

and applied aspects of the nutrition of fish, crustacean, and mollusk species including feeding behavior, nutritional ecology, energetics, and nutrient requirements. (Same as WF 4333/6333).

**NTR 6423. Feed Manufacturing. (3)** (Prerequisites: CH 2503 and CH 2501). Two hours lecture. Two hours laboratory. Mill design and equipment; procurement, storage and quality control for ingredients and complete feeds; formulation of practical type poultry rations. (Same as PO 4423/6423).

**NTR 7000. Directed Individual Study.** Hours and credits to be arranged.

**NTR 8000. Thesis Research and Thesis.**

**NTR 8111-8131. Nutrition Seminar. (1)** Survey of current literature; preparation, organization, and presentation of papers on selected topics in nutrition.

**NTR 8123. Methods in Nutrition Research. (3)** Fall semester. (Prerequisites: NTR 4115/6115 and ST 8114 or equivalent). Two hours lecture. Three hours laboratory. Application of analytical methods used in research techniques; practice in writing research proposals, conducting a research project, and preparing research finds suitable for scientific publication.

**NTR 8153. Ruminant Nutrition. (3)** (Prerequisite: NTR 4115/6115 or Equivalent). Three hours lecture. In-depth treatment of rumen function and recent concepts in ruminant nutrition.

**NTR 8162. Monogastric Nutrition. (2)** Fall semester. (Prerequisite: NTR 4115/6115 or equivalent). Two hours lecture. Monogastric nutritional relationships with special emphasis on swine nutrition. Metabolic functions, dietary requirements, deficiency symptoms and distribution of nutrients in feedstuffs.

**NTR 8233. Maternal, Infant and Child Nutrition. (3)** Three hours lecture. Nutritional needs during reproduction and growth; problems in nourishing women during the reproductive period, infants, and children; indices of growth and development. (Same as HS 8233).

**NTR 8243. Community Nutrition. (3)** (Prerequisite: HS 3213). Three hours lecture. Nutrition services and problems in the community.

Supervised experience in methods for determining and implementing action programs in nutrition education. (Same as HS 8243).

**NTR 8253. Nutrition and Food Science Research Techniques. (3)** Spring semester. One hour lecture. Six hours laboratory. Application of various instruments and techniques for assay of food and biological material. (Same as FST 8253).

**NTR 8261. Dietetic Internship Seminar. (1)** (Prerequisite: Admission into the School of Human Sciences Dietetic Internship/Graduate Studies Program). One hour lecture. Selection of current topics in foods, nutrition or dietetics and in-depth review of current literature for critical analysis presentation. (Same as HS 8261).

**NTR 8273. Dietetic Internship Capstone. (3)** (Prerequisite: Admission into the School of Human Sciences Dietetic Internship/Graduate Studies Program). Three hours lecture. Theoretical aspects of dietetics gained through the study of resources, technology, professional standards, and other factors that influence entry-level practice. (Same as HS 8273).

**NTR 8443. Avian Nutrition. (3)** (Prerequisite: NTR 4115/6115 or equivalent). Three hours lecture. Study of the nutrient functions, dietary relationships, deficiency symptoms, distribution in feedstuffs and quantitative requirements of nutrients.

**NTR 8463. Advanced Animal Nutrition. (3)** (Prerequisite: NTR 4115/6115 or prior approval from instructor). Two hours lecture. Two hours laboratory. Develop an understanding of nutritional physiology, metabolism, and utilization of nutrients by animal species.

**NTR 8473. Micro-Nutrient Nutrition. (3)** (Prerequisite: NTR 8114 or equivalent). Three hours lecture. Detailed study of functions, deficiency symptoms, dietary considerations necessary to the nutrition of fish, dogs, cats, horses, mink, rabbits, and laboratory animals.

**NTR 8990. Special Topics in Nutrition. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**NTR 9000. Dissertation Research and Dissertation.** Hours and credits to be arranged.

## Department of HEALTH, PHYSICAL EDUCATION, RECREATION and SPORT

Office: 216 McCarthy Gymnasium

Professors: Abadie, Hunt, Kirk (head); Associate Professor: Lamberth;  
Assistant Professors: Chromiak, Dohoney, Foxworth, Letter, Rukavina, Smith and Thompson;  
Instructors: Funderburk, Wiley, and Young.

**PE 1001. Racquetball. (1)** Two hours laboratory. Emphasis is on rules, knowledge, skill development, and team tactics necessary to successfully participate in an organized game.

**PE 1021. Basic Physical Fitness Concepts. (1)** Two hours laboratory. Basic knowledge, understandings and values of physical fitness. Emphasis on individualized fitness evaluation procedures and diversified program construction.

**PE 1041. Aerobics. (1)** Two hours laboratory. Assessment, development and maintenance of physical fitness through aerobic exercises to music.

**PE 1051. Beginning Karate. (1)** Two hours laboratory. The essential principles both physical and psychological will be stressed. Emphasis is placed on organization of karate techniques and training methods.

**PE 1071. Soccer. (1)** Two hours laboratory. Emphasis is on rules, knowledge, skill development, and team tactics necessary to successfully participate in an organized game.

**PE 1081. Beginning Golf. (1)** Two hours laboratory. Instruction and laboratory experience in the development of individual skills for participation in golf.

**PE 1091. Contemporary Dance. (1)** Two hours laboratory. A non-majors course designed to develop skills in contemporary dance routines.

**PE 1101. Karate for Intermediates. (1)** (Prerequisite: PE 1051 or prior Karate experience having attained the rank of Yellow Belt). Two hours laboratory. Current events of the American Karate world. Advanced free-fighting and self-defense techniques. Interpretation of forms.

**PE 1112. Teaching Team Sports. (2)** One hour lecture. Two hours laboratory. Theory of and participation in non-traditional and traditional team sports. Analysis of skills, discussion of developmental appropriateness, terms, basic rules and teaching strategies.

**PE 1121. Advanced Physical Development. (1)** Two hours laboratory. A continuation of PE 1111. This course is designed to further the understanding in the conceptual knowledge of fitness and physical conditioning and maintenance of human wellness. (May be taken up to four times for credit).

**PE 1122. Teaching Individual and Dual Sports. (2)** One hour lecture. Two hours laboratory. Theory of and participation in non-traditional and traditional individual and dual sports. Analysis of skills, discus-

sion of developmental appropriateness, terms, basic rules and teaching strategies.

**PE 1123. History and Appreciation of Dance. (3)** Two hours lecture, two hours laboratory. A course designed to acquaint students with the history of dance and to develop a greater sensitivity, appreciation and understanding of this art.

**PE 1131. Fitness Walking/Jogging. (1)** Two hours laboratory. An exercise and activity class emphasizing walking and/or jogging to develop and maintain fitness, weight control and flexibility.

**PE 1132. Teaching Lifetime Activities. (2)** One hour lecture. Two hours laboratory. Activities, methods and theories within outdoor education. Introduction of concepts, activities, technologies and teaching methods for strength training, aerobic conditioning, fitness assessment and stress management.

**PE 1142. Teaching Rhythms. (3)** One hour lecture. Two hours laboratory. Instruction, demonstration, skill development, and teaching techniques in the areas of square, folk, and contemporary dance.

**PE 1151. Teaching Gymnastics and Tumbling. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. Teaching methods for instructional procedure in gymnastics and tumbling. (May be taken up to four times for credit).

**PE 1181. Training Techniques for Physical Conditioning. (1)** Two hours laboratory. Provides the student with theoretical and laboratory experiences in the development of muscular strength, flexibility, and cardiovascular endurance. (May be taken up to four times for credit).

**PE 1213. Introduction to Exercise Science. (3)** Three hours lecture. This course is designed to provide students and overall understanding of the professions within Exercise Science.

**PE 1221. Volleyball. (1)** Two hours laboratory. Emphasis is on rules, knowledge, and team tactics necessary to successfully participate in an organized game.

**PE 1223. Personal Health. (3)** Three hours lecture. An introductory survey of the multiple dimensions of health. Focus is upon healthy behaviors across the lifespan as well as environmental and social influences.

**PE 1231. Modern Dance. (1)** (Prerequisite: Consent of Department Head). Two hours laboratory. Laboratory experience including a wide

range of fundamental exercises and techniques, movement patterns, and dance choreography.

**PE 1233. Introduction to Lifetime Leisure. (3)** Three hours lecture. A comprehensive examination of leisure from psychological, sociological, economical and historical contexts. Includes an exploration of individual and group activities appropriate for lifetime involvement.

**PE 1241. Tennis (1)** Two hours laboratory. Emphasis is on rules, knowledge, skill development, and team tactics necessary to successfully participate in an organized game.

**PE 1271. Fitness and Conditioning. (1)** Two hours laboratory. This course provides the student with necessary cognitive and laboratory experiences to make personal decisions specific to fitness and conditioning. (May be taken up to four times for credit).

**PE 1313. Introduction to Physical Education. (3)** Three hours lecture. Interpretation of the meaning of physical education based on the significant facts of the biological sciences.

**PE 1361. Strength Training. (1)** Two hours laboratory. Principles and practice of strength training with particular emphasis on specificity of design and management of load, repetitions, rate of exercise and recovery time.

**PE 1461. Badminton. (1)** Two hours laboratory. Emphasis is on rules, knowledge, skill development, and team tactics necessary to successfully participate in an organized game.

**PE 1471. Country and Western Dance. (1)** Two hours laboratory. The course provides a broad introduction to country and western dance and related activities which can be enjoyed throughout an individual's lifetime.

**PE 2001. Practicum in Health and Physical Education. (1)** Two hours laboratory. This course is designed to provide a laboratory experience for health and physical education majors in actual teaching situations.

**PE 2003. Foundations of Health Education. (3)** Three hours lecture. Introduction to the discipline of Health Education. Examination of fundamental concepts and required competencies of the health educator in a variety of settings.

**PE 2603. Medical Terminology. (3)** Three hours lecture. A working knowledge of terminology related to the human body through descriptive definitions, practical applications, and medical abbreviations will be developed.

**PE 2613. Exercise Electrocardiography. (3)** (Prerequisite: BIO 1004 or BIO 2014). Three hours lecture. Basic and intermediate electrocardiography including cardiac function, lead systems, rate, rhythm, axis, infarction, ischemia, hypertrophy and effects of cardiovascular drugs and exercise on ECG.

**PE 2990. Special Topics in Physical Education. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PE 3033. Basketball/Football Officials. (3)** Three hours lecture. A course designed to qualify officials for major sports officiating in Mississippi. Rules, rules interpretation, and mechanics of officiating for the major sports are covered.

**PE 3111. Advanced Military Physical Fitness. (1)** (Prerequisites: MS 3113, MS 3123, MS 4113, MS 4123). One hour laboratory. Develops the physical fitness required of an officer in the Army through emphasis of individual fitness programs and examination of the role of exercise/fitness. (May be taken up to four times for credit).

**PE 3123. Principles and Methods of Elementary School Health and Physical Education. (3)** Admission to Teacher Education required. Three hours lecture. Principles and methods of teaching health and physical education to elementary school children.

**PE 3133. Adapted Physical Education. (3)** (Prerequisite: Consent of the instructor). Two hours lecture. Two hours laboratory. A study of the psychomotor domain with emphasis on identifying handicapping problems and developing instructional strategies for remediating these problems.

**PE 3153. Methods of Elementary Physical Education. (3)** Three hours lecture. Designed to provide students with knowledge and practical experience that will enhance their effectiveness in teaching physical education to pre-school through fifth grade students.

**PE 3163. Principles and Methods of Secondary School Health and Physical Education. (3)** (Prerequisite: Senior standing and admission to Teacher Education). Three hours lecture. This course is designed to emphasize contemporary teaching methods in all areas of health and physical education in the secondary school.

**PE 3173. Measurement and Evaluation in Exercise Science. (3)** Three hours lecture. Emphasis is placed on fitness assessment and statistical interpretation of data related to fitness.

**PE 3183. Psychology of Coaching. (3)** Three hours lecture. Psychological principles applied to athletic coaching.

**PE 3213. Emergency Health Care. (3)** Three hours lecture. First Aid procedures which include shock, wounds, CPR, resuscitation, poisoning, transportation, hemorrhaging, splinting, burns, respiratory problems, etc. are taught and practiced.

**PE 3223. Motor Development and Movement. (3)** (Prerequisite: PE 3123 and BIO 1004). Two hours lecture. Two hours laboratory. A study of motor development, movement and the child-centered approach to teaching movement in grades K-6.

**PE 3263. Basic Principles of Health Promotion. (3)** (Prerequisite: PE 2003 Foundations of Health Education). Three hours lecture. Basic concepts of health promotion. Role of Health/Fitness professionals in developing wellness/prevention oriented interventions to promote healthy lifestyles.

**PE 3273. Athletic Training I. (3)** (Prerequisites: BIO 1004 or 2004). Two hours lecture. Two hours laboratory. Prevention and treatment of injuries prevalent in athletics, physical education and adult fitness programs.

**PE 3303. Physiology of Exercise. (3)** (Prerequisite: BIO 1004 or BIO 2014). Two hours lecture. Two hours laboratory. Functions of the body in muscular work; physiological aspects of training, physical fitness and fatigue.

**PE 3422. Coaching Football. (2)** Two hours lecture. Theoretical study of football fundamentals, positions, styles of offensive and defensive rules, signal methods, generalship, and team play.

**PE 3432. Coaching Basketball. (2)** Two hours lecture. Theoretical study of basketball from a coaching standpoint; fundamental and team play; methods of teaching fundamentals stressed; team organization.

**PE 3433. General Safety Methods. (3)** (Prerequisite: Junior standing). Three hours lecture. Analysis of accident causes and methods of prevention. Home, school, industry, farm, water, pedestrian problems considered.

**PE 3452. Coaching Softball and Baseball. (2)** Two hours lecture. Theoretical study of baseball and softball fundamentals and coaching techniques.

**PE 3623. Applied Exercise Physiology. (3)** (Prerequisite: PE 3303). Three hours lecture. Study of the application of mechanisms of metabolic control, force production, and cardiorespiratory support to acute and chronic adaptations of exercise.

**PE 3633. Rehabilitation Techniques in Sport. (3)** (Prerequisite: PE 3273). Two hours lecture. Two hours laboratory. Investigate aspects of physiotherapy utilized in treatment of injuries. Course will be supported with assistance of Oktibbeha County Hospital.

**PE 3643. Applied Anatomy. (3)** (Prerequisite: BIO 1004 or 2004). Three hours lecture. Provide in-depth analysis of muscle structure, muscle function, adaption of muscle to resistance training, and effects of disuse.

**PE 4000. Directed Individual Study.** Hours and credits to be arranged.

**PE 4113/6113. Fitness Programs and Testing Procedures. (3)** (Prerequisite: PE 3303 and PE 3173). Two hours lecture. Two hours laboratory. Provides study of and practice in conducting adult fitness programs and fitness testing procedures.

**PE 4133. Exercise Programs for Special Populations. (3)** Three hours lecture. This course describes the methods of prescribing exercise programs for individuals with special medical conditions.

**PE 4153/6153. Training Techniques for Exercise and Sport. (3)** (Prerequisite: PE 3303). Three hours lecture. Training techniques used for exercise and sport and their acute and chronic effect upon the body.

**PE 4173. Tests and Measurements in Health and Physical Education. (3)** Admission to Teacher Education required. Three hours lecture. Test construction, test administration, and statistical procedures for evaluating test results in health and physical education.

**PE 4183. Exercise and Weight Control. (3)** Two hours lecture. Two hours laboratory. The course describes the relationship between physical activity and nutrition for the maintenance of ideal body weight and optimal health throughout life.

**PE 4210. Fitness Management Internship. (1-9)** (Prerequisite: PE 4113; senior status, five hours of PE activity electives). Hours and credits to be arranged. A supervised observation and teaching experience in a fitness/health enhancement facility.

**PE 4233. Biomechanics. (3)** (Prerequisites: BIO 1004 or BIO 2004). Three hours lecture. Analysis of body mechanics; relationship and application of principles of movement to teaching physical education.

**PE 4313-4316. Sports Communication Internship. (3,6)** (Prerequisite: Consent of instructor). Hours and credits to be arranged. A su-

ervised observation and practicum experience in a sports communication setting.

**PE 4410. Clinical Exercise Physiology Internship. (1-9)** (Prerequisite: PE 2603, PE 2613, PE 3303, PE 3623, PE 3633, PE 3643, PE 4113, PE 4133; senior status). A supervised observation and teaching experience in clinical exercise physiology setting.

**PE 4413. Basic Driver and Traffic Safety Education I. (3)** (Prerequisite: Valid driver's license, two years driving experience). Two hours lecture. Two hours laboratory. Critical analysis of traffic accidents, attitude factors, essential knowledge of automobile operations and traffic laws and regulations; laboratory experiences for developing driving skills.

**PE 4423. Driver and Traffic Education Methods II. (3)** (Prerequisite: PE 4413). Two hours lecture. Two hours laboratory. Professional preparation of college students who plan to teach driver education in secondary schools; methods of teaching and administering program; scheduling, financing, and public relations.

**PE 4603. Exercise in Health and Disease. (3)** (Prerequisites: PE 3303 and PE 2603). Three hours lecture. Focus on the pathophysiology and risk factors of diseases and associated health problems attributable to physical inactivity.

**PE 4853. Motor Learning and Skill Analysis. (3)** Three hours lecture. Designed to provide students with an understanding of how movement is produced and controlled and the principles that underlie the learning of motor skills.

