project associated with natural resources management, or 2) a supervised work experience in natural resources management 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 M.S.A.N.R. degree. P/N only.

## Nursing (NURS)

**201 Pharmacology I** (2) Examines classifications, uses, actions and side effects of major drug groups and nursing responsibilities for safe drug administration, including client teaching. Focuses on drugs used for acute health care problems. Two hour lecture. *Prereq:* Admission to clinical nursing program or instructor's approval.

**202 Pharmacology II (2)** Continues examination of classifications, uses, actions and side effects of major drug groups and nursing responsibilities for safe drug administration, including client teaching. Focuses on drugs used for chronic and mental health care problems. Two hour lecture. *Prereq: NURS 201 or instructor's approval.*

**212 Foundations in Nursing I (6)** Beginning course in nursing which emphasizes concepts, principles and basic nursing skills utilized in nursing practice. Three hours lecture and six hours lab. *Prereq: Acceptance to clinical nursing courses, First Aid and CPR Provider C certifications and ZOOL 251. Coreq: ZOOL 352, NURS 201 and 221.*

**221 Concepts and Theories in Nursing (2)** Use of concepts and theories of professional nursing practice as the basis for implementing and evaluating health care. Two hours lecture. *Prereq: Acceptance to clinical nursing courses or instructor's approval.*

**231 Foundations in Nursing II (6)** Continuation of Foundations in Nursing I emphasizes the use of the nursing process in providing care for client/client systems with basic health care needs. Two hours lecture and eight hours lab. *Prereq: NURS 201, 212, 221 and ZOOL 352. Coreq: NURS 202 and 241.*

**241 Health Assessment (5)** Emphasizes concepts and skills of health assessment. Prepares the nurse to assess and analyze the physical and psychosocial status of individuals. Four hours lecture and two hours lab. *Prereq: NURS 212 and ZOOL 352 or instructor's approval. Coreq: NURS 202 and 231.*

**280-289 Topics in Health Care (1-3)** Group or individually planned topics or projects of concentrated studies in areas of need and interest. May be taken for credit or Pass/Fail. *Prereq: Completion of nursing curriculum prior to specific topic level or instructor's approval.*

**312 Health Assessment (5)** The course for Registered Nurses expands on concepts and skills of health assessment introduced at the technical level. Provides the RN with a broader knowledge base required in baccalaureate nursing education. Prepares the nurse to assess and analyze the physical and psychosocial status of individuals. Four hours

lecture and two hours lab. *Prereq: Licensure as a Registered Nurse and instructor's approval. Students cannot use credit for both NURS 241 and 312 toward graduation requirements.*

**321 Acute and Chronic Health Care Nursing I (7)** Emphasizes use of the nursing process in care of client/client systems with acute and chronic health needs. Attention will be given to prevention, health promotion and rehabilitation. Three hours lecture and eight hours lab. *Prereq: NURS 202, 231 and 241. Coreq: NURS 341. Students cannot use credit for both NURS 321 and NURS 350 toward graduation requirements.*

**331 Acute and Chronic Health Care Nursing II (7)** Continues emphasis on nursing needs of client/client systems with acute and chronic health needs. Attention will be given to prevention, health promotion and rehabilitation. Three hours lecture and eight hours lab. *Prereq: NURS 321 and 341. Coreq: NURS 362.*

**341 Mental Health Nursing (6)** Emphasizes concepts and principles necessary to understand client/client systems as they evolve through life experiences, utilizing the nursing process to assist them to meet their mental health needs. Three hours lecture and six hours lab. *Prereq: NURS 202, 231 and 241. Coreq: NURS 321.*

**350 Transition to Professional Nursing (8)** A transition course for Registered Nurses taken in place of NURS 321. Expands on nursing content introduced at the technical level to provide the RN with the broader knowledge base required in baccalaureate nursing education. Five hours lecture and six hours lab. *Prereq: Licensure as a Registered Nurse and either admission to the clinical nursing program with completion of NURS 202 and 241 or 312; or instructor approval. Students cannot use credit for both NURS 350 and NURS 321 toward graduation requirements.*

**362 Trends and Issues in Nursing (1)** Examines the nurse's role in change through evaluation of current trend and issues impacting upon the nursing profession and health care delivery. Writing and speaking intensive course. Two hours seminar. *Prereq: NURS 321 and 341 or instructor's approval. Coreq: NURS 331.*

**380-389 Topics in Health Care** (1-3) Group or individually planned topics or projects of concentrated studies in areas of need and interest. May be taken for credit or pass/fail. *Prereq: Completion of nursing curriculum prior to specific topic level or instructor's approval.*

**401 Family Health Nursing** (4) Examines normal developmental and reproductive tasks and related health needs and issues of client/client systems. Two hours lecture and four hours lab. *Prereq: NURS 331 and 362. Coreq: NURS 406 and 431.*

**406 Pediatric Health Care Nursing** (4) Emphasizes normal developmental tasks and related health needs and issues of client/client systems with a focus on pediatric client and the family unit. Two hours lecture and four hours lab. *Prereq: NURS 331 and 362. Coreq: NURS 401 and 431.*

**411 Advanced Health Care Nursing** (6) Emphasizes use of the nursing process to synthesize complex concepts in providing care for client/client systems with advanced health needs. Three hours lecture and six hours lab. *Prereq: NURS 401, 406 and 431 or NURS 350 and 431. Coreq: NURS 442 or instructor's approval.*

**431 Community Health Nursing** (6) Emphasizes care of client/client systems utilizing community health services in a variety of home and agency settings. Three hours lecture and six hours lab. *Prereq: NURS 331 and 362 or NURS 350 or instructor approval. Coreq: NURS 401 and 406.*

**442 Leadership and Management in Nursing** (5) Focuses on principles of management and leadership in delivery of health care. Emphasizes the professional nurse's role as a client advocate and as a collaborative member of the health team. Two hours lecture and six hours lab. *Prereq: NURS 401, 406 and 431. Coreq: NURS 411.*

**451 Research in Nursing** (2) Introduces methodology of investigation, including evaluation of existing and on-going research studies in nursing and health care. Writing and speaking intensive course. Two hours lecture. *Prereq: MATH 210 and NURS 401, 406 and 431 or instructor's approval.*

**480-489 Topics in Health Care** (1-3) Group or individually planned topics or projects of concen-

trated studies in areas of need and interest. May be taken for credit or pass/fail. *Prereq: Completion of nursing curriculum prior to specific topic level or instructor's approval.*

## Nutrition (NUTR)

**100 Introductory Nutrition** (3) Fundamentals of human nutrition and wellness. The impact of global interdependence on food availability.