**PE 4873. Professional Seminar in Physical Education and Athletics. (3)** (Prerequisites: Admission to Teacher Education and senior standing). Three hours lecture. A seminar dealing with legal, professional, administrative, and curriculum issues as they relate to physical education and athletics in the schools.

**PE 4883. School Health Education (3)** (Prerequisite: PE 2003 Foundations of Health Education or consent of instructor). Three hours lecture. Preparation for prospective teachers in planning, implementing and evaluating all aspects of comprehensive school health education.

**PE 4886, 4896. Student Teaching in Physical Education. (6,6)** (Both courses to be taken concurrently). (Prerequisites: Admission to Teacher Education and senior standing). Supervised observation and directed teaching in respective field of endorsement.

**PE 4990/6990. Special Topics in Physical Education. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PE 7000. Directed Individual Study.** Hours and credits to be arranged.

**PE 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**PE 8123. Physical Education and Sport Programs.(3)** Three hours lecture. Study of principles, problems, human relationships, and procedures in supervision. Involves theories of leadership, programs, and philosophies of the profession.

**PE 8143. Problems in Health Education. (3)** Three hours lecture. Includes current information relating to various health problems in our society. Stresses methods of prevention and wellness at different levels of curriculum organization.

**PE 8153. Wellness and Aging. (3)** (Prerequisites: PE 3303 or PSY 4403/6403 or consent of Department). Three hours lecture. A study designed to prepare practitioners to initiate, develop, and conduct programs in wellness and movement activities for the enrichment of life in older populations.

**PE 8163. Seminar in Physical Education. (3)** The course gives a complete review of current literature in Health, Physical Education, and Recreation.

**PE 8213. Problems in the Administration of Athletics. (3)** Three hours lecture. Interscholastic athletic program; place of athletics in education, program organization and administration, budget, equipment, facilities, public relations, legal liability, and eligibility and contest regulations.

**PE 8243. Cardiorespiratory Exercise Physiology. (3)** (Prerequisite: PE 3303). Three hours lecture. Advanced principles of cardiovascular and respiratory physiology, with special emphasis on the physiological responses of these systems to acute and chronic exercise.

**PE 8253. Doping and Supplemental Use in Sports. (3)** (Prerequisite: PE 3303 or equivalent, or consent of instructor). Three hours lecture. Examination of the pharmacological and nutritional agents used to enhance muscular development and athletic performance. Examination of commonly abused recreational drugs.

**PE 8263. Exercise Biochemistry. (3)** (Prerequisites: PE 3303). Three hours lecture. Functioning, interrelationships and adaptations of the systems of the body during acute and chronic exercise.

**PE 8273. Laboratory Instrumentation. (3)** (Prerequisite: PE 3303). Six hours laboratory. A course in the function, calibration and operation of physical education laboratory instruments.

**PE 8283. Environmental Exercise Physiology. (3)** (Prerequisite: PE 3303; suggested prerequisite or co-requisite PE 8243). Three hours lecture. Advanced principles and applications in exercise physiology including responses to acute exercise and chronic training in the heat, cold, and at high and low pressures.

**PE 8303. Research in Exercise Science and Sport. (3)** A study of research methods and techniques; the preparation of the research proposal specific to exercise science and sport; and familiarization with APA writing guidelines.

**PE 8313. Interpretation of Data in Exercise Science and Sport. (3)** Three hours lecture. Measurement, analysis and interpretation of data in exercise science and sport.

**PE 8323. Introductory Concepts Basic to Cardiac Rehabilitation. (3)** (Prerequisite: PE 3303). Two hours lecture. Two hours laboratory. An overview of the expanding field of cardiac rehabilitation and the opportunities for the physical educator.

**PE 8423. Graded Exercise Testing. (3)** (Prerequisite: PE 3303). Two hours lecture. Two hours laboratory. Methods of supervising graded exercise testing, including interpretation of basic electrocardiography.

**PE 8513. Theory and Practice of Health Education. (3)** Three hours lecture. Historical perspectives and current status of health education/promotion. Fundamental constructs of the discipline in school, community, and work site settings.

**PE 8523. Health Promotion Techniques. (3)** Three hours lecture. Examination of techniques utilized in delivery of health promotion interventions. Emphasizes use of technology in development of activities suitable for diverse audiences and settings.

**PE 8543. Health Education for Diverse Populations. (3)** Three hours lecture. This course is designed to help students identify and develop programs to overcome the health disparities that exist in diverse populations.

**PE 8553. Behavioral Epidemiology. (3)** Three hours lecture. Behavioral and social environmental issues related to premature morbidity and mortality patterns. Current research literature and application of epidemiological principles to health education/promotion.

**PE 8613. Design and Administration of Health Promotion Programs. (3)** Three hours lecture. Principles of health promotion planning models applicable to school, community, and work site programs. Investigation of existing programs and current literature.

**PE 8623. Seminar in School Health. (3)** Three hours seminar. Examination of the role of the health educator in the Coordinated School Health Program. Review of current curricular approaches and issues in school health.

**PE 8653. Implementation and Evaluation of Health Promotion Programs. (3)** Three hours lecture. Development and application of evaluation protocols for health promotion programs. Process, impact and outcome measures are examined.

**PE 8710. Internship. (3-6)** (Prerequisite: Consent of the Department Head). Opportunity for practical experience in business, fitness/wellness and sports organizations.

**PE 8803. Sport Law (3)** Three hours lecture. The analysis and application of the legal foundations, concepts and issues impacting the sports industry.

**PE 8823. The Sport Product. (3)** Three hours lecture. An examination of the uniqueness of the sport product and the importance of effective advancement and visibility of the sport product.

**PE 8833. Event and Facility Management. (3)** Three hours lecture. The principles and applications of management, design, and maintenance concepts as they apply to indoor and outdoor events and facilities.

**PE 8883. Sports Ethics. (3)** Three hours lecture. Philosophical exploration in the recognition, analysis, and implementation of ethical thought and the ethical decision making process within the multivalued contexts of the sports industry.

**PE 8990. Special Topics in Physical Education. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**Department of PHYSICS and ASTRONOMY**

Office: Hilbun Hall

Professors Novotny (Head), Bauman, Cook, Ferguson, Foley, Harpole, Koshel, Lestrade, Ma, Monts, and Su;  
 Professors Emeriti Croft, Crow, Denson, Howell, Jones and Rundel;  
 Associate Professors Arnoldus, and Winger;  
 Assistant Professors Clay, Dunne, Ermer and Kim;  
 Adjunct Lindner, Luthe, Singh, Wang, and Winstead;  
 Instructor/Instructional Support Coordinator Worthy

When both PHY 2414 and PHY 2424 are taken at the same community college they will equate to PH 1113, PH 1123 and PH 1133.

When both PHY 2514/2515 and PHY 2524/2525 are taken at the same community college they will equate to PH 2213, PH 2223, and PH 2233.

**PH 1001. Introduction to Physics. (1)** (Prerequisite: Consent of instructor). One hour lecture. Only open to Freshmen and transfer physics majors or prospective majors. Introduction to the profession. Historical perspectives. Use of microcomputers in physics.

**PH 1011. Physical Science Laboratory 1. (1)** (Prerequisites or corequisites: PH 1013 or PH 1063). Two hours laboratory. Experiments in mechanics, sound, light, electricity, and astronomy.

**PH 1013. Physical Science Survey 1. (3)** (Counts toward teacher certification in general science, but not physics/chemistry). Three hours lecture. Topics include mechanics, sound, light, electricity, and astronomy. Recommended laboratory PH 1011.

**PH 1021. Physical Science Laboratory 2. (1)** (Prerequisite or corequisite: PH 1023) Two hours laboratory. Experiments in chemistry, heat, meteorology, and geology.

**PH 1023. Physical Science Survey 2. (3)** (Counts toward teacher certification in general science, but not in physics/chemistry). Three hours lecture. Topics include chemistry, heat, meteorology, and geology. Recommended laboratory PH 1021.

**PH 1063. Descriptive Astronomy. (3)** Three hours lecture. Night observation. The solar system; description and evolution of stars and the universe; methods of obtaining astronomical information; applications of astronomical knowledge.

**PH 1113. General Physics. (3)** (Prerequisites: MA 1313 and MA 1323 or registration in MA 1713). Two hours lecture, one hour drill, two hours laboratory. Noncalculus-based study of the fundamental laws of mechanics, fluids, and relativity.

**PH 1123. General Physics. (3)** (Prerequisite: PH 1113). Two hours lecture, one hour drill, two hours laboratory. Noncalculus-based study of thermal physics, waves, sound, and light.

**PH 1133. General Physics. (3)** (Prerequisite: PH 1113). Two hours lecture, one hour drill, two hours laboratory. Noncalculus-based study of electricity and magnetism and selected topics in modern physics.

**PH 2213. Physics I. (3)** (Prerequisite: MA 1713). Three hours lecture. Calculus-based course emphasizing Newtonian mechanics and conservation laws. Honors section also available through invitation only.

**PH 2223. Physics II. (3)** (Prerequisites: PH 2213 and MA 1723). Two hours lecture, one hour recitation, two hours laboratory. Calculus-based introduction to gravitation, electricity and magnetism. Laboratory emphasizes concepts of force and motion, conservation laws, and simple electrical circuits. Honors section also available through invitation only.

**PH 2233. Physics III. (3)** (Prerequisite: PH 2223). Two hours lecture, one hour recitation, two hours laboratory. Calculus-based course in simple harmonic motion, waves, optics and an introduction to modern physics. Laboratory emphasizes optics and electronics.

**PH 2990. Special Topics in Physics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PH 3063. Astrophysics. (3)** (Corequisite: PH 3613 or consent of instructor). Three hours lecture. Quantitative treatment of astronomical topics. Stellar evolution, black holes, neutron stars, gamma-ray bursts, Newtonian and relativistic cosmologies, Big Bang.

**PH 3613. Modern Physics. (3)** (Prerequisites: PH 2233 or PH 1133; MA 2733, or registration in MA 2733). Three hours lecture. Special relativity, quantum physics, atomic, nuclear, and solid state physics.

**PH 4000. Directed Individual Study.** Hours and credits to be arranged.

**PH 4013/6013. Selected Topics in Physics for Teachers. (3)** Two hours class work, three hours laboratory. For teachers. Basic concepts of physics. Will include discussion and clarification of material from currently adopted public school textbooks.

**PH 4023/6023. Astronomy for Teachers. (3)** Two hours class work. Three hours laboratory. For teachers. An introduction to the physical universe with emphasis on observational astronomy.

**PH 4033/6033. Demonstrations and Concepts for Physics Teachers I. (3)** (Prerequisite: Consent of instructor). Two hours lecture, three hours laboratory. Topics are those normally covered in first semester high school physics. Equal emphasis on theory, problems, demonstrations, and laboratory.

**PH 4043/6043. Demonstrations and Concepts for Physics Teachers II. (3)** (Prerequisite: Consent of instructor). Two hours lecture, three hours laboratory. Topics are those normally covered in second semester high school physics. Equal emphasis on theory, problems, demonstrations, and laboratory.

**PH 4113/6113. Electronic Circuits for Scientists. (3)** (Prerequisites: PH 1133 or PH 2223 and MA 2733). Two hours lecture and three hours laboratory. DC and AC circuits. Resistors, capacitors, inductors, diodes and transistors in basic analog circuits. Topics include filters, tuned circuits, power supplies, amplifiers and oscillators.

**PH 4143/6143. Intermediate Laboratory. (3)** (Prerequisite: Junior standing). Six hours laboratory. Data analysis. Experiments in classical and modern physics. Scientific report writing.

**PH 4152/6152. Modern Physics Laboratory. (2)** (Prerequisite: PH 4143/6143). Six hours laboratory. Scientific report writing. Experiments in modern physics, optics and classical physics.

**PH 4213/6213. Intermediate Mechanics. (3)** (Prerequisites: PH 1133 or PH 2233 and MA 2733). Three hours lecture. Plane statics and dynamics of particles and systems of particles with emphasis on both derivation and application of principles involved.

**PH 4223/6223. Intermediate Mechanics. (3)** (Prerequisite: PH 4213/6213). Three hours lecture. Statics and dynamics of particles in three dimensional space using vector notation; Lagrange's equations; introduction to the special theory of relativity.

**PH 4323/6323. Electromagnetic Fields I. (3)** (Prerequisites: PH 1133 or PH 2233 and MA 2743). Three hours lecture. Electrostatics, dielectrics, electric current, magnetostatics, electromagnetic induction, magnetic properties of matter.

**PH 4333/6333. Electromagnetic Fields II. (3)** (Prerequisite: PH 4323/6323). Three hours lecture. Maxwell's equations, propagation of electromagnetic waves in free space and in matter, reflection and refraction, radiation.

**PH 4413/6413. Thermal Physics. (3)** (Prerequisites: PH 3613 and MA 2743). Three hours lecture. Thermodynamics, kinetic theory, classical and quantum statistical mechanics. Applications to low temperature physics, solid-state physics and plasma physics.

**PH 4513/6513. Intermediate Optics. (3)** (Prerequisites: PH 1123 or PH 2233 and MA 2733). Three hours lecture. Geometrical optics and physical optics.

**PH 4613/6613. Nuclear and Particle Physics. (3)** (Prerequisite: PH 3613). Three hours lecture. Special theory of relativity; nuclear structure; radioactivity; nuclear reactions; nuclear forces; fission; fusion; high energy particle and astrophysics. Experimental apparatuses and techniques.

**PH 4713/6713. Introduction to Quantum Mechanics. (3)** (Prerequisites: PH 3613 and MA 3253). Three hours lecture. Principles of quantum mechanics, Heisenberg uncertainty principle, angular momentum; the Schrödinger wave equation in one and three dimensions; the one-electron atom.

**PH 4723/6723. Applications of Quantum Mechanics. (3)** (Prerequisite: PH 4713/6713). Three hours lecture. Introduction to perturbation theory and quantum statistics. Topics selected from multi-electron atoms, diatomic molecules, solid state and nuclear physics.

**PH 4813/6813. Introduction to Solid State Physics. (3)** (Prerequisite: PH 3613). Three hours lecture. Crystal structure, crystal diffraction and the reciprocal lattice, crystal binding, free electron gas, energy bands, and semiconductors.

**PH 4990/6990. Special Topics in Physics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PH 7000. Directed Individual Study.** Hours and credits to be arranged.

**PH 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**PH 8013. Modern Topics for Physics Teachers. (3)** (Prerequisites: Consent of instructor). Two hours lecture, three hours laboratory. Historical development of special relativity and quantum physics with particular emphasis on topics and experiments in atomic and nuclear physics.

**PH 8213. Mechanics. (3)** (Prerequisite: A good undergraduate training in physics and mathematics—consent of instructor). Coordinate systems and transformations, tensors, and matrices. Particle dynamics, variational principles, Lagrange's and Hamilton's equations, rigid body motion, special relativity in mechanics.

**PH 8233. Methods of Theoretical Physics I. (3)** (Prerequisite: Consent of instructor). Topics will vary, but may include linear vector spaces, tensor analysis, group theory, function space and orthogonal polynomials.

**PH 8243. Methods of Theoretical Physics II. (3)** (Prerequisite: PH 8233). Topics will vary but may include analytic functions, Fourier analysis, Green's functions, integral transforms, partial differential equations and integral equations.

**PH 8313. Electromagnetic Theory (3)** (Prerequisite: PH 4333 or equivalent). Maxwell's theory of electromagnetism. Boundary value problems in electrostatics, static multipole moments, theory of dielectrics, magnetostatics, plane electromagnetic waves, simple radiating systems. (Same as ECE 8313).

**PH 8513. Statistical Mechanics. (3)** (Prerequisites: PH 4713 and PH 4413). Classical and quantum statistical mechanics and statistical interpretation of thermodynamic quantities.

**PH 8613. Nuclear Physics I. (3)** (Prerequisite: PH 4723). Nuclear two-body problem and nuclear forces. Interpretation of experimental

data through a study of nuclear models. Nuclear reactions and spectroscopy.

**PH 8623. Nuclear Physics II. (3)** (Prerequisites: PH 8613, PH 8743). Elementary particle theory and interpretation of experimental data.

**PH 8743. Quantum Mechanics I. (3)** (Prerequisites: PH 4723 and MA 3313). Schrödinger theory, spherically symmetric systems, matrix mechanics, angular momentum and spin, time-independent perturbation theory.

**PH 8753. Quantum Mechanics II. (3)** (Prerequisite: PH 8743). Time dependent perturbation theory, identical particles, theory of scattering, quantum-statistical mechanics, introduction of relativistic quantum mechanics, quantum electrodynamics.

**PH 8803. Molecular Structure. (3)** (Prerequisites: PH 8743). Theory of rotational, vibrational and electronic spectra of molecules. Molecular structure and determination of molecular constants.

**PH 8813. Solid State Physics. (3)** (Prerequisite: PH 8743). Theoretical interpretation of thermal, electric, and magnetic properties of solids.

**PH 8990. Special Topics in Physics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PH 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

## Department of PHILOSOPHY and RELIGION

Office: 29-30 President Circle

Professors Seger, and Jacobs;  
Associate Professors Clifford and Holt;  
Assistant Professors Estes, Hardin, and Mullen

**PHI 1103. Introduction to Philosophy. (3)** Three hours lecture. An introduction to the major ideas and methods of philosophy. At least one philosophical classic is read, usually one suitable for orientation purposes. Honors section available through invitation.

**PHI 1113. Introduction to Logic. (3)** Three hours lecture. A development of practical ability in the major forms of valid argumentation concluding with a consideration of the universal and existential operators.