**322 Principles of Nutrition** (3) Recommended dietary allowances. Function, food sources, absorption and utilization of nutrients. Energy metabolism. *Prereq: NUTR 100 and eight hours of physical or biological sciences.*

**422 (622) Lifespan Nutrition** (3) Nutritional needs of selected developmental stages such as reproduction, growth and aging. *Prereq: Eight hours of physical or biological science.*

**433 (633) Nutrition in Disease** (3) Principles of nutrition applied in the management of disease syndromes which may be influenced by diet. Three one-hour lectures. *Prereq: NUTR 322 and CHEM 112 or instructor's approval.*

**443 (643) Community Nutrition** (4) Nutrition problems and services in the community. Government and industry sponsored programs. Applications of research methodology to socio-cultural and ethnic food consumption and trends in consumer issues. Observations and field experiences included. *Prereq: NUTR 100 and FSCI 200.*

**455 (655) Nutrition Assessment and Counseling** (3) Components of nutrition assessment, theories and practice in nutrition counseling and basics of nutritional support for hospitalized patients. Also includes exercises in the development of critical thinking skills as they apply to nutrition issues.

**720 Human Nutrition** (3) Physiologic functions of carbohydrates, proteins, fats, minerals and vitamins. Contemporary problems in meeting nutritional requirements. *Prereq: NUTR 422.*

**723 Advanced Nutrition** (3) Applications of research methods to individual problems. *Prereq: CHEM 112 or equivalent.*

**724 Preprofessional Practice II** (2) One-hundred-eighty hours of supervised practice plus 20 hours of lecture-discussion/independent study addressing the aspects of dietetic practice in community nutrition. This course consists of rotations in public health nutrition/WIC, child nutrition programs, nutrition education for the public, renal dialysis and community private practice. *Prereq: Admission to Dietetic Internship and FSMG 714. Coreq: NUTR 764.*

**726 World Food Supply and Human Need** (3) Food supplies and food practices as related to human nutrition throughout the world. Regional, national and international agencies concerned with food and nutrition problems. *Prereq: Six (6) hours in nutrition or food science or consent of instructor.*

**733 Advanced Clinical Nutrition** (3) Physiological bases for diets in disease. Recent developments in dietary management of selected diseases. Evaluation of new products and practices.

**734 Preprofessional Practice III** (3) Two-hundred-eighty hours of supervised practice plus 40 hours of lecture-discussion/independent study addressing aspects of dietetic practice in clinical nutrition. This course consists of rotations in diet office operation, screening/nutritional assessment, gastrointestinal disorders, basic nutrition support and various medical-surgical rotations. *Prereq: Admission to Dietetic Internship.*

**754 Preprofessional Practice V** (3) Two-hundred-forty hours of supervised practice plus 80 hours of lecture-discussion/independent study addressing the aspects of nutrition intervention in developmental disabilities, rehabilitation, outpatient clinics, geriatrics, pediatrics, home health care, clinical management and critical care. *Prereq: Admission to Dietetic Internship, FSMG 714 and NUTR 734. Coreq: NUTR 724 and NUTR 764.*

**755 Nutrition in Mental Retardation and Developmental Disorders** (3) Nutrition assessment, feeding skills, nutrient requirement and drug interaction. Joint teaching by nutrition faculty and Infant Stimulation staff.

**764 Preprofessional Practice VI** (1) One hundred hours of supervised practice plus 20 hours of lecture-discussion/independent study addressing the aspects of business and entrepreneurial dietetics practice. This course consists of rotations in entrepreneurial private practice and dietetics practice in business. *Prereq: Admission to Dietetic Internship, FSMG 714 and NUTR 734. Coreq: NUTR 724.*

## Park and Recreation Administration (PRAD)

**100 Fundamentals of Park and Recreation Administration** (3) Historical development of recreation, leisure services and recreation resources. Philosophies of leisure, recreation and play. Survey of organized recreation delivery systems in public, non-profit, private and commercial settings. Career opportunities examined.

**110 Park Management** (3) Planning and organizing a park management program. Methods of maintaining and operating various park and recreation facilities in public and private settings. Includes design and scheduling personnel management and training preventive and/or corrective maintenance, law enforcement, vandalism control, fire protection, litter and garbage control.

**200 Recreation Leadership and Programming** (3) Presentation of the concepts, principles, practices and potentials of effective leadership and programming in recreation activities. Techniques of leadership and programming procedures for working with groups and individuals. Application of these techniques to given situations.

**220 Outdoor Recreation** (3) To develop a wide variety of certifiable skills in a number of outdoor activities such as orienteering, back-packing, camping, rappelling, canoeing, kayaking and problem solving. Weekend camping and canoeing trips required. *Prereq: Must be a good swimmer.*

**300 Technological Applications in PRA** (3) Application of the microcomputer technology to several course subject areas taught in PRA to include design, park management, recreation programming, financing, managing and marketing.