**PHI 1123. Introduction to Ethics. (3)** Three hours lecture. A study of the specific considerations, such as facts, feelings, principles, values and conflicts, which influence the making of concrete moral decisions.

**PHI 2123. Medical Ethics. (3)** Three hours lecture. A philosophical study of situations requiring ethical decision making in the area of medicine. (Not open to freshmen).

**PHI 2133. Introduction to Aesthetics. (3)** Three hours lecture. Theories of art and the nature of beauty, designed to enhance the student's sensitivity and cultural awareness.

**PHI 2990. Special Topics in Philosophy. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PHI 3013. Business Ethics. (3)** Three hours lecture. A philosophical exploration of how to recognize, analyze, and implement ethical decisions within the multivalued contexts of the various fields of business.

**PHI 3023. History of Western Philosophy: Part I. (3)** Three hours lecture. A survey of major figures and movements from early Greek philosophy to the late Middle Ages.

**PHI 3033. History of Western Philosophy: Part II. (3)** Three hours lecture. A survey of major figures from the Renaissance through contemporary philosophy.

**PHI 3103. Symbolic Logic. (3)** (Prerequisite: PHI 1113 or equivalent). Three hours lecture. An analysis of the properties of formal systems along with special problems in the philosophy of logic.

**PHI 3113. Philosophy of Law. (3)** Three hours lecture. A philosophical analysis of the concepts of law, liberty, justice, responsibility, and punishment from the rival ethical perspectives of deterrence and retribution.

**PHI 3123. Philosophy of Religion. (3)** (Prerequisite: Three hours of philosophy). Three hours lecture. A critical inquiry into the rational justification of central theistic beliefs, with emphasis on the traditional philosophical arguments for and against the existence of God. (Same as REL 3123).

**PHI 3133. Seminar in Philosophy. (3)** Three hours lecture. (Prerequisites: Completion of fifteen hours of PHI courses, including PHI

1113). The study of selected philosophy essays and practice in philosophical composition.

**PHI 3143. Nineteenth - Century Philosophy. (3)** (Prerequisites: Three hours of philosophy or Junior standing or consent of instructor). Three hours lecture. A study of the major philosophical movements and figures of the nineteenth century.

**PHI 3213. Syllogism. (3)** (Prerequisite: PHI 1113). Three hours lecture. A concentrated study of the categorical syllogism, with emphasis on recent extensions of it.

**PHI 4000. Directed Individual Study.** (Prerequisite: PHI 1103, PHI 1113, or PHI 1123). Hours and credits to be arranged.

**PHI 4123/6123. Existentialism and Postmodernism. (3)** (Prerequisite: 3 hours PHI or junior standing). Three hours lecture. A study of the 20th century philosophical movements of existentialism and postmodernism.

**PHI 4143/6143. Philosophy of Science. (3)** Three hours lecture. An analytical examination of the essential ingredients of science concluding with the effect of scientific values on contemporary culture.

**PHI 4153/6153. American Philosophy. (3)** (Prerequisite: Junior standing). Three hours lecture. Speculative and practical philosophies beginning with the early colonial settlers, and terminating with pragmatism, Santayana and Whitehead.

**PHI 4163/6163. Research Ethics. (3)** Three hours lecture. This course examines ethical issues that are generated by the tensional balancing of personal consideration against public good in the practice of scientific research.

**PHI 4213/6213. Theories of Inquiry. (3)** (Prerequisite: Junior/Senior standing or consent of instructor). Three hours lecture. A historical and topical examination of rival traditions and theories of inquiry. Special attention will be paid to the concepts of knowledge, warrant, and truth.

**PHI 4313/6313. Feminist Interpretations of Western Social and Political Philosophy. (3)** (Prerequisite: Junior/senior standing or consent of instructor). Three hours lecture. A survey of modern and contemporary social and political philosophical texts, which emphasizes recent feminist interpretations, analyses, and criticism of traditional social and political philosophy.

**PHI 4423/6423. Process Philosophy. (3)** Three hours lecture. A comprehensive study of the philosophy of Alfred North Whitehead and his influence on modern philosophy.

**PHI 4990/6990. Special Topics in Philosophy. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PHI 7000. Directed Individual Study.** Hours and credits to be arranged.

**PHI 8990. Special Topics in Philosophy. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer develop-

ing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

## ANIMAL PHYSIOLOGY

(For the interdisciplinary graduate programs in Animal Physiology, consult College of Agriculture and Life Sciences section of this *Bulletin*, and the *Graduate Bulletin*.)

**PHY 6114. Cellular Physiology. (4)** (Same as BIO 4114/6114).

**PHY 6514. Animal Physiology. (4)** (Same as BIO 4514/6514).

**PHY 6611. Practice in Physiology of Reproduction.** (Prerequisite: ADS 4613/6613 or taken concurrently). (Same as ADS 4611/6611).

**PHY 6623. Physiology of Lactation. (3)** (Prerequisite: VS 3014 or BIO 1504). (Same as ADS 4623/6623).

**PHY 6613. Physiology of Reproduction. (3)** (Prerequisite: BIO 1504 or VS 3014). (Same as ADS 4613/6613).

**PHY 6843. Poultry Physiology. (3)** (Prerequisite: PO 4833/6833 or consent of instructor). Two hours lecture. Two hours laboratory. Physiology of the fowl with emphasis on integration of body functions. (Same as PO 6843).

**PHY 8000. Thesis Research/Thesis.**

**PHY 8133. Endocrinology (3)** Three hours lecture. Study of factors by which cells communicate: the traditional endocrine system, autocrine, paracrine and neurocrine secretion. Physiological and genetic control of synthesis and secretion.

**PHY 8243. Advanced Physiology of Reproduction. (3)** (Prerequisite: ADS 4613/6613). (Same as ADS 8243).

**PHY 8333. Advanced Toxicology. (3)** (Prerequisite: EPP 4543/6543 or elementary biochemistry). (Same as EPP 8333).

**PHY 8433. Bone, Muscle and Fat Deposition in Animals. (3)** (Prerequisite: BCH 4613/6613). (Same as ADS 8433).

**PHY 8623. Physiology of Digestion and Metabolism. (3)** (Prerequisite: CH 4523/6523). (Same as PO 8823).

**PHY 8633. Homeostatic Regulations and Physiological Stress. (3)** Prerequisites: PHY 8133 and BIO 4514/6514). (Same as ADS 8633).

**PHY 8811-8841. Animal Physiology Seminar. (1)** Four one-hour seminars.

**PHY 8990. Special Topics in Physiology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PHY 9000. Dissertation Research/Dissertation.**

## Department of POULTRY SCIENCE

Office: 114 Hill Poultry Science

Professors Morgan (Head), Chen, Hargis\*, Lott, May\*, Peebles, Sadler\*, Thaxton and Vizzier

Associate Professors Chamblee, Kidd and McDaniel;

Assistant Professors Branton\* and Fritts

**PO 2990. Special Topics in Poultry. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PO 3011-3021. Seminar. (1)** One hour lecture. Preparation and presentation of specially assigned current problems in poultry science.

**PO 3103. Genetics I. (3)**. (Prerequisites: MA 1313, BIO 1504, or BIO 1203, or equivalents). Two hours lecture. Two hours laboratory. Principles of heredity, genetic material, and gene expressions. (Same as BIO 3103, GNS 3103).

**PO 3313. Commercial Poultry Production. (3)** Three hours lecture. An introduction to practical management problems encountered in the production of commercial eggs, broiler production, and breeding flocks.

**PO 3323. Poultry Judging. (3)** Two hours lecture. Two hours laboratory. Breed type and variety characteristics including production and exhibition qualities: judging live, dressed poultry, poultry products; organization and operation of poultry contests and shows.

**PO 3333. Advanced Poultry Judging. (3)** Two hours lecture. Two hours laboratory. Advanced study of breed type and characteristics: intensified training in judging for production and exhibition qualities.

**PO 3353. Poultry Production Internship. (3)** (Prerequisite: Consent of instructor). Structured, progressive experiential learning with the live production division of a poultry integrator.

**PO 3363. Poultry Processing Internship. (3)** (Prerequisite: Consent of instructor). Structured, progressive experiential learning with the processing division of a poultry integrator.

**PO 4000. Directed Individual Study.** Hours and credits to be arranged.

**PO 4031-4041. Seminar. (1)** One hour lecture. Preparation and presentation of specially assigned current problems in poultry science.

**PO 4313/6313. Management of Commercial Layers. (3)** Three hours lecture. Management of laying flocks as related to production of edible eggs; including housing, cage design, equipment, feeding techniques, lighting, molting and other factors involved with efficient production.

**PO 4323/6323. Management of Broiler Breeders. (3)** Three hours lecture. Farm layout, housing, equipment, management of laying and breeding flocks; rearing of pullets, feeding applications; other economic factors relating to efficient production.

**PO 4333/6333. Broiler Production. (3)** Three hours lecture. Practical management problems encountered in the production of broilers in-

cluding breeding, housing, brooding, diseases, and feeding; field trips to intensified broiler areas.

**PO 4373. Hatchery Management Laboratory. (3)** Six hours laboratory. Fundamental principles of hatchery design, incubator layout, ventilation and humidity control, fertility and hatchability problems that relate to hatching chicks.

**PO 4413/6413. Poultry Nutrition. (3)** (Prerequisite: CH 2503 and PO 3313 or equivalents). three hours lecture. Study of the digestion, absorption, and metabolism of nutrients in avian species. Special emphasis is given to practical nutritional needs of commercial poultry flocks.

**PO 4423/6423. Feed Manufacturing. (3)** Two hours lecture. Two hours laboratory. Mill design and equipment; procurement, storage and quality control for ingredients and complete feeds; formulation of practical type poultry rations. (Same as NTR 6423).

**PO 4513/6513. Poultry Processing. (3)** Two hours lecture. Two hours laboratory. Operation and study of modern processing equipment; grading poultry and eggs; killing, dressing, eviscerating, and packaging poultry; studying methods of retail and wholesale marketing. (Same as FST 4513/6513).

**PO 4523/6523. Commercial Broiler Processing Technology. (3)** Three hours lecture. Study of preparation of live broiler chickens for retail sales, including all pertinent technology, product flow, equipment and applicable regulations.

**PO 4833/6833. Poultry Anatomy. (3)** Two hours lecture. Two hours laboratory. Anatomy of the fowl with emphasis on morphology and organization of the avian body structures.

**PO 4990/6990. Special Topics in Poultry. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PO 4843/6843. Poultry Physiology. (3)** (Prerequisites: PO 4833/6833 or consent of instructor). Two hours lecture. Two hours laboratory. Physiology of the fowl with emphasis on integration of body functions. (Same as PHY 6843).

**PO 7000. Directed Individual Study.** Hours and credits to be arranged.

**PO 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**PO 8513. Poultry Food Science Readings. (3)** (Prerequisite: PO 6513 or 3 hours in related courses offered in Animal Science, Dairy Science or Horticulture). One hour lecture. Six hours library research weekly. An intensive study of poultry food science literature dealing with

chemical, microbial, physical and organoleptic attributes of eggs and poultry meats. (Same as FST 8513).

**PO 8823. Physiology of Digestion and Metabolism. (3)** (Prerequisite: CH 4523/6523). Three hours lecture. The chemistry and physiology of digestion and absorption; the fate of absorbed products in the body. (Same as PHY 8823).

### Master of Public Policy and Administration

(For departmental information, see Department of POLITICAL SCIENCE)

**PPA 7000. Directed Individual Study.** Hours and credits to be arranged.

**PPA 8103. Seminar in Public Administration. (3)** (Prerequisite: consent of instructor). Detailed examination of the major elements of the field of public administration, with particular emphasis on emerging trends in the field.

**PPA 8123. State Government Administration. (3)** Seminar in the practice and principles of state government administration, including judicial and legislative administration.

**PPA 8133. City and County Management. (3)** Seminar focus on small town and county management in quasi-bureaucratic settings. Detailed consideration of problem solving capabilities as they relate to different forms of local government structure.

**PPA 8143. Civil Rights and Affirmative Action. (3)** (Prerequisite: consent of the instructor). A seminar which examines the various civil rights laws and acts and court decisions related to affirmative action in the workplace and public policy.

**PPA 8153. Seminar in Privatization. (3)** (Prerequisite: Consent of instructor). Three hours lecture. Examination of the theoretical and practical issues of public-private partnerships.

**PPA 8193. Seminar in Intergovernmental Relations. (3)** (Prerequisite: 9 hours of graduate work). Three hours lecture. Examines the current day functioning of the American federal system. Focuses upon national-state, national-local, interstate, state-local and interlocal relationships as well as fiscal federalism.

**PPA 8400. Public Administration Internship. (1-6)** Hours and credits to be arranged. (Prerequisite: Consent of instructor). Individual work experience under faculty guidance in a governmental or public agency. Scholarly paper on approved topic required. Student evaluations are assigned on satisfactory/unsatisfactory basis.

**PPA 8703. Government Organization and Administrative Theory. (3)** Detailed survey of organization theories and managerial techniques as they relate to the public sector.

**PPA 8713. Public Personnel Management. (3)** Course considers major developments in the issues and management practices affecting personnel such as affirmative action, unions, and civil service reforms.

**PPA 8723. Public Budgeting and Financial Management. (3)** Analysis of current financial and budgetary techniques as they apply to the public sector. Capital budgeting, debt administration, and financial management.

**PPA 8733. Public Program Evaluation. (3)** Techniques and analytical methods of assessing governmental program success. Special emphasis will be given to program designs, data collection and quantitative applications.

**PPA 8743. Administrative Law. (3)** (Prerequisite: PS 4703/6703). Three hours lecture. An environmental study of the legal nature and effect of policies and attitudes of government toward business, especially the power and limitations of regulatory agencies.

**PPA 8803. Research Methods for Public Affairs. (3)** Stress on research designs and methods, survey research and other techniques and measuring data. focus on applied approaches for mathematically analyzing governmental data. (Same as PS 8803).

**PPA 8833. Systems in Public Administration. (3)** (Prerequisite: BIS 1013, CSE 1013, TKT 1273, or equivalent). Three hours lecture. Role of automated, computer-based systems in government; their impact on the workplace, government institutions, and the governmental systems; selected topical applications.

**PPA 8903. Public Policy. (3)** Nature, determinants, and effects of public goods and services; policy formulation and implementation; semi-

**PO 8990. Special Topics in Poultry. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PO 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

nar emphasizes contemporary issues such as strategic planning, leadership, and managerial control. (Same as PS 8903).

**PPA 8990. Special Topics in Public Policy Administration. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

### Ph.D. in Public Policy and Administration

**PPA 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

**PPA 9103. American Political Institutions. (3)** (Prerequisite: consent of instructor). Three hours lecture. Seminar addressing theoretical and empirical issues pertaining to the dynamics of American political institutions. (Same as PS 9103)

**PPA 9413. Normative Analysis of American Public Policy. (3)** Three hours lecture. Seminar exploring issues in American politics and public policy from a normative perspective. (Same as PS 9413)

**PPA 9603. Scope of American Public Administration. (3)** (Prerequisite: consent of the instructor). Seminar dealing with historical background and development of American Public Administration as a discipline, and a review and analysis of current topics in the field.

**PPA 9613. Rural Government Administration I: Theoretical and Environmental Aspects. (3)** (Prerequisite: Consent of the instructor). A seminar dealing with the principles of democratic theory as they affect the role of government and citizens' participation in government in rural settings.

**PPA 9623. Rural Government Administration II. Implementation Aspects. (3)** (Prerequisite: Consent of the instructor). A seminar dealing with program implementation by rural and small town governments, including adoption and diffusion of management innovation by public administrators as change agents.

**PPA 9703. Organization Behavior in the Public Sector. (3)** (Prerequisite: Consent of the instructor). Seminar dealing with major topics, issues, concerns of individual and group behavior in public organizations.

**PPA 9713. Administration of Human Resources in a Public Sector Environment. (3)** (Prerequisite: Consent of the Instructor). A seminar dealing with current basic research concerning management in the public sector environment.

**PPA 9723. Public Budgeting Processes and Their Policy Implications. (3)** (Prerequisite: Consent of instructor). A seminar dealing with norms and behaviors of budget process participants, their impact on budget policy and implications of budget actions for democratic government.

**PPA 9803. Multivariate Analysis and Design for Public Affairs. (3)** (Prerequisite: PPA 8813). Seminar dealing with applications of multivariate statistical methods and special topics in research design to problems in public policy and administration.

**PPA 9893. American Political Behavior. (3)** (Prerequisite: PPA 9803 and consent of instructor). Three hours lecture. Seminar in American political behavior including public opinion, socialization, participation, and voting behavior. (Same as PS 9893).

**PPA 9903. Public Policy Formulation and Implementation. (3)** (Prerequisite: Consent of the instructor). A seminar dealing with public policy formulation implementation and evaluation which stresses the theoretical aspects of policy processes.

### Department of POLITICAL SCIENCE

Office: 133 Etheredge Hall

Professors Breaux (Head), Clync, Feig, Shaffer, Tryman, and Wiseman;  
Professor Emeritus Bhansali  
Associate Professors Emison, Travis and Wall;  
Associate Professors Emeritus Giles and Handy;  
Assistant Professors Britton, Davenport and Goodman;

**PS 1113. American Government. (3)** Three hours lecture. The evolution of American governmental institutions and the organization and operation of the U.S. government today. Honors section available through invitation.

**PS 1311. Mississippi Model Security Council Research I. (1)** Hours arranged. Development of "delegate preparation materials" and Model Security Council booklet for use in Mississippi Model Security Council.

**PS 1313. Introduction to International Relations. (3)** Three hours lecture. This course examines through case studies the basic concepts of international politics such as nation, state, power, influence, bipolarity, deterrence, non-alignment, alliances and diplomacy. Honors section open through invitation only.

**PS 1321. Mississippi Model Security Council Internship I. (1)** Hours arranged. Internship experience as participant in Mississippi Model Security Council as delegate, county advisor, council president, or United Nations Secretary General.

**PS 1331. Mississippi Model Security Council Research II. (1)** (Prerequisite: PS 1311 or PS 1321.) Hours arranged. Development of "delegate preparation materials" and Model Security Council booklet for use in Mississippi Model Security Council.

**PS 1341. Mississippi Model Security Council Internship II. (1)** (Prerequisite: PS 1321.) Hours arranged. Internship experience as participant in Mississippi Model Security Council as delegate, country advisor, council president, or United Nations Secretary General.

**PS 1351. Mississippi Model Security Council Research III. (1)** (Prerequisite: PS 1351 or PS 1341.) Hours arranged. Development of "delegate preparation materials" and Model Security Council booklet for use in Mississippi Model Security Council.

**PS 1361. Mississippi Model Security Council Internship III. (1)** (Prerequisite: PS 1341) Hours arranged. Internship experience as participant in Mississippi Model Security Council as delegate, country advisor, council president, or United Nations Secretary General.

**PS 1371. Mississippi Model Security Council Research IV. (1)** (Prerequisite: PS 1361 or PS 1351.) Hours arranged. Development of "delegate preparation materials" and Model Security Council booklet for use in Mississippi Model Security Council.

**PS 1381. Mississippi Model Security Council Internship IV. (1)** (Prerequisite: PS 1361. Hours arranged. Internship experience as participant in Mississippi Model Security Council as delegate, country advisor, council president, or United Nations Secretary General.

**PS 1513. Comparative Government. (3)** Three hours lecture. Survey of various governmental systems. **1513H.** Honors section open through invitation. Introduction to comparative political inquiry including developing, democratic and authoritarian political systems.

**PS 2403. Introduction to Political Theory. (3)** Three hours lecture. An examination of selected thinkers, text, ideas, and periods in the history of political thought.

**PS 2703. Introduction to Public Policy. (3)** (Prerequisite: PS 1113 or consent of instructor). Three hours lecture. An examination of the formulation and implementation of public policy and the roles of government institutions and actors in policy making.

**PS 2990. Special Topics in Political Science. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PS 4000. Directed Individual Study. (Prerequisite: Junior standing).** Hours and credits to be arranged.

**PS 4083. Senior Honors Research in Political Science. (3)** (Prerequisite: Senior standing, and consent of department head). Topic to be selected by the student under the guidance of an honors faculty advisor.

**PS 4093. Senior Honors Thesis in Political Science. (3)** (Prerequisites: PS 4083, and consent of department head). Thesis writing on the topic researched in PS 4083.

**PS 4464/6464. Political Analysis. (4)** (Prerequisite: 6 hours in political science). Three hours lecture. Two hours laboratory. Philosophical and historical foundations of political analysis; constructing and executing research designs; measuring political phenomena; elementary methods of data analysis; games, models, and simulations.

**PS 4990/6990. Special Topics in Political Science. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

## American Politics

**PS 3013. Political Leadership. (3)** Analysis of political leadership, emphasizing characteristics of successful leadership and opportunities available to students for leadership in the political arena.

**PS 3033. Gender and Politics. (3)** Three hours lecture. Examines gender differences in law, the courts, voting, political involvement, approaches to political power, and violence.

**PS 3063 Constitutional Powers. (3)** (Prerequisite: Junior standing or consent of instructor). Three hours lecture. A study of the constitutional system; constitutional modification, federal courts and judicial review, separation of the powers, federalism, congressional and presidential powers, and contact clause.

**PS 3073. Civil Liberties. (3)** (Prerequisite: Junior standing or consent of instructor). Three hours lecture. Political and civil rights; individual rights, national security and individual freedom; war and the Constitution; equal protection, criminal procedure; administrative process.

**PS 3183. Law and Politics. (3)** (Prerequisite: Sophomore standing or consent of instructor). Three hours lecture. Study of the politics of selected features of the legal system and the political usages of law as a tool for social control.

**PS 3193. Intergovernmental Relations. (3)** (Prerequisites: PS 1113 or PS 1193). Three hours lecture. Historical, prescriptive, and empirical studies of federalism with emphasis upon recent development in federal-state-local relationships.

**PS 4113/6113. State Government. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Comparative study of the structures, functions, and policies of the various American states.

**PS 4163/6163. The Chief Executive. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Historical and comparative study of chief executives, including governors and mayors, with special emphasis on the Presidency.

**PS 4173/6173. Legislative Process. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Organization, work, and procedure of legislative bodies and other law-making authorities.

**PS 4183/6183. Judicial Process. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Process and structure of the American legal system and the role of the judiciary.

**PS 4193/6193. Mississippi Judicial System. (3)** (Prerequisite: PS 1113). Three hours lecture. A study of the interrelationship of the actors within Mississippi's judicial system. Emphasis is placed on judicial decision-making, selection process, and resource allocation.

**PS 4203/6203. Political Parties and Electoral Problems. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. The development and operation of American political parties, with special attention to electoral problems

**PS 4213/6213. Campaign Politics. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Survey of the theory of political campaigns, the resources and techniques they employ, and their effects on voters.

**PS 4223/6223. The Dynamics of American Democracy. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Analysis of factors affecting the translation of public opinion into public policy within a national institutional context.

**PS 4233/6233. Interest Groups. (3)** (Prerequisite: PS 1113 or consent of instructor). Three hours lecture. The study of the politics and practices of interest groups within the American political process.

**PS 4253/6253. Southern Politics. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Survey of the politics of the Confederate and border states, examination of party development, leadership, and impact of the South in national politics.

**PS 4263/6263. Mississippi Government and Politics. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. A study of the organization, powers, processes and politics of state government in Mississippi.

**PS 4273/6273. African American Politics. (3)** (Prerequisite: PS 1113). Three hours lecture. The nature, processes, structures, and functions of African American politics in the domestic arena and international arena.

**PS 4283/6283. Public Opinion. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. The nature of public opinion; the influence of the press; pressure groups and propaganda techniques; the means of political communication.

**PS 4293/6293. Political Behavior. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Examination of the foundations and types of individual political activity; emphasis on psychological, social and cultural factors influencing personal political behavior.

**PS 4703/6703. Principles of Public Administration. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Bureaucratic politics and power; administrative responsibility in a pluralist democracy; public administrative organization; public personnel administration; and public budgeting.

**PS 4743/6743. Environmental Policy. (3)** (Prerequisite: PS 1113, PS 2703, or consent of instructor). Three hours lecture. History, development, and practice of environmental policy in the United States.

### International Politics

**PS 4303/6303. U.S. Foreign Policy. (3)** (Prerequisite: PS 1313 or consent of instructor.) Three hours lecture. An examination of the decision-making processes, institutions and structures that influence the formulation and execution of past and current U.S. foreign policy.

**PS 4313/6313. Principles of International Law. (3)** (Prerequisites: PS 1313 and junior standing). Three hours lecture. The nature, sources and scope of international law as found in custom, international convention, the teachings of authoritative writers, and judicial decisions.

**PS 4323/6323. International Organization. (3)** (Prerequisites: PS 1313 and junior standing). Three hours lecture. A study of the development of international organization and a concentration on the structure, processes and functions of the United Nations and its specialized agencies.

**PS 4333/6333. Theories of International Relations. (3)** (Prerequisites: PS 1313 and junior standing). Three hours lecture. This course critically examines traditional and contemporary, normative and behavioral, qualitative and quantitative theories of international relations.

**PS 4343/6343. International Conflict and Security. (3)** (Prerequisite: PS 1313 and junior standing). Three hours lecture. Study of the patterns, causes, and consequences of armed conflict between nations.

**PS 4353/6353. International Political Economy. (3)** (Prerequisite: PS 1313 or consent of instructor). Three hours lecture. This course will systematically address the relationship between politics and economics in an international context.

**PS 4383/6383. National Security Policy. (3)** (Prerequisites: PS 1313 and junior standing). Three hours lecture. An examination of those policies and issues affecting American national security with attention to the institutions, organizations and processes which shape them.

**PS 4393/6393. The Global Context. (3)** (Prerequisite: Junior standing or consent of instructor). Three hours lecture. Examination of selected issues of current importance to international relations.

### Political Theory

**PS 4423/6423. 20th Century Political Thought. (3)** (Prerequisites: PS 2403 or consent of instructor). Three hours lecture. An examination of selected thinkers, text, and ideas in the history of political thought from the late 19th Century to the present.

**PS 4433/6433. American Political Theory. (3)** (Prerequisites: PS 1113 and junior standing). Three hours lecture. Major schools of political thought in America from the colonial to the contemporary period.

**PS 4453/6453. Western Political Theory: Plato to Marx. (3)** (Prerequisite: PS 1113 or PS 2403). Three hours lecture. Chronological survey of central thinkers, texts, ideas, and movements in Western political thought from Plato to Marx.

### Comparative Politics

**PS 4543/6543. African Politics. (3)** (Prerequisites: PS 1513 and junior standing). Three hours lecture. Contemporary sub-Saharan Black Africa; prospects for political development or decay. Role of parties, bureaucracy and military and their relation to elite formation and political integration.

**PS 4553/6553. West European Politics. (3)** (Prerequisites: PS 1513 and junior standing). Three hours lecture. Governments of countries of Western Europe with emphasis upon England, France, Germany, Italy, and Spain.

**PS 4573/6573. South and Southeast Asian Politics. (3)** (Prerequisites: PS 1513 and junior standing). Three hours lecture. An evaluation of the traditional and contemporary political institutions, behavior and ideas of the countries of South and Southeast Asia.

**PS 4593/6593. Latin American Politics. (3)** (Prerequisites: PS 1513 and junior standing). Three hours lecture. Background, organization, and structure of the governments of the various Latin American countries.

**PS 4623/6623. Politics of the Third World. (3)** (Prerequisites: PS 1513 and junior standing). Three hours lecture. Political processes of developing nations. Prospects for development and decline considered. Re-

lationship between political, economic and cultural dimension during the process of social change.

### Master of Political Science

**NOTE:** See latest *Graduate Bulletin* for admission information into the Political Science Department's M.A., M.P.P.A., or Ph.D. graduate programs.

**PS 7000. Directed Individual Study.** Hours and credits to be arranged.

**PS 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**PS 8113. Seminar in State Government and Politics. (3)** (Prerequisites: PS 4113 and nine hours of related courses, or consent of instructor). Three hours lecture. The examination of selected concepts in the policies, politics, machinery and/or powers of state government.

**PS 8153. Seminar in Campaign Politics. (3)** (Prerequisite: Consent of instructor). Analysis of conduct and phases of political campaigns; and their effect on voters and the political system generally.

**PS 8203. Seminar in Comparative Government. (3)** (Prerequisites: PS 1313 and nine hours of related courses, or consent of instructor). Special research problems dealing with governmental organization and administration in the major nations of the modern world.

**PS 8303. Seminar in International Relations. (3)** (Prerequisites: PS 1313 and nine hours of related courses, or consent of instructor). Special research dealing with major international problems.

**PS 8413. Seminar in Political Theory. (3)** (Prerequisites: PS 2403 and nine hours of related courses, or consent of instructor). Three hours lecture. Seminar on selected aspects of political theory from the ancient to the modern period.

**PS 8513. Readings in Local Government and Politics. (3)** (Prerequisite: Consent of instructor). Reading assigned material in local government and politics and making reports thereon under the supervision of a member of the graduate faculty.

**PS 8523. Readings in State Government and Politics. (3)** (Prerequisite: Consent of instructor). Reading assigned material in state government and politics and making reports thereon under the supervision of a member of the graduate faculty.

**PS 8533. Readings in National Government and Politics. (3)** (Prerequisite: Consent of instructor). Reading assigned material in an appropriate subfield of national government and making reports thereon under the supervision of a member of the graduate faculty.

**PS 8543. Readings in Comparative Government and Politics. (3)** (Prerequisite: Consent of instructor). Reading assigned material in an appropriate subfield of comparative government and making reports thereon under the supervision of a member of the graduate faculty.

**PS 8553. Readings in International Relations. (3)** (Prerequisite: Consent of instructor). Reading assigned material in an appropriate subfield of international relations and making reports thereon under the supervision of a member of the graduate faculty.

**PS 8803. Research Methods for Public Affairs. (3)** Stress on research designs and methods, survey research and other techniques and measuring data. focus on applied approaches for mathematically analyzing governmental data. (Same as PPA 8803).

**PS 8813. Quantitative Methods for Public Affairs. (3)** (Prerequisite: PS 8803 or PPA 8803). Detailed consideration of selected quantitative analytic models and their application to public sector management and policy problems. (Same as PPA 8813).

**PS 8903. Public Policy. (3)** Nature, determinants, and effects of public goods and services; policy formulation and implementation; seminar emphasizes contemporary issues such as strategic planning, leadership, and managerial control. (Same as PPA 8903).

**PS 8990. Special Topics in Political Science. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PS 9103. American Political Institutions. (3)** (Prerequisite: consent of instructor). Three hours lecture. Seminar addressing theoretical and empirical issues pertaining to the dynamics of American political institutions. (Same as PPA 9103)

**PS 9413. Normative Analysis of American Public Policy. (3)** Three hours lecture. Seminar exploring issues in American politics and public policy from a normative perspective. (Same as PPA 9413)

**PS 9893. American Political Behavior. (3)** (Prerequisite: PPA 9803 and consent of instructor). Three hours lecture. Seminar in American political behavior including public opinion, socialization, participation, and voting behavior. (Same as PPA 9893).

## Department of PLANT and SOIL SCIENCES

Offices: 117 Dorman Hall

Professors Byrd, Creech, Jenkins\*, Kingery, Matta, McCarty\*, Nagel, Reichert, Reynolds, Rowe\*, Shaw, Tatum, Triplett, Varco, and Williams;

Associate Professors Baldwin, Cox, DelPrince, Harkess, Lang, Reddy and Wallace;

Assistant Professors Greer, Massey, Meints, Peterson, Rankins and Stewart;

Instructor McDougald (\*- adjunct professor)

**PSS 1313. Plant Science. (3)** Two hours lectures. Two hours laboratory. Scientific principles as the basis for practice in producing, handling, processing, marketing, and utilizing agronomic and horticultural plants.

**PSS 2343. Floral Design. (3)** Two hours lecture. Two hours studio. The history and appreciation of floral art through exploration of design principles, plant materials, and compositional floral forms.

**PSS 2351. Techniques in Flowershop Management. (1)** (Prerequisite: PSS 2343. Floral Design). Two hours laboratory. Demonstrations and practice of fundamentals which are essential in the operation of a retail flower shop.

**PSS 2423. Plant Materials I. (3)** Two hours lecture. Two hours laboratory. Characteristics, identification and landscape uses of ornamental trees, shrubs, vines, flowers and grasses adapted to Southern conditions.

**PSS 2990. Special Topics in Plant and Soil Sciences. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSS 3023. Retail Floristry Operation and Management. (3)** (Prerequisites: ACC 2023, MGT 3114, and MKT 3013). Three hours lecture. To identify and understand the basic principles of retail floristry management and the operation of a florist shop.

**PSS 3043. Fruit Science. (3)** Three hours lecture. Principles and practices involved in the production of deciduous trees and small fruits. Fall semester, odd years.

**PSS 3133. Introductory Weed Science. (3)** (Prerequisites: BIO 1203, CH 1213 or CH 1053). Three hours lecture. Managing weeds; basic weed biology; methods of controlling weeds, introductory herbicide technology, weed control systems, and the fate of herbicides in the environment.

**PSS 3301. Soils Laboratory. (1)** (Prerequisite: Prior credit for/or current enrollment in PSS 3303.) Two hours laboratory. Fall and Spring semesters. General treatment of selected phases of the subject matter.

**PSS 3303. Soils. (3)** (Prerequisite: One semester (preferably two) of inorganic chemistry, CH 1043.) Three hours lecture. Fall and Spring semester. General treatment of all phases of the subject including lime and fertilizers.

**PSS 3313. Interior Planting Design and Maintenance. (3)** Two hours lecture, two hours laboratory. Identification of plant materials for interior planting and principles of design, installation and maintenance, preparation of cost estimates and maintenance contracts for interior plantings.

**PSS 3343. Advanced Floral Design I. (3)** (Prerequisite: PSS 2343). One hour lecture. Four hours laboratory. Application of design theory and principles to specific operations encountered in retail floristry.

**PSS 3411. Turf Seminar I. (1)** One hour lecture. Class discussions with invited turf industry representatives. Topics will include Turf industry overview, turf career opportunities, writing a resume, and job interviews.

**PSS 3413. Floristry Internship. (3)** (Prerequisites: PSS 2343, PSS 2351 and consent of Retail Floristry Management faculty). Individual work experience in a floral industry enterprise with an approved employer under faculty supervision.

**PSS 3421. Turf Seminar II. (1)** One hour lecture. Review of turfgrass literature and presentations of scientific articles.

**PSS 3423. Agronomy Internship. (3)** (Prerequisites: Junior standing and consent of Agronomy Faculty). Individual work experience in an agronomic or environmental organization with an approved employer under faculty supervision. This course may be repeated under approved conditions.