**310 Recreation Area Design and Comprehensive Planning** (3) Principles of planning, design and layout of recreation areas and facilities. Emphasis on site analysis and design of areas and facilities according to function, need, use and spatial arrangement. Special attention will be given to the study of recreation needs analysis for comprehensive recreation plans. Two one-hour lectures and one two-hour lab. *Prereq: PRAD 300.*

**315 Special Event Management in PRA** (3) Principles and techniques for planning, promoting, marketing and implementing special events in the park and recreation setting. Emphasis will be placed on the practical application of these techniques in special events on and off campus.

**321 Landscape Management** (3) Principles and techniques for maintenance of residential, commercial and institutional landscapes. Emphasis on landscape maintenance involving turf, flowers, ground covers, shrubs and trees. Discussion of maintenance of playgrounds, natural areas, trails, golf courses, pools and other public facilities. (Same as PLSC 321)

**400 (600) Interpretation of Natural and Cultural Resources** (3) Introduction to principles and techniques used to communicate natural and cultural history, ecological features and environmental awareness to park visitors. Methods of gathering, analysis and presentation of information. Planning construction and use of audiovisual equipment, exhibits and related interpretive devices. Students are required to write reports and give oral presentations. Two one-hour lectures and one two-hour lab.

**410 (610) Financing, Managing and Marketing Recreation Services** (3) Study of financial resources, legal aspects, organization, budgeting and management of recreation programs. Marketing of recreation products and services.

**430 Supervised Field Experience** (3-12) Supervised study in an operational setting with an approved agency. Emphasis on application of principles of park and recreation administration and of selected aspects of park management and preparation of a comprehensive analysis of a specific problem. Joint evaluation by on-the-job and academic supervisors. *Prereq: Senior standing and instructor's approval.*

**760 Management of Interpretive Resources** (3) Principles of interpretation and an examination of the resources used for interpretive services. There will be an overview of the application of management principles to interpretive services. Sociological concepts, relevant innovations, resource inventory and master planning will be explored. Emphasis will be placed on the role of interpretation to accomplish an organization's mission. (Same as NRM 760)

**765 Conservation and Preservation of Historic Structures** (3) Principles and methods related to the use, preservation and interpretation of historic structures. This will include the application of technology for the identification and cataloging of structures that have historical significance. Relevant laws and regulations will be reviewed. Special attention will be given to construction methods and materials as they apply to preservation. (Same of NRM 765)

**770 Topics in Park and Recreation Administration** (1-6) Topics in selected areas of park and recreation administration. 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.

## Philosophy (PHIL)

**110 The Adventure of Ideas** (3) The living heritage of philosophy. An introductory study of the philosophical quest for understanding and wisdom from Socrates to Kant. A study of classical Greek, Biblical, medieval, Buddhist, scientific and early modern thought.

**120 The Adventure of Ideas** (3) (TBR: PHIL 1030) Living issues in current philosophy. An introductory study of the philosophical quest for understanding and wisdom in modern, contemporary and recent thought. A study of perspectives in the nineteenth and twentieth centuries and at the dawn of the twenty-first century.

**130 Ethics and Race** (3) An introductory course which explores the morality of race relations in America, from the points of view of secular and religious value systems. The goal of the course is the enhancement of understanding and philosophical rigor in matters of values among races.

**160 Introduction to Ethics** (3) A study of basic issues in ethics. Action-centered vs. agent-centered theories, the idea of virtue and aspects of moral psychology may be discussed. Applications to a selection of issues in applied ethics (e.g., medical and environmental ethics).

**210 Elementary Logic** (3) An analysis of the fundamental logical categories and skills which are needed for academic studies and the ordering of life's experiences: meaning, informal fallacies, tests of truth, rules of evidence, types of language, inference, argument and methodology (scientific and otherwise).

**301 Major Religions of the World** (3) A survey of the history and philosophy of major living religions: Hinduism, Jainism, Buddhism, Confucianism, Taoism, Zoroastrianism, Judaism, Christianity and Islam. (Same as RLST 301)

**310 Aesthetics** (3) A basic course in aesthetics, dealing with such conceptual issues as the criteria of identity for works of art, the idea of style, of expression, the notion of aesthetic attitude, the relevance of artists' intentions to interpretation and truth in literature and the arts. Analysis of these and similar notions with reference to examples from various art forms (painting, music, literature, etc.). Written reports and oral presentations are required. (Same as FA 310)

**314 History of Ancient and Medieval Philosophy** (3) A survey of philosophy from its beginnings through the medieval period; pre-Socratics, sophists, Plato, Aristotle, Hellenistic philosophy, selected major medieval figures (Augustine, Aquinas and some Arabic and/or Jewish figures).

**315 History of Modern Philosophy** (3) An examination of the leading philosophical ideas of the 16th, 17th and 18th centuries; the scientific revolution, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume and Kant.

**320 Traces of God** (3) An analysis of the contemporary question of the existence and nature of God and the relevance to that question of experience, faith, revelation, mysticism, proofs, history, relationships and creativity. Also an exploration of the relation of God and the World in terms of creation/

evolution, time/eternity and culture/values. Position paper required. (Same as RLST 320)

**330 Love, Sexuality and Living** (3) A contemporary study of relationships, particularly those of love, human sexuality, caring, authenticity, friendship, family, fellowship, creative living and appreciation/manipulation. Position paper required.

**340 Death, Suffering and Evil** (3) A study of the essential limits and boundary situations of life, particularly the dark shadows of death, suffering and evil. Special attention given to an investigation of the possible meaningfulness of these limits and their value for authentic life. Other considerations include: suicide, abortion, war, crime, punishment, illness, insanity, perversion, inequality, waste. Position paper required. (Same as RLST 340)

**350 Principles of Bioethics** (3) Introduction to the ethical principles of paternalism, utilitarianism, autonomy, nonmaleficence, beneficence and justice and application of those principles to problem areas in the allocation of medical resources, genetic counseling, human experimentation and other areas of medical science.