**PSS 3433. Horticulture Internship. (3)** (Prerequisite: Consent of the Floriculture and Ornamental Horticulture faculty). Individual work experience in a horticulture or allied industry organization with an approved employer under faculty supervision. This course may be repeated under approved conditions.

**PSS 3443. Advanced Floral Design II. (3)** One hour lecture. Four hours laboratory. Application of design theory and principles to non-perishable, dried, and preserved floral products.

**PSS 3473. Plant Materials II. (3)** (Prerequisite: PSS 2423). Two hours lecture. Two hours laboratory. Continuation of PSS 2423.

**PSS 3511. Seminar. (1)** (Prerequisite: Nine credits in horticulture). One hour lecture. Review of horticultural literature, and presentation and discussion of scientific articles.

**PSS 3923. Plant Propagation. (3)** (Prerequisite: BIO 1203). Two hours lecture. Two hours laboratory. Basic principles in the propagation of horticultural plants. Spring semester.

**PSS 4000. Directed Individual Study.** Hours and credits to be arranged.

**PSS 4103/6103. Forage and Pasture Crops. (3)** Two hours lecture. Two hours laboratory. Fall semester. Origin, uses, and ecology of forage plants, establishment, nutritive value, use, yield and maintenance of forage plants as related to morphology, physiology and pasture management.

**PSS 4123/6123. Grain Crops. (3)** (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Spring semester, odd-numbered years. Corn, small grain, practice in commercial grading given in laboratory.

**PSS 4133/6133. Fiber and Oilseed Crops. (3)** (Prerequisite: Junior standing). Three hours lecture. Spring semester. Production and utilization of fiber and oilseed crops. Emphasis on cotton and soybean production in Mississippi.

**PSS 4143/6143. Advanced Fruit Sciences. (3)** (Prerequisite: PSS 3043 or equivalent). Three hours lecture. Three hours laboratory. A study of the latest advances in pomology and interpretation of current research findings and their application to modern fruit growing. Spring semester, odd years.

**PSS 4223/6223. Seed Production. (3)** (Prerequisite: Junior standing). Two hours lecture. Two hours laboratory. Fall semester (odd years). Principles and practices, special emphasis on production of variety pure seeds; agronomic factors in harvesting, drying, storage, treating and marketing seed.

**PSS 4243/6243. Seed Technology. (3)** (Prerequisite: Senior standing). One hour lecture. Four hours laboratory. Spring semester (odd years). Seed development and morphology; germination; vigor and other special tests for seed quality; maintenance of seed viability; and seed quality control system.

**PSS 4253/6253. Seed and Grain Conditioning and Storage. (3)** (Prerequisite: Senior standing). Two hours lecture. Two hours laboratory. Fall semester. Physical and biological principles involved in the conditioning and storage of seed and grain with emphasis on systems used, operational procedures, management and economic considerations.

**PSS 4313/6313. Soil Fertility and Fertilizers. (3)** (Prerequisites: PSS 3303 and Junior standing). Three hours lecture. Spring semester. Fundamentals and concepts of soil fertility; sources and responses of crops to plant nutrients; soil fertility evaluation and maintenance through fertilization.

**PSS 4314/6314. Soil Microbiology. (4)** (Prerequisite: BIO 3304). Three hours lecture. Three hours laboratory. Spring semester. Soil microorganisms and their importance in ammonification, nitrification, and other biological processes. (Same as BIO 4324)

**PSS 4323/6323. Soil Classification. (3)** (Prerequisite: PSS 3303). Three hours lecture. Fall semester, odd-numbered years. Origin, development, and classification of soils including identification and field mapping.

**PSS 4333/6333. Soil Conservation and Land Use. (3)** (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Fall semester. Soil identification, topographic relationships and soil-water resources; their characteristics, quality, suitability, and management; conservation practices; using soil maps to determine land use

**PSS 4343/6343. Greenhouse Management. (3)** (Prerequisites: BIO 1203 and PSS 3303 and PSS 3301). Two hours lecture. Two hours laboratory. A detailed review and explanation of principles and practice of greenhouse operation and management. Fall semester.

**PSS 4353/6353. Arboriculture and Landscape Maintenance. (3)** Two hours lecture. Two hours laboratory. Care of ornamental trees and shrubs, including pruning, bracing, surgery, transplanting, and fertilization.

**PSS 4363/6363. Nursery Management. (3)** (Prerequisites: PSS 3923, PSS 2423, and PSS 3473). Two hours lecture. Two hours laboratory. The production and handling of ornamental nursery stock. Spring semester, even-numbered years.

**PSS 4373/6373. Geospatial Agronomic Management. (3)** (Prerequisites: PSS 3303 and PSS 3133). Two hours lecture. Three hours lab-

oratory. This class will utilize the basic tools of geographical information systems and geographical positioning systems technologies to analyze agronomic case studies.

**PSS 4411-4441/6411-6441. Remote Sensing Seminar. (1)** (Prerequisite: Junior standing). One hour lecture. Lectures by remote sensing experts from industry, academia, and governmental agencies on next-generation systems, applications, and economic and societal impact of remote sensing.

**PSS 4414/6414. Turf Management. (4)** (Prerequisite: Junior Standing). Three hours lecture. Two hours laboratory. Comprehensive study of turfgrasses, their establishment, and the varied management strategies employed for golf and sports turf, home lawns and commercial turf, and sod production.

**PSS 4423/6423. Golf Course Operations. (3)** (Prerequisite: PSS 4414/6414). Two hours lecture. Two hours laboratory. Fall semester. Scheduling maintenance practices, golf course construction and renovation with emphasis on operation and care of specialized turf equipment.

**PSS 4443/6443. Athletic Field Management. (3)** (Prerequisite: PSS 3303, PSS 4414, or consent of instructor). Two hours lecture. Two hours laboratory. A comprehensive study of athletic fields, including construction, maintenance, renovation and management. Emphasis will be placed on interactions between soil properties and sports turf performance.

**PSS 4444/6444. Plant Tissue Culture. (4)** (Prerequisite: BIO 4214 and CH 1053 or equivalent). Three hours lecture. Three hours laboratory. A comprehensive study of plant cell, tissue and organ culture with emphasis on practical applications of tissue culture in various areas of plant science.

**PSS 4453/6453. Vegetable Production. (3)** (Prerequisite: PSS 3303 and PSS 3301 or BIO 4204). Two hours lecture. Two hours laboratory. Principles and practices of commercial vegetable production.

**PSS 4483/6483. Intro to Remote Sensing Technologies. (3)** (Prerequisite: Senior or graduate standing, or consent of instructor). Three hours lecture. Electromagnetic interactions, passive sensors, multispectral and hyperspectral optical sensors, active sensors, imaging radar, SAR, Lidar, digital image processing, natural resource applications (Same as ECE 4423/6423 and ABE 4483/6483).

**PSS 4503/6503. Plant Breeding. (3)** (Prerequisite: PO 3103). Two hours lecture. Two hours laboratory. Application of genetic principles to the improvement of economic crop plants; history, methods and procedures of plant breeding.

**PSS 4603/6603. Soil Chemistry. (3)** (Prerequisite: PSS 3303). Two hours lecture. Three hours laboratory. Fall semester, even-numbered years. Introduction to the basic chemistry of soils, including: mineral weathering/formation, ion exchange; adsorption, oxidation/reduction, acidity, salinity/alkalinity, and soil reactions of environmental importance.

**PSS 4613/6613. Floriculture Crop Programming. (3)** (Prerequisite: PSS 4343/6343). Two hours lecture. Two hours laboratory. A detailed study of the techniques involved in the production of the major commercial flower crops. Spring semester, odd-numbered years.

**PSS 4633/6633. Weed Biology and Ecology. (3)** (Prerequisites: BIO 1203, PSS 3133. Junior standing or consent of instructor). Two hours lecture. Two hours laboratory. Weed identification and population responses to agricultural production systems. Spring semester.

**PSS 4813/6813. Herbicide Technology. (3)** (Prerequisites: PSS 3133 and Junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides. A detailed look at herbicide application-field use and factors influencing herbicide activity. Spring semester. Credit may not be given for this course and PSS 4823/6823.

**PSS 4823/6823. Turfgrass Weed Management. (3)** (Prerequisite: PSS 3133 and Junior standing). Two hours lecture. Three hours laboratory. Classification and use of herbicides with emphasis on herbicides used in turfgrasses. Credit may not be given for this course and PSS 4813/6813.

**PSS 4990/6990. Special Topics in PSS. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSS 7000. Directed Individual Study.** Hours and credits to be arranged.

**PSS 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**PSS 8103. Pasture Development. (3)** Three hours lecture. Utilization systems for forage crops in the southeast; adaptation, morphology, identification, and physiology of grasses and legumes; analyses of forage quality; interpretation of forage research.

**PSS 8123. Crop Ecology. (3)** (Prerequisite: BIO 4213/6213 or consent of instructor). Three hours lecture. Spring semester, even num-

bered-years. The geographical distribution, use, and adaptation of field crops as influenced by soil, climate, and other environmental factors.

**PSS 8163. Environmental Plant Physiology. (3)** Three hours lecture. Spring semester, even-numbered years. The influences of physical factors of the environment on growth and development of crop plants.

**PSS 8203. Seed Physiology. (3)** (Prerequisite: PSS 4243/6243 or approval of instructor). Three hours lecture. Spring semester (even years). Physiology of seed maturation, germination, dormancy, and deterioration; relation of seed quality to growth and development of plants.

**PSS 8313. Plant Processes and Crop Yield of Horticulture Plants. (3)** (Prerequisite: BIO 6203 or equivalent). Three hours lecture. A study of the genetic variations in physiological processes in relation to crop yield and adaptation.

**PSS 8314. Clay Mineralogy. (4)** (Prerequisite: Approval of instructor). Two hours lecture. Four hours laboratory. Spring semester, even-numbered years. Crystal structure and reaction mechanisms of clay minerals weathering. X-ray diffraction, thermal, and chemical studies of clay minerals.

**PSS 8323. Advanced Soil Chemistry. (3)** (Prerequisite: CH 4413 and preferably CH 4423 or approval of instructor). Three hours lecture. Spring semester, odd-numbered years. Application of the fundamental laws of colloid chemistry to inorganic and organic soil colloids with special emphasis on chemical equilibria, chelation, cation exchange. Gouy-Chapman theory and electrokinetics.

**PSS 8333. Advanced Soil Fertility. (3)** (Prerequisite: Graduate standing). Two hours lecture. Three hours laboratory. Fall semester, even-numbered years. Advanced course in soil fertility; special emphasis on all soil conditions affecting plant growth. Experimental techniques in plant nutrition and in soil fertility will be utilized.

**PSS 8343. Soil Physics. (3)** (Prerequisite: PSS 4613/6613 or consent of instructor). Three hours lecture. Fall semester, odd-numbered years. The fundamental principles and laws which govern the soil as a physical system with special emphasis on transport phenomena and the physical characteristics of soils.

**PSS 8511. Seminar. (1)** (Prerequisite: Graduate standing). One hour lecture. Review of scientific literature and presentation of scientific papers.

**PSS 8513. Advanced Plant Breeding. (3)** (Prerequisite: PSS 4503/6503 or equivalent). Three hours lecture. Fall semester, even-numbered years. An intensive review of methods of plant improvement and the application of these methods to modern plant breeding. (Same as GNS 8113.)

**PSS 8523. Nutrition of Horticultural Plants. (3)** (Prerequisites: PSS 3303 and PSS 3301 and BIO 4214/6214 or equivalent). Three hours lecture. Principles of mineral nutrition applied to diverse horticultural plants.

**PSS 8543. Biometrical Genetics in Plant Breeding. (3)** (Prerequisites: PSS 4503/6503 and ST 8114). Three hours lecture. Spring semester, odd-numbered years. Analysis and interpretation of experiments for estimation of hereditary parameters. Emphasis on mating designs, heritability, and genotype x environment interactions in plant breeding. (Same as GNS 8143.)

**PSS 8553. Plant Growth and Development. (3)** (Prerequisites: BIO 4214/6214 and CH 2503). Three hours lecture. Auxins, gibberellins, and other growth regulating substances, photoperiodism, thermoperiodicity. Fall semester, odd-numbered years.

**PSS 8554. Plant Genetic Engineering. (4)** (Prerequisite: PSS 6444 or PSS 6443 and BCH 6713). Two hours lecture. Four hours laboratory. A study of molecular techniques, product development, applications and implications of plant improvement through genetic engineering.

**PSS 8563. Post-Harvest Physiology of Horticultural Plants. (3)** (Prerequisites: Organic Chemistry and BIO 4214/6214 or equivalent). Three hours lecture. The nature, evaluation, and control of chemical and physiological changes that occur after harvest of horticultural products.

**PSS 8573. Morphology of Horticultural Plants. (3)** (Prerequisite: BIO 4204/6204). One hour lecture. Four hours laboratory. Development of the floral and vegetative organs of horticultural plants. Fall semester, even-numbered years.

**PSS 8613. Methods of Horticultural Research. (3)** (Prerequisite: Graduate standing). One hour lecture. Four hours laboratory. Techniques and instrumentation in plant research.

**PSS 8634. Environmental Fate of Herbicides. (4)** (Prerequisites: CH 4513/6513, PSS 4813/6813). Three hours lecture. Three hours laboratory. Fate of herbicides, including drift volatility, adsorption/desorption, leaching, runoff, microbial, chemical, and photolytic degradation, and plant metabolism, environmental factors that influence these processes.

**PSS 8645. Field Applications of Weed Sciences Principles I. (5)** (Prerequisite: PSS 6633 and PSS 6813 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in cotton, soybean, and vegetables; application equipment calibration.

**PSS 8655. Field Applications of Weed Science Principles II. (5)** (Prerequisite: PSS 8646 or consent of instructor). Three hours lecture. Four hours laboratory. Field weed identification; herbicide symptomology; problem solving in turf, field corn, rice, sorghum and pastures; application equipment calibration.

**PSS 8701-8791. Current Topics in Weed Science. (1)** (Prerequisites: Graduate standing, PSS 4813/6813 or consent of instructor). Lecture, discussion and readings in selected areas of current interest in weed science. Maximum total credits in graduate program allowed, 4 hours-M.S.; 6 hours-Ph.D.

**PSS 8724. Herbicide Physiology and Biochemistry. (4)** (Prerequisites: PSS 4813/6813, BIO 4214/6214 and CH 4513/6513 or consent of instructor). Three hours lecture. Three hours laboratory. Herbicide, plant growth regulator and allelochemic chemistry, mode of action, and effects on plants and plant constituents: fate/ persistence of herbicides in the environment. Fall semester, odd-years.

**PSS 8811-8831. Seminar. (1)** (Prerequisite: Graduate standing). Review of literature on assigned topics; preparation of formal papers and presentation of them at staff seminars.

**PSS 8990. Special Topics in PSS. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSS 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

## Department of PSYCHOLOGY

Office: 110 Magruder Hall

Professors Carskadon, Doane, Giesen, Klein (Head), Miller, Morse, Spirrisson, and Wells-Parker;  
Associate Professors Adams-Price, Armstrong, Bradshaw, Fee and N. McCarley;  
Assistant Professors Jacquin and J. McCarley

**PSY 1013. General Psychology. (3)** Three hours lecture. The study of human behavior, heredity and growth; motivation: feeling and emotion; frustration; conflict; learning; language; thinking, attention; sensation; perception; intelligence; aptitudes; social influences. **1013H.** Honors section open through invitation only. Intensified study of human behavior, heredity, motivation, emotion, frustration, conflict, learning, sensation, perception, intelligence, experimental methodology, and social interaction.

**PSY 2990. Special Topics in Psychology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSY 3003. Environmental Psychology. (3)** (Prerequisite: PSY 1013 or consent of instructor). Three hours lecture. Study of the social and physical environmental factors and their effects on behavior. Theory, research, and application will be examined.

**PSY 3023. Applied Psychology. (3)** (Prerequisite: PSY 1013 or consent of instructor). Three hours lecture. Principles, techniques, and results of psychology applied to a wide range of problems in daily life and work.

**PSY 3073. Psychology of Interpersonal Relations. (3)** Three hours lecture. (Prerequisite: Junior standing). Examination of psychological principles, theories and research which apply to various types of human interaction.

**PSY 3103. Introductory Psychological Statistics. (3)** (Prerequisite: PSY 1013, MA 1313). Three hours lecture. Techniques and practices in statistical analyses used in psychological experimentation and evaluation.

**PSY 3203. Psychology of Gender Differences. (3)** (Prerequisite: PSY 1013 or consent of instructor). Three hours lecture. Survey of the biological, physiological, and sociocultural factors which influence the psychological differentiation of the genders.

**PSY 3213. Psychology of Abnormal Behavior. (3)** (Prerequisite: PSY 1013). Three hours lecture. Behavioral patterns and causes of deviant behavior from childhood through later maturity. Etiology and symptomatology are emphasized.

**PSY 3313. Experimental Psychology. (3)** (Prerequisite: PSY 3103). Three hours lecture. Emphasis on the methods and techniques of research design. Experiments in perception, learning, animal behavior, memory and thinking. Laboratory hours to be arranged.

**PSY 3343. Psychology of Learning. (3)** (Prerequisite: PSY 1013). Three hours lecture. Survey of a variety of learning situations. Consideration of the variables and conditions which influence the learning process.

**PSY 3353. Motivation. (3)** (Prerequisite: PSY 1013). Three hours lecture. Study of the role of motivation in behavior theory; biological and psychological bases; historical and contemporary views.