**360 Symbolic Logic** (3) A first course in symbolic logic designed to introduce students to the idea of a logistical system, the propositional calculus, the predicate calculus with identity, functions, decidability and completeness. *Prereq: PHIL 210 or equivalent, or instructor's approval.*

**370 God and Human Happiness** (3) Studies in selected philosophers, religious thinkers and religious texts where a primary concern is the nature of human happiness and its relationships to beliefs about God or the ultimately real. Texts may include works from such philosophers as Plato or Nietzsche, such authors as Tolstoy or O'Connor and such texts as the New Testament or the Bhagavad Gita. Issues may include the relative importance of moral or non-moral goodness for happiness, the nature of God or ultimate reality as it bears upon human life and destiny and related issues. Position paper required. (Same as RLST 370)

**380 Topics in the Philosophy and History of Religion [Selected Topics]** (3) Intensive coverage of issues in the philosophy of religion (such

as the theistic attributes, theistic proofs, religious language) or in the history of religion (such as non-Western religious traditions, eras of reform, the history of interpretation). Course may be repeated with total credits not to exceed six hours. (Same as RLST 380)

**385 Topics in the History of Philosophy [Selected Topics]** (3) Intensive coverage of individual philosophers or of periods only surveyed or not covered in PHIL 314 and 315, such as 19th and 20th century philosophy. Course may be repeated with total credits not to exceed six hours.

**395 Philosophy and Film** (3) An examination of philosophical elements in film. The course will focus on how these media confront traditional philosophical questions about such issues as good and evil, the existence of God, the possibility of knowledge of self and the real, the nature of time. The ways in which the structure of these media themselves raise philosophical questions may also be addressed. Students will be required to attend out of class screenings of assigned films.

**410 Political and Legal Philosophy** (3) An examination of classic and recent discussions of the foundations of society and of conceptions of justice and law. Topics may include classical theories of the state, theories of natural law, 20th century discussions of law and liberty, legal idealism, legal realism and positivism, law and the social sciences and critical legal studies. Some focus on court decisions as illustrative of philosophical assumptions in legal reasoning.

**430 (630) Science and Human Values** (3) An examination of the philosophical foundations of the scientific enterprise with particular emphasis on the social/value implications of the natural, biological, social and behavioral sciences. (Same as PSYC 430)

**440 Topics in African-American and Feminist Studies** (3) An examination of the status of African Americans, including a focus on such matters as economic, social, political and educational status. An exploration of the global status of women and the effects on women of major social institutions.

**450 Existentialism and Phenomenology** (3) Studies in selected contemporary existentialist

philosophers and phenomenologists: Kierkegaard, Nietzsche, Husserl, Sartre, Heidegger, Marcel and Jaspers. Existentialism's dominant themes, its historical and social origins, its use of the phenomenological method and its current impact on thought and culture are considered.

**460 Contemporary Metaphysics and Epistemology** (3) Survey of contemporary discussions in metaphysics and epistemology. Issues include idealism, materialism, dualism, realism, theories of knowledge, theories of truth, epistemological skepticism.

**470 Internship in Race Relations** (3) Experience with local, state, national, and international authorities in matters of race relations. Internship is under the supervision of faculty. Course performance is based on an agreement between student and instructor which stipulates specific academic and work assignments. *Prereq: Approval of instructor and either PHIL 130 or 440.*

**490 (690) Topics in Philosophy [Selected Topics]** (3) Studies in selected issues in metaphysics, epistemology, ethics, aesthetics and philosophy of science, such as philosophy of mind, theories of truth, cognitive relativism, concepts of virtues, literary theory and the like, with each seminar devoted to one such topic. Course may be repeated with total credits not to exceed six hours.

## Physical Activity (PACT)

*A student may elect a maximum of eight semester hours credit within the service (activity) program to count toward graduation. ONLY two service (activity) courses may be taken during any given semester.*

*Any service course may be taken either for a letter grade or for Pass/Fail. If the Pass/Fail option is chosen, this option must be declared in writing before the end of the course adjustment period.*

**112 Scuba I-Open Water** (3) Laws of physics that relate to diving, medical aspects of diving, decompression and recompression, aquatic environment and basic rescue techniques Certification: PADI. To be certified, a student must complete a weekend practical exercise at a dive location. *Prereq: Instructor's approval. May not be repeated for credit.*

**113 Scuba II-Advanced Scuba and Rescue (3)** Comprehensive study of factors involved in open water diving including the safety factors associated with night diving, search and recovery, compass navigation and natural navigation. Certification: PADI. To be certified, a student must complete a weekend exercise at a dive location. *Prereq: Instructor's approval and PACT 112. May not be repeated for credit.*

**114 Scuba III-Dive Master (3)** Knowledge, skill and safety factors involved in conducting underwater tours and dive trips for groups. First aid and CPR training for diving accidents, emergency entry and retrieval of divers from the water. Certification: PADI. To be certified, a student must complete a weekend practical exercise at a dive location. *Prereq: PACT 113 and instructor's approval. May not be repeated for credit.*

**115 Swimming (2)** For all students at the beginning non-swimmer levels. A proficiency test administered the first day of class. One hour lecture and two one-hour labs. May be repeated for credit.

**116 Lifeguard Training (2)** Skills and knowledge necessary for American Red Cross Lifeguard Certificate. One hour lecture and two one-hour labs. May be repeated for credit.

**117 Water Safety Instructor (2)** Skills and knowledge necessary for American Red Cross Water Safety Instructor Certificate. One hour lecture and two one-hour labs. May not be repeated for credit.

**118 Judo I (2)** Beginning judo. Course emphasizes physical and mental skills utilized in the judo training. May be repeated for credit.

**119 Martial Arts I (2)** Beginning martial arts. Course emphasizes physical and mental skills utilized in the martial arts. One hour lecture and two one-hour labs. May not be repeated for credit.

**120 Martial Arts II (2)** Intermediate and advanced martial arts skill development. May be repeated for credit. One hour lecture and two one-hour labs.

**121 Marksmanship/Weapons (2)** Instruction in the history of weapons, firearms, safety, various types of military weapons. Basic rifle marksmanship including the various types of firing positions, federal

and state firearm laws and the U.S Army Qualification Course with the M16 rifle. Freshman and sophomores are encouraged to participate because of their eligibility as it relates to possible ROTC financial benefits. Four hours lecture/lab. May not be repeated for credit.

**122 Aerobic Walking/Jogging (2)** A course designed to promote health and longevity. Emphasis on the development of an individual walking or jogging program as an aerobic activity to promote cardiovascular endurance and flexibility. Emphasis on body composition and diet. May be repeated for credit. One hour lecture and two one-hour labs.

**123 Hydrorobics (2)** A vital program for health and longevity emphasizing cardiovascular endurance, flexibility, body composition and diet control. An aerobic fitness opportunity for students who cannot participate in traditional aerobic activities due to physical limitations. May be repeated for credit. One hour lecture and two one-hour labs.

**124 Rhythmic Aerobics (2)** A program of vigorous choreographed movements and steps to music designed to improve or maintain cardiovascular endurance, agility, flexibility, balance, strength, rhythm and coordination. May be repeated for credit. One hour lecture and two one-hour labs.

**125 Weight Training (2)** Instruction in the safe performance of a variety of resistance training exercises and programs. Emphasis on development of proper training techniques and understanding of fitness training principles for meeting individual fitness goals. May be repeated for credit.

**126 Archery (2)** Development and refinement of the skills of archery. Emphasis on aiming techniques, safety, rules, equipment and tournament competition. One hour lecture and two one-hour labs. May be repeated for credit.

**127 Advanced Archery (2)** Development of knowledge and skills used for hunting and competitive target shooting. May be repeated for credit. One hour lecture and two one-hour labs.

**128 Badminton (2)** Development of the skills and strategies of badminton. Emphasis on rules, safety and sportsmanship necessary to play both competi-

tively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**129 Advanced Judo (2)** Course develops the knowledge and skills required for advanced competence in Judo. Training emphasizes falling, throwing, mat and sparring techniques. *Prereq: PACT 118 or instructor's approval.* May be repeated for credit.

**130 Hapkido (2)** Course teaches the basic skills and knowledge of self-defense. Combines the elements of Karate, Judo and other self-defense disciplines and prepares the student for advanced study of Hapkido. May be repeated for credit.

**131 Women's Self-Defense (2)** This class is designed to provide instruction relative to awareness of potentially dangerous situations. It will also provide the students with the opportunity to learn basic self-defense skills in the event there is an attack. May not be repeated for credit.

**132 Advanced Women's Self-Defense (2)** The class is designed to provide continued instruction relative to awareness of potentially dangerous situations encountered on a daily basis. It will provide the student the opportunity to develop intermediate and advanced self-defense skills. May be repeated for credit.

**133 Tai Chi (2)** Meditation, exercise and stretching and self-defense techniques with emphasis on Tai Chi Chuan Form. This course also includes an introduction to Tai Chi history, types and characteristics. May be repeated for credit.

**134 Yoga/Stretching Techniques (2)** The practice of yoga techniques has been shown to increase strength and flexibility. In this course students will learn to perform several basic yoga poses as well as breathing techniques to calm, relax and reduce stress. Instruction according to Hatha Style, Iyengar yoga and Paranyama breathing. May be repeated for credit.

**135 Golf (2)** Development of the skills of golf. Emphasis on rules, safety and sportsmanship. Opportunities to practice at various local golf courses. One hour and two one-hour labs. May be repeated for credit.

**136 Intermediate Golf (2)** To provide the student with an overview and understanding of golf rules,

safety and sportsmanship. Opportunities to practice at various golf courses. May be repeated for credit.

**138 Country/Western and Line Dancing (2)** This course teaches the basic steps for a variety of dances performed to popular music. Dances will include steps done solo, with partners and in small groups. May be repeated for credit.

**140 Tumbling and Gymnastics (2)** Development of skills and safety in tumbling and gymnastics. Instruction for students with no previous background. One hour and two one-hour labs. May not be repeated for credit.

**141 Ballroom/Swing Dance (2)** This course is designed to teach the beginning dancer how to perform basic ballroom dance steps. Dances that will be taught include the foxtrot, tango, waltz, cha-cha, rumba, two-step and the east and west coast swing. May be repeated for credit.

**142 Intermediate Gymnastics (2)** Development of skills and safety in the different gymnastic events for men and women. Beginning instruction at intermediate levels of difficulty. One hour and two one-hour labs. *Prereq: PACT 140 or instructor's approval.* May not be repeated for credit.

**143 Gymnastics for Cheerleading (2)** Techniques and skills applicable to cheerleading, including crowd communications, motivation and control, tumbling, partner stunts, jumps and pyramid building. An extension of the UT Martin Cheerleading Scholarship Program. Scholarship recipients take course fall semester only. One hour and two one-hour labs. *Prereq: Scholarship recipient or instructor's approval.* May not be repeated for credit.

**145 CardioKickboxing (2)** In this course students will learn and execute stances, hand techniques and leg techniques that boxers and kickboxers use in training. These techniques will be coordinated with music to tone, lose weight, build self-esteem, increase flexibility and relieve stress. May be repeated for credit.

**146 Cardio Fitness (2)** Designed to promote health and longevity. Emphasizes the development of individual fitness program to promote cardiovascular endurance, body composition and diet. This course may be repeated for credit.