**PSY 3363. Behavior Modification. (3)** (Prerequisite: PSY 1013). Three hours lecture. Intensive examination of the principles and procedures used to modify the behavior of humans in contemporary situations.

**PSY 3413. Human Sexual Behavior. (3)** (Prerequisite: PSY 1013 or consent of instructor). Three hours lecture. Varieties of sexual behavior. Research methods and findings; typical behaviors; homosexuality; sexual disorders; sexual assault and sexual victims; treatments; pornography and prostitution; sexual risk perception.

**PSY 3503. Health Psychology. (3)** (Prerequisites: PSY 1013). Three hours lecture. Overview of research on psychophysiological disorders and related interventions. Emphasis is placed on chronic physical disorders and their relationship to psychological functioning.

**PSY 3623. Social Psychology. (3)** (Prerequisites: PSY 1013 or consent of instructor). Three hours lecture. Human behavior as a product of social interaction; social perception; social norms and roles; group processes, interrelationship of personality, culture, and group.

**PSY 3713. Cognitive Psychology. (3)** Three hours lecture. Introduction to the basic areas of cognitive psychology, including perception, attention, memory, reasoning, and language.

**PSY 3803. Introduction to Developmental Psychology. (3)** (Prerequisite: PSY 1013). Three hours lecture. A survey and evaluation of current theory and research concerning development from infancy to young adulthood. Cognitive, social, and emotional development is emphasized.

**PSY 4000. Directed Individual Study.** Hours and credits to be arranged.

**PSY 4103/6103. Psychometrics. (3)** (Prerequisite: PSY 3103). Three hours lecture. Theory, problems, skills, and techniques of psychological measurement. Emphasis on construction, evaluation, item analysis, reliability and validity techniques in the improvement of measures of human behavior. Laboratory hours to be arranged.

**PSY 4123/6123. Quantitative Techniques In Psychology Using Computers. (3)** (Prerequisites: PSY 3103 or equivalent, and consent of instructor). A survey of major quantitative techniques in psychology and related behavioral sciences made possible by modern computers.

**PSY 4203. Theories of Personality. (3)** (Prerequisite: PSY 1013). Three hours lecture. Current theories of personality. Structure, development, dynamics, acculturation processes. Methods, techniques, and research in personality assessment.

**PSY 4223/6223. Drug Use and Abuse. (3)** (Prerequisite: PSY 1013). Three hours lecture. Study of basic principles of drug use and abuse. Includes an introduction to psychopharmacology and basic treatment strategies.

**PSY 4323. History of Psychology. (3)** (Prerequisite: PSY 1013 and junior standing). Three hours lecture. A discussion of people, events, and theoretical and empirical contributions relevant to development of psychology.

**PSY 4333. Introduction to Clinical Psychology. (3)** (Prerequisites: PSY 3213 and PSY 3313 or consent of instructor). Three hours lecture. Survey of assessment techniques, intervention procedures, professional issues of contemporary clinical psychology. Emphasis placed on the Boulder (scientist-practitioner) model.

**PSY 4343. Clinical Child Psychology. (3)** (Prerequisites: PSY 3213; PSY 3313 or PSY 3803). Three hours lecture. Overview of childhood disorders and related interventions.

**PSY 4353/6353. Psychology and the Law. (3)** (Prerequisite: PSY 1013 and Junior standing). Three hours lecture. Examination of the roles of psychologists in the legal systems; application of psychological theory and research to issues in the legal system.

**PSY 4403/6403. Biological Psychology. (3)** (Prerequisite: PSY 1013). Three hours lecture. Nervous, endocrine, and immune systems of the body as they affect behavior and adjustment. Emphasis upon the role of the central and peripheral nervous systems.

**PSY 4423/6423. Sensation and Perception. (3)** (Prerequisite: PSY 1013, PSY 4403). Three hours lecture. Survey of basic sensory mechanisms and perceptual phenomena. Sensory mechanisms re-

viewed will include vision, audition, olfaction, gustation, and touch with emphasis on vision and audition.

**PSY 4523/6523. Industrial Psychology. (3)** (Prerequisite: PSY 1013). Three hours lecture. Applications of psychological principles and methods to industry emphasizing employee selection, placement, merit rating, training, human relations, and measurement and improvement of employee morale.

**PSY 4643/6643. Social Cognition. (3)** (Prerequisite: PSY 3623 or consent of instructor). Three hours lecture. Examination of how people perceive, categorize and reason about other people and themselves.

**PSY 4653/6653. Cognitive Science. (3)** (Prerequisite: CSE 4633/6633 or PSY 4713 or PHI 4143/6143 or AN 4623/6623 or EN 4403/6403). Three hours lecture. The nature of human cognition from an interdisciplinary perspective, primarily utilizing a computational model, including insights from philosophy, psychology, linguistics, artificial intelligence, anthropology, and neuroscience. (Same as CSE 4653/6653).

**PSY 4713/6713. Language and Thought. (3)** Three hours lecture. Review of current research and theories. Symbolic process, concept formation, problem solving and language development.

**PSY 4726. Internship in Psychology I. (6)** (Prerequisite: Consent of instructor). A minimum of 20 hours per week of professional experience in a human service or other field setting. One hour of seminar and group supervision.

**PSY 4733/6733. Memory. (3)** Three hours lecture. (Prerequisite: PSY 1013). Introduction to theoretical and practical aspects of memory. Discussion of laboratory memory, computer models of memory, memory self-concepts, everyday memory, and clinical memory problems.

**PSY 4736. Internship in Psychology II. (6)** (Prerequisite: Consent of instructor). A minimum of 20 hours per week of professional experience in a human service or other field setting. One hour of seminar and group supervision.

**PSY 4743/6743. Psychology of Human-Computer Interaction. (3)** (Prerequisites: PSY 3713 or CSE 4663/6663 or IE 4113/6113 or consent of the instructor). Two hours lecture. Two hours laboratory. Exploration of psychological factors that interact with computer interface usability. Interface design techniques and usability evaluation methods are emphasized. (Same as CSE 4673/6673 and IE 4123/6123).

**PSY 4903/6903. Seminar in Psychology. (3)** (Prerequisite: PSY 1013). In-depth examination of particular topics of current interest to faculty and students. Critical evaluation of current research.

**PSY 4983/6983. Psychology of Aging. (3)** (Prerequisite: PSY 1013). Three hours lecture. A description and analysis of the development and changes occurring in individuals from early adulthood through late life.

**PSY 4990/6990. Special Topics in Psychology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSY 7000. Directed Individual Study.** Hours and credits to be arranged.

**PSY 8000. Thesis Research and Thesis.** Hours and credits to be arranged.

**PSY 8111. Scientist-Practitioner Applications. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. A minimum of two hours per week in supervised service delivery and research activities of clinical psychologists.

**PSY 8121. Scientist-Practitioner Applications. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. A minimum of two hours per week in supervised service delivery and research activities of clinical psychologists.

**PSY 8131. Scientist-Practitioner Applications. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. A minimum of two hours per week in supervised service delivery and research activities of clinical psychologists.

**PSY 8141. Scientist-Practitioner Applications. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. A minimum of two hours per week in supervised service delivery and research activities of clinical psychologists.

**PSY 8151. Scientist-Practitioner Applications. (1)** (Prerequisite: Consent of instructor). Two hours laboratory. A minimum of two hours per week in supervised service delivery and research activities of clinical psychologists.

**PSY 8214. Quantitative Methods in Psychology II. (4)** (Prerequisite: PSY 3103). Three hours lecture. Three hours laboratory. Advanced experimental design and methods with emphasis on analysis of variance.

**PSY 8223. Systems and Theories of Psychology. (3)** (Prerequisite: PSY 4323/6323). Three hours lecture. Study of the basic systems and theories relevant to current psychology.

**PSY 8313. Developmental Psychology. (3)** (Prerequisite: PSY 3803). Three hours lecture. Human growth processes and related developmental tasks in areas such as creative ability, language, social competency, and bodily fitness.

**PSY 8323. Psychopathology. (3)** (Prerequisites: PSY 3213). In-depth coverage of contemporary systems of psychiatric diagnosis, and biological, psychological, and social theories of the etiology of psychological disorders.

**PSY 8333. Systems of Psychotherapy. (3)** (Prerequisite: Consent of instructor). Three hours lecture. A comparative introduction to the theories, techniques, and outcomes of major approaches to psychotherapy.

**PSY 8354. Intelligence Testing. (3)** (Prerequisite: Consent of the instructor). Three hours lecture. Two hours laboratory. Administration, scoring and interpretation of the standard psychometric instruments used in evaluating individual intellectual functioning.

**PSY 8364. Personality Appraisal. (4)** (Prerequisite: PSY 8323). Three hours lecture. Two hours laboratory. Administration, scoring and interpretation using standard self-report and projective methods of individual personality assessment. Current research is also explored.

**PSY 8373. Child Psychopathology and Treatment of Childhood Disorders. (3)** (Prerequisite: PSY 3213). Three hours lecture. Research on the nature, assessment and treatment of disorders of childhood/adolescence.

**PSY 8383. Behavior Therapy. (3)** (Prerequisite: Consent of instructor). Three hours lecture. A survey of contemporary literature relating to the theory, techniques, and outcomes of behavior therapy. Emphases placed on systematic desensitization and operant conditioning techniques.

**PSY 8454, 8464. Professional Practicum. (4)** (Prerequisite: Departmental consent). A minimum of 300 hours per semester of supervised professional psychological experience in an appropriate setting.

**PSY 8503. Learning. (3)** (Prerequisite: PSY 3343). Three hours lecture. Current theories and learning models; methods and results of experimental studies of human and animal learning.

**PSY 8513. Psychological Research. (3)** (Prerequisite: PSY 3313). Three hours lecture. Practicum in the techniques of planning and execution of various areas of psychological research.

**PSY 8533. Introduction to Clinical Practicum in Psychology. (3)** (Prerequisite: Consent of instructor). One hour lecture. Two hours practicum. Intensive introduction to clinical interviewing, as well as the research literature in clinical psychology.

**PSY 8573. Psychopharmacology. (3)** (Prerequisites: PSY 4403 and PSY 8323). Three hours lecture. Overview of research on pharmacological and combined treatments for psychological disorders. Emphasis is placed on psychological disorders in adulthood.

**PSY 8613. Advanced Social Psychology. (3)** (Prerequisite: PSY 3623). Three hours lecture. Examination of research and theories of attraction and liking. Emphasis upon reinforcement theory, gain-loss theory, and dissonance theory.

**PSY 8703. Personnel Psychology. (3)** (Prerequisite: Consent of instructor.) Three hours lecture. Study of theories and methods of psychology as applied to work setting design, personnel management, and organizational behavior with special emphasis on personnel psychology.

**PSY 8713. Issues and Methods in Cognitive Psychology. (3)** (Prerequisite: Graduate Standing). Three hours lecture. Exploration of theoretical issues and research methods in current Cognitive Psychology.

**PSY 8723. Cognitive Models of Skill. (3)** (Prerequisite: Graduate standing). Three hours lecture. Introduction to cognitive modeling, with a focus on computational models of skill acquisition and expert skill (Same as CSE 8613).

**PSY 8803. Advanced Quantitative Methods for Industrial/Organizational and General Psychology. (3)** (Prerequisites: PSY 8214). Three hours lecture. Study of advanced analytic and multivariate quantitative methods applied to contemporary problems and research in industrial/organizational and general psychology.

**PSY 8990. Special Topics in Psychology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**PSY 9000. Dissertation Research and Dissertation. (1-13)** Hours and credits to be arranged.

**RADIO — T.V. — FILM**

(See Communication)

**READING EDUCATION**

(See Elementary Education)

**RDG 2990. Special Topics in Readings. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses.

**RDG 3113. Foundations of Literacy. (3)** (Prerequisite: Admission to Teacher Education). Three hours lecture. Foundations of literacy learning and teaching; emergent literacy.

**RDG 3213. Teaching of Literacy. (3)** (Prerequisite: RDG 3113). Three hours lecture. Literacy teaching and learning for upper elementary and middle school.

**RDG 3313. Practicum: Diagnosis and Remediation of Reading Disability. (3)** (Prerequisite: RDG 3213). The supervised diagnostic teaching of reading in a public school setting.

**RDG 3513. Developing Reading Strategies in the Secondary School Content Areas. (3)** Basic theories and techniques needed by content area teachers for teaching reading to secondary school students. Admission to Teacher Education required.

**RDG 4113/6113. Teaching Reading in the Middle School. (3)** (Prerequisite: RDG 3113). Three hours lecture. Theory and applied methods, techniques, and analysis of reading strategies for the adolescent learner (ages 10-15) in the middle school.

**RDG 4990/6990. Special Topics in Readings. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses.

**RDG 8153. Psychology of Reading. (3)** Three hours lecture. Analysis of reading patterns; conditions favorable and unfavorable to progress in reading skill; the readiness concept; problems of levels. Prevention and correction of reading handicaps.

**RDG 8413. Reading in the Public Schools. (3)** Three hours lecture. Materials and methods employed in individual and group procedures for the teaching of reading in public schools.

**RDG 8453. Research in Reading. (3)** Three hours lecture. The function of research in the development of reading programs; contribution of research to reading.

**RDG 8573. Diagnosis of Reading Problems. (3)** The selection, utilization and interpretation of instruments used to diagnose disability and outline remedial procedures.

**RDG 8593. Issues and Innovations in Reading. (3)** Issues and innovations related to trends, methodology, and materials in the teaching of reading.

**RDG 8653. Teaching Reading in the Secondary Schools. (3)** Three hours lecture. A study of reading problems of junior- and senior-high school students. A study of machines, materials, and techniques used in developmental reading for high school youth.

**RDG 8990. Special Topics in Readings. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses.

**RELIGION**

(For departmental information, see PHILOSOPHY and RELIGION.)

**REL 1103. Introduction to Religion. (3)** Three hours lecture. Religion seen as a human search for meaning in life or response to the holy. Studied through basic structures and modes of expression.

**REL 1213. Introduction to the Old Testament. (3)** Three hours lecture. A survey of Old Testament literature with attention to archaeological findings and the cultural setting.

**REL 1223. Introduction to the New Testament. (3)** Three hours lecture. A survey of New Testament literature with attention to archaeological findings and the cultural setting.

**REL 2233. Introduction to Old Testament Archaeology. (3)** Three hours lecture. A survey of the Old Testament in the light of archaeological research. The approach is chronological-historical-archaeological.

**REL 2990. Special Topics in Religion. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**REL 3123. Philosophy of Religion. (3)** (Prerequisite: Three hours of philosophy). Three hours lecture. A critical inquiry into the rational justification of central theistic beliefs, with emphasis on the traditional philosophical arguments for and against the existence of God. (Same as PHI 3123).

**REL 3203. The Prophets of Ancient Israel. (3)** Three hours lecture, seminar. A study of the message and function of prophetic traditions within ancient Israel and in contemporary ancient Near Eastern societies.

**REL 3213. World Religions: Part I. (3)** Three hours lecture. A history and comparative study of beliefs and the cultural impact of the great religions of the East.

**REL 3223. World Religions: Part II. (3)** Three hours lecture. A history and comparative study of beliefs and the cultural impact of the great theistic religions of the West.

**REL 3453. Hinduism & Buddhism. (3)** Three hours lecture. Introduction to and critical-historical survey of significant texts, doctrines, themes, and thinkers in the main indigenous Indian religion traditions.

**REL 3540. Archaeological Travel and Participation Program. (1-6)** Participation in excavations in the Near East and related lecture program. (Same as AN 3540).

**REL 3553. Near Eastern Archaeology. (3)** Three hours lecture. Introduction to the contributions made by archaeological research to ancient Near Eastern history and prehistory, with special emphasis on the Syro-Palestinian area. (Same as AN 3553).

**REL 3703. The Western Church: Beginning to Reformation. (3)** (Prerequisites: Completion of any 100-level course in history or philosophy and religion). Three hours lecture. An examination of the institutions, doctrines, and spirituality of the Western Church and their impact on Western European politics, society, and culture.

**REL 4000. Directed Individual Study.** Hours and credits to be arranged.

**REL 4123/6123. Scandinavian Mythology. (3)** (Prerequisite: Junior standing or consent of instructor). Three hours lecture. A survey of the myths and legends of Scandinavia in English translation. (Same as FL 4123/6123).

**REL 4143/6143. Classical Mythology. (3)** Three hours lecture. Myths and legends of Greece and Rome and their use in literature and the arts through the ages. (Same as FL 4143/6143).

**REL 4253/6253. Religion in America. (3)** (Prerequisite: HI 1063 or HI 1073). Three hours lecture. Surveys history of religion in America, emphasizing interaction with social and political developments. Same as HI 4253/6253).

**REL 4403/6403. The Ancient Near East. (3)** (Prerequisite: Completion of any 1000-level history course). Three hours lecture. A study of the origins and development of civilizations in Mesopotamia, Egypt, and Syria-Palestine from prehistoric times to the end of the Persian period. (Same as HI 4403/6403).

**REL 4990/6990. Special Topics in Religion. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**REL 7000. Directed Individual Study.** Hours and credits to be arranged.

**REL 8990. Special Topics in Religion. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**REAL ESTATE and MORTGAGE FINANCING**

Office: 315 McCool Hall

(For departmental information, see FINANCE and ECONOMICS)

**REM 2990. Special Topics in Real Estate & Mortgage Finance. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing

courses. (Courses limited to two offerings under one title within two academic years).