**147 Boxercise** (2) Non-combative instruction in the use of Olympic-style boxing for circuit training. Emphasis on proper punching techniques, footwork and exercise for muscular strength and cardiovascular endurance. May be repeated for credit.

**148 Pilates** (2) Instruction in mind-body exercises for the improvement of body awareness, posture, core strength and flexibility. Emphasizes proper breathing, body alignment and smooth movement techniques. May be repeated for credit.

**150 Pickleball and Paddle Tennis** (2) Development of the skills and strategies of pickleball and paddle tennis. Emphasis on rules, strategies, safety and sportsmanship necessary to play both competitively and recreationally. One hour and two one-hour labs. May be repeated for credit.

**152 Skiing/Snowboarding** (2) Provides instruction in skiing and snowboarding for all ski levels from novice to advanced performers. In addition to providing instruction in skiing and snowboarding techniques, the course addresses safety considerations and the selection and fitting of equipment. Accompanying the formal instruction appropriate to the skill level will be free time opportunities for practice. This course is conducted at a ski resort during the break between fall and spring semesters. An additional fee is required to cover the expense of the trip. May be repeated for credit.

**155 Racquetball** (2) Development of the skills of racquetball. Emphasis on rules, strategies, safety and sportsmanship necessary to play both competitively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**160 Tennis** (2) Development of the skills of tennis. Emphasis on rules, strategies, safety and sportsmanship involved in playing both competitively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**161 Intermediate Tennis** (2) Focus on match play strategy for the intermediate performer in singles and doubles. One hour lecture and two one-hour labs. *Prereq: PACT 160 or instructor's approval.* May be repeated for credit.

**165 Backpacking/Geocaching** (2) This course addresses the fundamentals of backpacking and

geocaching, including safety and proper use of equipment such as GPS devices. The student will gain actual experience on mandatory field trips. May be repeated for credit.

**170 Special Topics in Physical Education** (1-3) Selected topics. No more than six hours topics credit may be applied to an undergraduate degree in education. *Prereq: Instructor's approval.*

**175 Volleyball** (2) Development of the skills of volleyball. Emphasis on rules, strategies, safety and sportsmanship necessary to play both competitively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**180 Intermediate Basketball** (2) Development of the intermediate skills of basketball. Emphasis on rules, strategies, safety and sportsmanship necessary to play both competitively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**182 Flag Football** (2) Development of the basic skills requisite to flag football. Emphasis on rules, strategies, safety and sportsmanship involved in playing both competitively and recreationally. May be repeated for credit.

**185 Physical Fitness Training** (2) This course is designed to provide the student with the opportunity to participate in a structured physical fitness routine. Components include flexibility, muscular strength and endurance and cardiovascular training. Can be repeated for credit and will provide exposure to Army ROTC procedures and opportunities. Freshmen and sophomores are encouraged to participate because of their eligibility as it relates to possible ROTC financial benefits.

**190 Softball** (2) Development of the skills of softball. Emphasis on rules, strategies, safety and sportsmanship necessary to play both competitively and recreationally. One hour lecture and two one-hour labs. May be repeated for credit.

**195 Varsity Athletics** (2) Participation in the development of high level skill strategies and techniques utilized in a selected varsity sport that is nationally sanctioned for intercollegiate competition and an approved sport in the athletic program at UT Martin. May be repeated for credit.

## Physics (PHYS)

**101 Physics in Everyday Life** (4) A conceptual, inquiry-based course for students with non-science majors. This course examines familiar objects of everyday experience and leads to an understanding of physical principles that make them work. Topics include motion, forces, energy, fluids and waves. May not be taken for credit by students who have completed a higher number course in physics. This course is taught with an integrated lab and lecture. Students should not attempt PHYS 101 unless the results of Mathematics testing indicate placement in a college level mathematics course.

**102 Physics in Everyday Life** (4) A conceptual, inquiry-based course for students with non-science majors. This course examines familiar objects of everyday experience and leads to an understanding of physical principles that make them work. Topics include light, electricity, electromagnetism and modern physics. May not be taken for credit by students who have completed a higher number course in physics. This course is taught with an integrated lab and lecture. Students should not attempt PHYS 102 unless the results of Mathematics testing indicate placement in a college level mathematics course.

**111 Concepts and Problem Solving in Physics** (3) A course stressing introductory concepts and problem solving techniques in physics. Intended for students who have not had high school physics. May not be taken for credit by a student who has successfully completed a higher numbered course in Physics. *Prereq/Coreq: MATH 140.*

**150 Concepts and Demonstrations in Physics** (4) A first course in physics primarily designed for modeling instructional activities in physics. The course stresses fundamental physics concepts with demonstration experiments and activities. The course is taught with an integrated lab and lecture.

**211-212 College Physics** (4, 4) (TBR: PHYS 2010-2020) A non-calculus introduction to the basic principles of physics. 211: mechanics, elasticity, fluids, wave motion, sound and heat. 212: electricity, magnetism, light, optics and modern physics. Must be taken in sequence. Three hours lecture and two hours lab. *Prereq: MATH 140 or equivalent.*

**220 University Physics** (4) (TBR: PHYS 2110) A calculus-based introduction to the basic principles of physics. Topics include mechanics, elasticity, oscillatory motion, wave motion, sound, fluids and thermodynamics. Three hours of lecture and two hours of lab. *Prereq: MATH 251.*

**221 University Physics** (4) (TBR: PHYS 2120) A continuation of the calculus-based introduction to the basic principles of physics. Topics include: electricity, magnetism, basic circuits, geometrical optics and physical optics. Three hours of lecture and two hours of lab. *Prereq: PHYS 220 and MATH 252.*

**322 University Physics** (3) A continuation of the calculus-based introduction to the basic principles of physics. Topics include: fluids, waves, thermodynamics and optics. *Prereq: PHYS 221.*

**323 University Physics** (3) A continuation of the calculus-based introduction to the basic principles of physics. Topics include: relativity, radioactivity, nuclear structure, basic quantum mechanics, atomic structure and solid state physics with applications to lasers and semiconductors and elementary particles. *Prereq: PHYS 322 or consent of instructor.*

**331-332 (531-532) Mechanics** (3, 3) Kinematics and dynamics of point particles and rigid bodies. 331: vector calculus applied to motion of point particles including orbits, harmonic motion, motion of constrained particle. 332: special relativity (four-vectors), motion of rigid bodies, symmetric top, physical pendulum, elastic solids. An introduction to Lagrangian and Hamiltonian formulations. Must be taken in sequence. *Prereq: PHYS 220 or 211 and instructor's approval.*

**343 Methods in Physics Research** (3) An introduction to experimental and theoretical methods in physics research. Topics include: instrumentation, data acquisition and analysis and mathematical and computational methods. *Prereq: PHYS 221.*

**441-442 (641-642) Electricity and Magnetism** (3, 3) 441: a quantitative study of electric and magnetic fields and their interaction with matter; culminates in the formulation of Maxwell's equations. 442: application of Maxwell's equations to the generation and propagation of electromagnetic waves through free space and matter. Must be taken in sequence. *Prereq: PHYS 221 or PHYS 212 and instructor's approval.*

**471-472 (671-672) Modern Physics** (3, 3) An introduction to quantum mechanics with application to atomic structure, solid state and nuclear physics. Must be taken in sequence. *Prereq: PHYS 222 or 212 and instructor's approval.*

**491-492 (691-692) Special Projects in Physics** (1-3, 1-3) Research projects or special topics under the active supervision of a faculty member. *Prereq: Junior standing and instructor's approval.*

## Plant Science (PLSC)

**110 Introductory Plant and Soil Science** (3) Economic importance of plants and their relationship to agriculture and society. Plant structure, physiology and heredity. Factors of the environment in relation to growth, adaptation and management of plants. Utilization of plant products.

**119 Introductory Plant and Soil Science Laboratory** (1) Provides lab experience on basic concepts of plant structure, physiology, growth and propagation. Includes plant-soil relationships. One two-hour lab. *Coreq: PLSC 110.*

**205 Introduction to Pesticides** (3) Manufacture, regulation, marketing and use of pesticides. Structure, mode of action, toxicity, degradation, safety and environmental impact of pesticides commonly used. Biological, chemical and non-chemical approaches and their effectiveness in controlling pests. This course serves as preparation for materials covered on the Pesticide Applicators certification exam. Opportunity will be given to take the Certified Pesticide Applicators exam at the end of the semester if the student desires to become certified. *Prereq: Two semesters of biological science.*

**234 Lawn and Turf Management** (3) Principles and practices of identifying, establishing and maintaining lawns and turfs in the landscape for public and private agencies. Two one-hour lectures and one two-hour lab.

**242 Fundamentals of Horticulture** (3) Horticulture industry and its contribution to world economy; theoretical and practical aspects of plant growth and development; principles and techniques of plant propagation; pruning and control of growth. Application and use of plant growth regulators in

horticulture. Production, storage, processing and marketing of horticultural plants and products. Two one-hour lectures and one two-hour lab.

**250 Crop Evaluation** (1) Intensive study involving identification and evaluation of agronomically important crops. Includes seed and plant identification along with grain grading. Course culminates in participation in national contest. May be repeated. Maximum of four hours *Prereq: Consent of instructor.*

**260 Landscape Equipment and Technology** (3) Course will introduce students to equipment and technologies used in landscape maintenance and construction. Course will emphasize appropriate uses, equipment maintenance scheduling and safety.

**301-302 Special Problems** (1, 1) Individual projects for students exhibiting special interests and abilities in soils or in breeding, propagation, or production of agronomic or horticultural plants. Maximum of one hour applicable to concentration requirements. Written project outline and report of results required. Taught only by arrangement prior to registration. *Prereq: Eight hours of study suitable to the problem.*

**321 Landscape Management** (3) Principles and techniques for maintenance of residential, commercial and institutional landscapes. Emphasis on landscape maintenance involving turf, flowers, ground covers, shrubs and trees. Discussion of maintenance of playgrounds, natural areas, trails, golf courses, pools and other public facilities. (Same as PRAD 321)

**322 Introductory Plant Pathology** (3) Introduction to basic principles of plant pathology. Diagnosis, cause and control methods of major plant diseases. Major emphasis on agronomic crops. Students are required to write reports and give oral presentations. Two one-hour Lectures and one two-hour lab. *Prereq: Two semesters biological science.*

**324 Landscape Construction Techniques** (3) An introduction to the landscape construction and contracting industry; a survey of landscape construction materials and methods with emphasis on grading, drainage, wooden structures, cost-estimation and construction document preparation. Practical

experience will be provided through implementation of small-scale landscape development projects. Two one-hour lectures and one two-hour lab.

**333 (533) Weed Science (3)** Economic importance of weeds. Weed identification, weed interference and integrated pest management. Ecology of weed growth, dissemination and competition with crops. Herbicide selectivity, persistence and mode of action. Government regulation of herbicides. Specific recommendations for crop and non-crop usage. Two one-hour lectures and one two-hour lab. *Prereq: Two semesters biological science. Coreq: CHEM 112. A term paper and research project will be required of students receiving graduate credit.*

**341 Dendrology and Forest Ecology (3)** The production, identification, management and utilization of important forest trees of the United States, emphasizing native hardwood species common to Tennessee. Two hours lecture and one three-hour lab.

**342 Fruit and Vegetable Production (3)** Distribution, economic importance and characteristics of important fruit and vegetable crops. Adaptation, culture and management requirements. Disease and insect problems and controls. Harvesting and marketing systems. Commercial utilization. Students are required to write reports and give oral presentations.