**REM 3253. Real Property Evaluation (Appraisal). (3)** (Prerequisite: REM 3333 or consent of instructor). Three hours lecture. Methods, evaluation procedures, and techniques of appraising commercial and residential real property under various value-influencing conditions; case problems for appraisal.

**REM 3333. Principles of Real Estate. (3)** (Prerequisite: Junior standing). Three hours lecture. A survey of the activities involved in the acquisition, transfer, operation, and management of real estate.

**REM 3353. Real Estate Finance. (3)** (Prerequisites: REM 3333 or consent of instructor). Three hours lecture. Direct investment in real estate. Sources of funds; risk analysis; typical policies and procedures of investing and financing investment real estate.

**REM 4000. Directed Individual Study. (1-3)** Hours and credits to be arranged with Instructor.

**REM 4253. Mortgage Financing. (3)** (Prerequisites: REM 3333 or FIN 3123 or consent of instructor). Three hours lecture. Indirect investment in real estate. Institutional sources of funds, mortgage market mechanisms, mortgage derivatives and mortgage underwriting.

**REM 4990/6990. Special Topics in Real Estate & Mortgage Finance. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

## Department of SOCIOLOGY, ANTHROPOLOGY, and SOCIAL WORK

Office: 200 Bowen Hall

Professors Emeriti Baird, Bryant, Estes, Marshall, Saunders, Sollie, Swain, Thomas and Wells;

Distinguished Professor: C. Rent

Professors Bluhm, Cosby, Frese, Gill, Howell, Jones, Levin (Head), Rafferty, G. Rent, and Seger;

Associate Professors Bartkowski, Boyd, Crudden, Dunaway, Hogue, Ray, Wood, Woodrow-Lafield, Wood and Xu;

Assistant Professors Blanchard, Burson, Cossman, Kerley, Lee, Loewe, Parisi, and Peacock

Instructor: Lewis

**SO 1003. Introduction to Sociology. (3)** Three hours lecture. The nature and development of culture; social aspects of personality; analysis of community life, population trends, social classes, institutions, processes, and organization; culture change. Honors section open through invitation only.

**SO 1103. Contemporary Social Problems. (3)** Three hours lecture. Analysis of problems related to: life cycle, sexuality, family disruptions, health, illness, death and dying, addictions, crime, minorities, population, environment, resources and poverty. Suggested solutions.

**SO 1173. Introduction to Gender Studies. (3)** Three hours lecture. An introduction to theoretical concepts in Gender Studies. This course will examine the influence of the women's movement on the academic development of Gender Studies (Same as AN 1173 and WS 1173).

**SO 1203. Marriage and Family. (3)** Three hours lecture. A study of dating, mate selection, marriage and parenthood, with emphasis on the contemporary American family.

**SO 2203. Cultural and Racial Minorities. (3)** (Prerequisite: Three hours in an introductory social science). Three hours lecture. Origins of minority groups and racial attitudes. Biological and cultural concepts of race and minority groups; problems of adjustment in interracial and multiethnic societies. (Same as AN 2203).

**SO 2990. Special Topics in Sociology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**SO 3003. Social Inequality. (3)** (Prerequisite: SO 1003). Three hours lecture. Investigates the nature, causes, and consequences of social inequality and stratification, the relationships among class, race, and gender inequalities in cross-cultural perspective.

**SO 3013. Society and the Individual. (3)** (Prerequisite: SO 1003). Three hours lecture. A study of interrelationship between society and the individual. Emphasis is placed on the structural aspects of socialization and the social construction of reality.

**SO 3053. Organizations in Modern Society. (3)** (Prerequisite: SO 1003). Three hours lecture. Examines the nature and types of formal organizations, their impact on, and outcomes for, individuals and society; organizational structures, processes, environments and effectiveness.

**SO 3103. Social Theory I. (3)** (Prerequisite: Nine hours of sociology, CSE 1013 or equivalent and junior standing). Lecture course. Study of European and American sociological theory—intellectual antecedents as well as social-cultural context.

**SO 3213. Introduction to Social Research. (3)** (Prerequisites: Nine hours of sociology and junior standing). Three hours lecture. A survey of the general field of research and methodology, including an examination of the various types of research designs, techniques, and procedures.

**SO 3313. Deviant Behavior. (3)** (Prerequisite: SO 1103 or its equivalent or consent of instructor). Three hours lecture. Introduction to the social and cultural factors related to human deviance. Special attention is given to the study of various theories of deviance.

**SO 3323. Contemporary Woman. (3)** Three hours lecture. Introductory course for the Concentration in Women's Studies. Major topics are women's heritage, identity, culture, and vulnerabilities.

**SO 3333. Society and Religion. (3)** Three hours lecture. Religion as an institution. Examines the social origins of religion and its functions, both positive and negative, in social movements, social control and politics. (Same as REL 3333).

**SO 3343. Gender, Crime, and Justice. (3)** Three hours lecture. Gender differences in criminal behavior, victimization, and criminal justice processing, emphasizing the unique experiences of women in all of these areas. (Same as COR 3343).

**SO 3503. Violence in the United States. (3)** Three hours lecture. In-depth study of violence, including types of violence, categories of offenders and victims, its social causes, and potential solutions. (Same as COR 3503).

**SO 3603. Criminology. (3)** (Prerequisites: SO 1103 and 3313 or equivalent or consent of instructor). A study of the causes of crime, disorganized communities and homes conducive to delinquency, boys' gangs, organized crime, prison, probation, parole, and crime prevention programs.

**SO 4000. Directed Individual Study.** Hours and credits to be arranged.

**SO 4113/6113. Social Organization and Change. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. An intensive examination of recent research focusing on the prediction, explanation and control of social change with attention to trends in developing countries.

**SO 4123/6123. Poverty Analysis: People, Organization and Programs. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. Historical perspectives; problems of definition and measurement; socio-cultural situations contributing to deprivation; delineation of poverty groups; social consequences of poverty; poverty programs and organizations.

**SO 4173/6173. Environment and Society. (3)** (Prerequisite: AN 1103 or SO 1003 or consent of instructor). Three hours lecture. A study of the interaction between human society and the environment including the social aspects of environmental problems. (Same as AN 4173/6173).

**SO 4203/6203. The Family in the United States. (3)** (Prerequisite: SO 1203). Three hours lecture. A study of the American family as an institution, with emphasis on change and interrelationships with other institutions.

**SO 4223/6223. Comparative Family Systems. (3)** (Prerequisite: SO 1203). Three hours lecture. A systematic study of family patterns in selected cultures of the world.

**SO 4233/6233. Juvenile Delinquency. (3)** (Prerequisite: SO 3603). Three hours lecture. Critical study of problems, causes, ways of handling; attitudes, roles and relationships of persons involved, including youthful offender, social worker, court and law enforcement officials. (Same as COR 4233/6233).

**SO 4273/6273. Sociology of Education. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. A sociological analysis of education as a social institution, its role in the larger society, the organization of schooling, and the social dynamics of classrooms.

**SO 4303/6303. Urban Sociology. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. A sociological and ecological study of urban areas emphasizing the processes of population, environment, technology and social organization.

**SO 4333/6333. Sociology of Sport. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. Examination of sport as a social institution in American society, its contributions to society and to participants.

**SO 4403/6403. Sex Roles and Gender. (3)** (Prerequisites: SO 1003, or approval of instructor). Three hours lecture. Changing sex roles in theory and reality, social problems associated with gender, and probable future realities of the female-male relationships.

**SO 4513/6513. Correctional Systems. (3)** (Prerequisite: SO 3603). Three hours lecture. Survey of contemporary correctional system

and practices. Emphasis placed on the formal organization and functioning of penal systems.

**SO 4623/6623. Language and Culture. (3)** (Prerequisite: AN 1103 or consent of instructor). Three hours lecture. Examination of language as a part of culture, a source of knowledge about other aspects of culture, and a social behavior. (Same as AN 4623/6623 and EN 4623/6623).

**SO 4633/6633. Sociolinguistics. (3)** (Prerequisites: SO 1003, or consent of instructor). Three hours lecture. Examination of relationship between language and society, and how, when, and why people in speech communities use language varieties. (Same as AN 4633/6633 and EN 4633/6633).

**SO 4703/6703. Population Problems and Processes. (3)** (Prerequisite: SO 1003 or consent of the instructor). Three hours lecture. World population growth and its consequences, population change and national policies, family planning, recent U.S. population trends, basic demographic measurement, the demographic report.

**SO 4803. Social Research Practice. (3)** (Prerequisite: SO 3213 or equivalent). Three hours lecture. Practical application of sociological analysis and methods conducting social research projects. Includes selection of methods and analytical techniques, data collection, ethics, and report writing.

**SO 4713/6713. Methods in Population Research. (3)** Review and evaluation of censuses, vital statistics, and demographic surveys and their uses, with emphasis on measurement, methods, and analytical techniques.

**SO 4733/6733. Community: Organization and Relationships. (3)** (Prerequisites: SO 1003 and junior standing). Three hours lecture. Rural-urban approach to community; types of local societies and community organizations; perspectives in community study.

**SO 4990/6990. Special Topics in Sociology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**SO 7000. Directed Individual Study.** Hours and credits to be arranged.

**SO 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**SO 8103. Graduate Theory I. (3)** Social theories and intellectual antecedents: European and American origins and development. Includes entire range of socio-cultural complex associated with 19th- and early 20th-century sociology.

**SO 8113. Graduate Theory II. (3)** Focus on post-19th century theory and antecedents. Delineation of the basic postures in the discipline and relative relationships of these postures to theory development.

**SO 8213. Research Design. (3)** (Prerequisite: SO 8274). Three hours lecture. Emphasis on overall design, plan, structure, and strategy. Also limitations of theory, measurement, sampling and statistical testing in research.

**SO 8223. Techniques of Survey Research. (3)** (Prerequisite: SO 8213). Schedule construction, sampling, field procedures, techniques of analysis, presentation of statistical materials.

**SO 8233. Qualitative Analysis. (3)** (Prerequisite: SO 8213). Three hours lecture. Qualitative approaches to understanding social behavior. Exposure to all phases of qualitative research: epistemology, design, field work, ethics, and writing research results.

**SO 8274. Graduate Social Statistics I. (4)** (Prerequisite: ST 2113 or equivalent). Three hours lecture. Two hours laboratory. Probability, hypothesis testing, tests of means and proportions, contingency table analysis, analysis of variance, bivariate linear regressions correlation; data analysis and interpretation using current statistical software.

**SO 8284. Graduate Social Statistics II. (4)** (Prerequisite: SO 8274). Three hours lecture. Two hours laboratory. Hypothesis testing, analysis of variance, multiple linear regression and correlation, causal models, exploratory factor analysis; data analysis and interpretation using current statistical software.

**SO 8293. Structural Equations Modeling with Latent Variables in Sociology. (3)** (Prerequisites: SO 8284 or equivalent). Three hours lecture. The application of structural equation modeling techniques to sociological problems containing unobserved variables, focusing on estimation and interpretation of model parameters with errors of measurement.

**SO 8323. Strategies and Tactics of Planned Change. (3)** (Prerequisites: Six hours in the social sciences). Three hours lecture. Study of models of social action: historical bases and types of planned change; case studies in planned change; roles of change agents. Emphasis on application.

**SO 8343. Complex Organizations. (3)** Theory and research in organizations. Nature and types of organizations; determinants and consequences of organizational growth; organizational effectiveness; production, authority, and control systems in organizations.

**SO 8403. Seminar in Race Relations. (3)** Three hours lecture. Contributions of anthropology, sociology and psychology to the field of race relations. Critical analysis of recent studies, current racial theories and programs.

**SO 8413. Seminar in Social Stratification. (3)** Three hours lecture. Critical analyses of theories and research on social class and related social structures. Explores race/gender/class stratification and policies to alter income/wealth inequality.

**SO 8423. Seminar in Deviant Behavior. (3)** Examination of relation between social conditions, social problems, deviance, and deviant careers. The organization of social control activities, and the social differentiation of deviant populations.

**SO 8433. Seminar in Criminology. (3)** Exploration of conceptual, methodological, and substantive problems of research in the field of criminology. The classification of criminals and criminal careers receives special emphasis.

**SO 8503. Seminar in the Family. (3)** An advanced seminar on the family institution, emphasizing theoretical and conceptual frameworks, topics of current concern to family sociology, and major literature in the area.

**SO 8523. Symbolic Interaction and Social Structure. (3)** Review of classic and current sociological literature in symbolic interaction and development of self as process and product of social structure.

**SO 8603. Seminar in Modernization. (3)** (Prerequisites: Six hours in social sciences). Three hours lecture. Structural, institutional and behavioral factors and processes affecting the modernization of traditional societies. Evaluation of causal factors and theoretical perspectives.

**SO 8673. Seminar in Social Impact Analysis. (3)** (Prerequisites: SO 4173/6173 or AN 4173/6173). Three hours lecture. Examination of the requirements of, methodologies for, and issues in, social impact assessment. Attention is given to practical working experience with techniques.

**SO 8703. Seminar in Population. (3)** (Prerequisite: SO 4703/6703 or equivalent). Study of population dynamics; theories of optimum population; population policies and programs; zero population growth; interrelationship of population phenomena with socioeconomic developments.

**SO 8723. Advanced Demographic Analysis and Research. (3)** Techniques of population and migration estimations and projections; and methods of estimating basic demographic measures from incomplete data.

**SO 8900. Fields of Sociology.** (Hours and credits to be arranged up to 3 hours.) A seminar in selected areas of sociological research and practice.

**SO 8990. Special Topics in Sociology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**SO 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

## STATISTICS

(For departmental information, see MATHEMATICS and STATISTICS.)

**ST 2113. Statistics for the Behavioral Sciences. (3)** (Prerequisite: MA 1313 or equivalent). Three hours lecture. Statistical techniques used in the behavioral sciences, including descriptive statistics, random variables and their probability distributions, estimation; confidence intervals, hypothesis testing, and measures of association.

**ST 2990. Special Topics in Statistics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**ST 3113. Introduction to Statistical Inference. (3)** (Prerequisite: MA 1313 or equivalent). Two hours lecture. Two hours laboratory. Basic concepts and methods of statistics, including descriptive statistics, probability, random variables, sampling distributions, estimation, hypothesis testing, introduction to analysis of variance, simple linear regression.

**ST 4000. Directed Individual Study.** Hours and credits to be arranged.

**ST 4111/6111. Seminar in Statistical Packages. (1)** One hour lecture. Introduction to the statistical computer packages available at MSU.

**ST 4211/6211. Statistical Consulting. (1)** (Prerequisite: Consent of the department). (May be repeated for credit.) Provides students with the opportunity to participate as statistical consultants on real projects; consultants are required to attend a weekly staff meeting.

**ST 4213/6213. Nonparametric Methods. (3)** (Prerequisite: An introductory course in statistical methods). Three hours lecture. Nonparametric and distribution-free methods, including inferences for proportions, contingency table analysis, goodness of fit tests, statistical methods based on rank order, and measures of association.

**ST 4523/6523. Introduction to Probability. (3)** (Prerequisite: MA 2733). Three hours lecture. Basic concepts of probability, conditional probability, independence, random variables, discrete and continuous probability distributions, moment generating function, moments, special distributions, central limit theorem. (Same as MA 4523/6523).

**ST 4543/6543. Introduction to Mathematical Statistics I (3)** (Prerequisite: MA 2743). Three hours lecture. Combinatorics; probability, random variables, discrete and continuous distributions, generating functions, moments, special distributions, multivariate distributions, independence, distributions of functions of random variables. (Same as MA 4543/6543).

**ST 4573/6573. Introduction to Mathematical Statistics II. (3)** (Prerequisite: ST 4543/6543). Three hours lecture. Continuation of ST 4543/6543. Transformations, sampling distributions, limiting distributions, point estimation, interval estimation, hypothesis testing, likelihood ratio tests, analysis of variance, regression, chi-square tests. (Same as MA 4573/6573).

**ST 4990/6990. Special Topics in Statistics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**ST 7000. Directed Individual Study.** Hours and credits to be arranged.

**ST 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**ST 8114. Statistical Methods. (4)** (Prerequisite: MA 1313). Three hours lecture. Two hours laboratory. Fall and Spring semesters. Descriptive statistics; sampling distributions; inferences for one and two populations; completely random, block, Latin square, split-plot designs; factorials; simple linear regression; chi-square tests.

**ST 8214. Design and Analysis of Experiments. (4)** (Prerequisite: ST 8114) Three hours lecture. Three hours laboratory. Offered spring semester. Procedures in planning and analyzing experiments; simple, multiple, and curvilinear regression; factorial arrangement of treatments; confounding; fractional replication; block designs; lattices; split-plots.

**ST 8253. Regression Analysis. (3)** (Prerequisite: ST 8114 or equivalent). Three hours lecture. Fall and Spring semesters. Simple linear regression analysis and related inferences, remedial measures, multiple and polynomial regression, use of indicator variables, variable selection methods, and use of computer.

**ST 8263. Advanced Regression Analysis. (3)** (Prerequisite: ST 8253). Three hours lecture. Continuation of ST 8253, including variable selection methods, optimization techniques, biased estimation methods such as ridge regression, non-linear regression, model validation methodology, indicator variables, design models.

**ST 8313. Introduction to Survey Sampling. (3)** (Prerequisite: ST 8114). Three hours lecture. Topics include: design, planning, execution, and analysis of sample surveys; simple random, stratified random, cluster, and systematic sampling; ratio and regression estimation.