**345 Fruit and Vegetable Products (3)** Basic principles and practices utilized in handling, processing and storage of fruit and vegetable products. Emphasis placed on current technical and applied information. Field trip required. Two one-hour lectures and one two-hour lab.

**363 Plant Identification and Propagation (3)** Principles and techniques for identifying and propagating native and exotic ornamental plants utilized for functional and aesthetic purposes in residential, recreational and public grounds improvement.

**365 Greenhouse Crops and Management (3)** Identification, propagation production and post-harvest physiology of floral, indoor and ornamental plants. Operation of greenhouses emphasizing state-of-art technologies and management.

**401-402 (601-602) Research Participation (3, 3)** Application of the scientific method and techniques of research to solution of problems for students exhibiting special interest and abilities in investigative work in soil or plant sciences. Maximum of three hours applicable to concentration requirements. Presentation of written project outline and written and oral reports required. Taught only by arrangement prior to registration. *Prereq: Senior standing and minimum GPA of 2.75.*

**410 (610) Nonindustrial Private Forestry (3)** Principles of forestry and management of small private tracts of forestland. Multiple uses of these forests and how to market and harvest products from them. How to protect them, improve their quality and keep records. (Same as NRM 410/610.)

**422 (642) Forage Crops (3)** Characteristics, distribution and economic importance of forages. Culture, management and utilization of grasses and legumes in forage-livestock systems. Factors affecting forage quality and utilization by ruminant livestock. Students are required to write reports and give oral presentations. Two one-hour lectures and one two-hour lab. *Prereq: PLSC 110, ANSC 110.*

**431 (631) Principles of Plant Breeding (3)** Principles of reproduction and inheritance of plants and their application to development of improved genotypes for particular uses. Variety evaluation and distribution procedures. Two one-hour lectures and one two-hour lab. *Prereq: BIOL 336.*

**433 (633) Field Crop Production (3)** World distribution, economic importance and growth characteristics. Cultural and management requirements, pest problems and control. Harvesting marketing and utilization of major field crops. Two one-hour lectures and one two-hour lab. *Prereq: SOIL 210.*

**442 (642) Crop Adaptation and Ecology (3)** Influence of environmental factors and cultural practices on plant growth responses, adaptation and distribution. Study of plant community structure, competitive interactions and their relationship to cycling of energy, nutrients and water in agricultural ecosystems. Two one-hour lectures and one two-hour lab. *Prereq: Two semesters of biological science, PLSC 110.*

**445 Plants, Environment and Design (3)**

Principles of plant composition and theory of plants in design with emphasis on historical and contemporary approaches to planting design. Understanding the functional abilities of plants in altering the environment with emphasis on architectural, engineering, aesthetics and climatological uses of plants. Plant characteristics, requirements and selection for use in natural and man-made environments with reference to soils, topography, climate, as well as, maintenance issues. Two one-hour lectures and one two-hour lab. *Prereq: PLSC 242 and 462.*

**462 Environmental Landscape Design (3)**

Theory and principles of landscape design with special emphasis on consideration of environmental factors affecting and affected by the landscape design. Form, structure and function along with visual appeal will also serve as the basis for designing landscapes. Economics of design and long-term project maintenance will also be addressed.

**471 Golf Course Management (3)** Establishment and management of special purpose grasses for golf courses, greens, fairways and the rough areas. Two one-hour lectures and one two-hour lab. *Prereq: PLSC 234 or PLSC 242 or consent of instructor.*

**475 (675) Grazing Management Techniques**

(3) Principles of forage crop growth, pasture soil characteristics, livestock grazing behavior and pasture utilization through grazing. Methods of designing intensive pasture utilization systems. For graduate credit students are required to complete a capstone grazing system design utilizing concepts developed in the course.

**722 Production of Biorenewable Resources**

(3) An exploration of plant species with potential as crops for industrial uses including biofuels. An overview of the chemistry of plant products and extraction techniques for useful products including biofuels, unique fatty acids and pharmaceuticals from new and existing crops. Will include a review of fundamental concepts in bioenergy and biobased products including engineering thermodynamics and organic chemistry. (Same as NRM 722)

**724 Advanced Grazing Management Techniques**

(3) An in depth discussion of the integral biological and physical components of pasture systems.

Students will learn how soil chemical and physical properties interact with plant growth in the production of forage crops. The focus of the course will be to examine the impact of management practices on the ecology of grazing livestock in pasture systems. Students will evaluate grazing systems and develop a management plan as a part of the course activities. A paper dealing with pasture ecology will be a required component of the course. (Same as NRM 724)

**Political Science (POSC)****210-220 American Government and Politics**

(3, 3) A survey of the origins, structure and functions of the political system in the United States on the national, state and local levels. 210: Development of American constitutionalism, federalism and intergovernmental relations, parties, interest groups, elections, civil rights and civil liberties. 220: The executive, legislative and judicial branches at national, state and local levels. Domestic policies, budgetary processes, defense and foreign policy issues.

**303 Scope and Methods of Political Science**

(3) An examination of the basic theories, concepts and methods of modern political analysis and the application of various research techniques. Significant writing and oral presentations required. Open only to political science majors and minors with at least junior standing.

**312 Politics and Government of Tennessee**

(3) An examination of Tennessee government and politics, including the state constitution, the three branches of government, political affairs, political issues and local government.

**314 Intergovernmental Relations (3)** An in-depth examination of the historical evolution, growth and contemporary status of fiscal political and legal relationships between the national, state and local governments. The course emphasizes federal policy and financing of state and local governments within the context of grants-in-aid programs.

**321-322 International Relations (3, 3)** Principles of theory and practice of international politics. Fundamentals of national power study, diplomacy, foreign policy, as well as the social, cultural, legal