**ST 8353. Statistical Computations. (3)** (Prerequisite: ST 8114). Three hours lecture. Applications of computer packages, including data screening, t-tests and Hotelling's  $T^2$ , analysis of designed experiments, regression analysis, contingency table analysis, projects, and report writing.

**ST 8413. Multivariate Statistical Methods. (3)** (Prerequisite: ST 8253). Three hours lecture. Multivariate normal; multiple and partial correlation; principal components; factor analysis; rotation; canonical correlation; discriminant analysis; Hotelling's  $T^2$ ; cluster analysis; multidimensional scaling; multivariate analysis of variance.

**ST 8423. Multivariate Analysis. (3)** (Prerequisites: ST 8413 and ST 8613). Three hours lecture. Theory of multivariate statistical methodology including multivariate normal and Wishart distributions, Hotelling's  $T^2$ , classification, multivariate analysis of variance and covariance, canonical correlation, and principal components.

**ST 8533. Applied Probability. (3)** (Prerequisite: ST 4543/6543). Three hours lecture. An introduction to the applications of probability theory. Topics include Markov Chains, Poisson Processes, and Renewal, Queuing, and Reliability theories. Other topics as time permits.

**ST 8543. Stochastic Processes. (3)** (Prerequisite: ST 8533). Three hours lecture. Continuation of ST 8533, including semi-martingales, Markov processes, second-order processes, diffusion processes, stochastic integrals, stochastic differential equations, and branching processes.

**ST 8603. Applied Statistics. (3)** (Prerequisite: ST 8214 and ST 8253 or equivalent). Three hours lecture. Advanced analysis of experimental data. Topics include mixed and random models, incomplete block design, changeover trials, experiments, analysis of covariance, and repeated measures design.

**ST 8613. Linear Models I. (3)** (Prerequisites: ST 4573/6573). Three hours lecture. Random vectors, multivariate normal, distribution of quadratic forms, estimation and statistical inferences relative to the general linear model of full rank, theory of hypothesis testing.

**ST 8633. Linear Models II. (3)** (Prerequisite: ST 8613). Three hours lecture. Continuation of ST 8613, including generalized inverses; general linear model not of full rank, related inferences, applications; computing techniques; design models, analyses, hypothesis testing; variance-component models.

**ST 8853. Advanced Design of Experiments I. (3)** (Prerequisite: ST 8603 or ST 8214). Three hours lecture. Noise reducing designs; incomplete block designs; factorial experiments, Yates' algorithms, confounding systems; fractional replication; pooling of experiments; nested designs; repeated measurement designs; messy data analyses.

**ST 8863. Advanced Design of Experiments II. (3)** (Prerequisites: ST 8853 and ST 8613). Three hours lecture. Continuation of ST 8853, including analysis of covariance, split-plot designs and variants, applications of the general linear model, response surface methodology, randomization models, pseudo-factors, and cross-over design.

**ST 8913. Recent Developments in Statistics. (3)** (Prerequisite: Consent of instructor). New results in statistical theory and/or statistical methodology; advanced work organized around topics not usually considered in the other courses.

**ST 8951. Seminar in Statistics. (1)** (Prerequisite: Consent of instructor). (May be repeated for credit). Review of literature on assigned topics; discussions and presentations of papers.

**ST 8990. Special Topics in Statistics. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**ST 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

**ST 9493. Topics in Multivariate Statistics. (3)** (Prerequisite: Consent of instructor). (May be repeated for credit). Advanced readings in multivariate statistics; course content varies depending on current issues.

**ST 9533 Probability Theory. (3)** Prerequisite: ST 4543/6543 and MA 8633). Three hours lecture. A measure-theoretic presentation of the theory of probability including independence and conditioning, convergence theorems, characteristics functions, martingales, and Brownian motion.

**ST 9593. Topics in Probability Theory. (3)** (Prerequisite: Consent of instructor). (May be repeated for credit). Advanced readings in probability theory or stochastic processes; course content varies depending on current issues.

**ST 9693. Topics in Linear Models. (3)** (Prerequisite: Consent of instructor). (May be repeated for credit). Advanced readings in linear models; course content varies depending on current interests.

**ST 9723. Nonparametric Statistical Inference I. (3)** (Prerequisite: ST 9733). Three hours lecture. A theoretical study of nonparametric statistics and robust statistical procedures. Topics may include: order statistics, empirical C.D.F.'s, M-estimates, rank statistics, optimality considerations, and asymptotic distribution theory.

**ST 9733. Statistical Inference. (3)** (Prerequisites: ST 4573/6573 and consent of instructor). Three hours lecture. Topics include: sufficiency, completeness, and uniqueness, convex loss functions, minimax estimation, Bayesian estimation, decision theory, symmetry and invariance, and sequential testing.

**ST 9793. Topics in Statistical Inference. (3)** (Prerequisite: Consent of instructor). (May be repeated for credit). Advanced readings in statistical inference; course content varies depending on current interests.

**ST 9893. Topics in Design of Experiments. (3)** (Prerequisite: Consent of instructor). (May be repeated for credit). Advanced readings in the design and analysis of experiments; course content varies depending on current interests.

## SOCIAL WORK

(For departmental information, see SOCIOLOGY, ANTHROPOLOGY and SOCIAL WORK.)

**SW 2303. Social Welfare Policy I. (3)** Three hours lecture. In-depth study of the historical and contemporary effects of social welfare policy on client systems.

**SW 2313. Introduction to Social Work/Social Welfare. (3)** Three hours lecture. A study of professional social work and the historical and philosophical development of social work and social welfare.

**SW 2323. Social Welfare Policy II. (3)** (Prerequisite: SW 2313). Three hours lecture. The course provides an analysis and evaluation of social welfare policies as institutional responses to social problems, social justice, and human needs.

**SW 2990. Special Topics in Social Work. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**SW 3003. Social Work with At-Risk Populations. (3)** Three hours lecture. Examines the role and interaction of social workers with vulnerable groups. Includes concepts of racism, sexism, homophobia, oppression, affirmative action, and xenophobia.

**SW 3013. Human Behavior and Social Environment I. (3)** (Prerequisite: SW 2313). Three hours lecture. Examines biological, psychological, social-structural, and cultural aspects of human development from conception through young adulthood from a social systems perspective, emphasizing diversity and oppression.

**SW 3023. Human Behavior and the Social Environment II. (3)** (Prerequisite: SW 3013). Three hours lecture. Examines biological, psychological, social-structural, and cultural aspects of human development from middle adulthood to death from a social systems perspective, emphasizing diversity and oppression.

**SW 3213. Introduction to Social Research. (3)** (Prerequisite: Nine hours of sociology and junior standing). Three hours lecture. A survey of the general field of research and methodology including an examination of the various types of research design, techniques, and procedures.

**SW 3513. Social Work Practice I. (3)** (Prerequisites: SW 2323 and SW 3013). Three hours lecture. The course emphasizes problems solving methods utilizing communication theories and skills working with individuals, families, groups, and communities in preparation for generalist social work practice.

**SW 3523. Social Work Practice II. (3)** (Prerequisites: SW 3023, and SW 3513). Three hours lecture. The course focuses on processes in-

involved in engaging client systems in data collection, assessment, intervention, evaluation, and termination in preparation for generalist social work practice.

**SW 3533. Social Work Practice III. (3)** (Prerequisite: SW 3523). Three hours lecture. The course focuses on processes involved in engaging client systems in problem solving with emphasis upon groups and larger systems in generalist social work practice.

**SW 4000. Directed Individual Study. (Prerequisites:** Six hours of social work, junior standing, and consent of instructor). Hours and credits to be arranged. Independent research of problems related to social work.

**SW 4613. Child Welfare Services. (3)** (Consent of instructor). Three hours lecture. Assessment of parental and society's responsibilities in meeting physical, social, psychological, and legal needs of children and examining the delivery, policies, systems, and services.

**SW 4623. Social Work with the Aged. (3)** (Consent of instructor). Three hours lecture. Assessment of social, psychological, physical, and economic needs of aging persons; their utilization of services, conjoint planning and creation of new community based resources.

**SW 4633. Social Work in Health Care. (3)** (Consent of instructor). Three hours lecture. Assessment of social work knowledge, values, and skills in understanding psychosocial aspects of illness, medical terminology, recording, discharge planning, ethics, team disciplines, and community resources.

**SW 4643. Social Work Services in Schools. (3)** Three hours lecture. Assessment of the development, concepts, policies, planning, implementation, and evaluation of social work services in primary and secondary schools.

**SW 4713. Social Work Senior Seminar. (3)** (Prerequisite: SW 3523). Critical evaluation of current issues in social work practice; examination of career opportunities; and assessment of personal educational preparation for practice.

**SW 4990/6990. Special Topics in Social Work. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**SW 4916-4926. Social Work Field Practicum/Seminar I-II. (6)** (Prerequisites: SW 4713 and SW 3533). The course provides students opportunities to apply generalist social work practice methods by completing a minimum of 450 supervised hours in a social work agency.

## THEATRE

(See Communication)

### Department of INSTRUCTIONAL SYSTEMS, LEADERSHIP, and WORKFORCE DEVELOPMENT

Office: 100 Industrial Education Building

Professors Olinzock (Head), Blendinger, Cornelious, Forde, G. Johnson,

Associate Professor W.C. Johnson;

Assistant Professors Adams, Brandenburg, Davis, Du, Durrington, Havard, Okojie, Stumpf, Wyatt and Yu;

Instructors Giordano, Love, Mize and Seiler

### BUSINESS TECHNOLOGY

**TKB 1012. Keyboarding. (2)** One hour lecture; Two hours laboratory. Keyboard mastery; letter writing; vertical and horizontal centering; manuscript writing; tabulation. No credit allowed if student has earned high school credit. Students with no high school credit will be allowed to remove this deficiency during the freshman year.

**TKB 1123. Document Formatting/ Information Processing. (3)** (Prerequisite: TKB 1012 or equivalent). Two hours lecture. Two hours laboratory. Review of keyboarding principles, development of speed/accuracy using computer software, and masters of formatting and word processing competencies required to produce business documents.

**TKB 1313. Records Management. (3)** Two hours lecture. Two hours laboratory. Development of guidelines for establishment, implementation, and maintenance of records control programs in various organizations.

**TKB 2112. Document Production. (2)** (Prerequisite: TKB 1122 or equivalent). One hour lecture. Two hours laboratory. Development of speed and accuracy using computer software, advanced application of

formatting skills using computer software, machine dictation and transcription.

**TKB 2122. Introduction to Database Management. (2)** (Prerequisite: TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency). One hour lecture. Two hours laboratory. An exploration of database management technology as it applies to business applications in today's contemporary business environment. Provides hands-on technology experience with database management software.

**TKB 2132. Introduction to Spreadsheet Design and Analysis. (2)** (TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency). One hour lecture. Two hours laboratory. An exploration of electronic spreadsheet technology applied to business applications in today's contemporary business environment. Provides hands-on computer technology with most widely used spreadsheet software.

**TKB 2413. Administrative Office Procedures. (3)** (Prerequisite: TKB 1122 or instructor's consent). Three hours lecture. Principles and practices involved in preparation for administrative support positions.

**TKB 2543. Word Processing—Concepts, Procedures, and Applications. (3)** (Prerequisite: TKB 1122 or instructor's consent). Two

hours lecture. Two hours laboratory. Concepts and applications in word processing using microcomputers.

**TKB 2990. Special Topics in Business Technology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**TKB 3133. Office Management. (3)** (Prerequisite: Junior standing). Three hours lecture. Planning and directing functions of offices; executive duties, selection and training of office employees; selection of office equipment and supplies.

**TKB 4283/6283. Advanced Office Systems. (3)** (Prerequisite: TKT 1273 or BIS 1013 or CSE 1013; TKB 2132, TKB 2122; and keyboarding proficiency or consent of instructor). Two hours lecture. Two hours laboratory. An exploration of computer technology as it applies to the office. Provides hands-on microcomputer experience with integrated business software and graphics.

**TKB 4543/6543. Advanced Information Processing. (3)** (Prerequisite: TKB 1123 or instructor's consent.) Two hours lecture. Two hours laboratory. Applications in advanced word processing and desktop publishing.

**TKB 4563. Introduction to Data Networks. (3)** (Prerequisite: TKB 1273). Three hours lecture. Strategies in supporting the users of data networking systems and exploration of the associated networking hardware and software that are appropriate for the office environment.

**TKB 4583/6583. Graphics and Web Design. (3)** (Prerequisites: TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency). Two hours lecture. Two hours laboratory. Principles and development of graphics and web design.

**TKB 4990/6990. Special Topics in Business Technology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

## INDUSTRIAL TECHNOLOGY

**TKI 1223. Wood, Polymer, and Composite Processing. (3)** Two hours lecture. Two hours laboratory. The planning, operation, and control of the processing of natural and synthetic polymers and associated composites.

**TKI 1813. Basic Industrial Electricity and Electronics. (3)** One hour lecture. Four hours laboratory. Study of fundamental industrial electrical and electronic principles with experimentation and project construction.

**TKI 2323. Forging, Welding and Founding. (3)** (Prerequisite: Concurrent or credit in TKI 1813). Six hours laboratory. Practice in hand forging; annealing, hardening and tempering of tool steel; casting, gas and electric welding; plasma arc cutting.

**TKI 2413. History and Appreciation of the Arts and Crafts. (3)** Three hours lecture. Growth and development of the arts and crafts through the ages; instructional applications; practical designs; demonstrations and projects in artmetal, leather, ceramics, and other handicraft areas.

**TKI 2990. Special Topics in Industrial Technology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**TKI 3043. Industrial Safety. (3)** Three hours lecture. Principles and procedures relating to appraisal, organization and administration of safety programs in industrial plants including implementation of occupational safety and health legislation.

**TKI 3063. Industrial Human Relations. (3)** Three hours lecture. The application of psychological principles to teacher-pupil relationships, employer-employee relationships, and other human relationships in business and industry.

**TKI 3083. Job Analysis and Related Industrial Procedures. (3)** Three hours lecture. Trade and job analysis with application to appropriate industrial procedures.

**TKI 3103. Advanced Industrial Electricity and Electronics. (3)** (Prerequisite: TKI 1813). One hour lecture. Four hours laboratory. Continuation of TKI 1813. Study of and experimentation with industrial electronic, transistor, and integrated circuitry.

**TKI 3183. Machine Metal Processing. (3)** Six hours laboratory. Machine tool (drill, grinder lathe, mill and shaper) operations; bench metals, precision measurements, calculations, and chipless machining; project construction.

**TKI 3223. Industrial Materials Technology. (3)** (Prerequisite: CH 1043). Two hours lecture. Two hours laboratory. An investigation of the mechanical and characteristic properties of industrial materials. The in-

fluence of these properties on manufacturing and product service requirements.

**TKI 3363. Motion and Time Study. (3)** (Prerequisite: TKI 3083). Two hours lecture. Two hours laboratory. A study of the techniques for analysis of production systems, the design of work stations, and the development of time standards. (for non-I.E. students). (Same as IE 3113).

**TKI 4103. Industrial Control Systems. (3)** (Prerequisite: TKI 3103). One hour lecture. Four hours laboratory. Application of basic and advanced industrial electronic principles to industrial control systems and processes.

**TKI 4113/6113. Industrial Fluid Power. (3)** (Prerequisites: PH 1113 and TKI 3103). One hour lecture. Four hours laboratory. A practical study of fluid power concepts, components, and systems as relates to modern industrial applications and to appropriate scientific principles. Hands-on laboratory activities.

**TKI 4203/6203. Automated Systems. (3)** (Prerequisite: TKI 4103). Two hours lecture. Two hours laboratory. An advanced study of automated systems and applications for the Industrial Technologist.

**TKI 4213/6213. Survey of Energy Sources and Power Technology. (3)** (Prerequisite: three semester hours physical science or other physics). Three hours lecture. Scientific and applied approaches to energy conversion, transmission, utilization, and conservation. Internal-external combustion, nuclear, fluid, hydroelectric, solar, etc. Current energy problems; lab demonstrations; activities.

**TKI 4223/6223. Quality Assurance. (3)** (Prerequisites: BQA 2113 and ACC 1203). Three hours lecture. Concepts and procedures to design, plan, assure and audit quality and quality systems.

**TKI 4263/6263. Manufacturing Technology & Processing. (3)** (Prerequisite: TKI 3363). One hour lecture. Four hours laboratory. Interpretation of modern industry duplicates the life cycle of an industrial enterprise in a laboratory environment.

**TKI 4303/6303. Industrial Robotics. (3)** (Prerequisite: TKI 4103). Two hours lecture. Two hours laboratory. A study of industrial robotics and applications for production supervisors.

**TKI 4990/6990. Special Topics in Industrial Technology. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

## TECHNOLOGY TEACHER EDUCATION

**TKT 1273. Microcomputers in Education. (3)** Three hours lecture. A study of the educational application of microcomputer technology.

**TKT 2990. Special Topics in Technology Teacher Education. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**TKT 3001. Practicum in Vocational Education. (1)** Observation of secondary and high school students and participation in classroom activities prior to the directed teaching.

**TKT 3153. Teaching Business Technology. (3)** (Prerequisite: Admission to teacher education). Three hours lecture. A study of objectives, materials, and teaching methods appropriate for business technology courses.

**TKT 3173. Teaching Business Education Skills Subjects. (3)** (Prerequisite: Acceptance to student teaching). Three hours lecture. A study of objectives, materials, and teaching methods appropriate for business education skills subjects.

**TKT 3213. Call Center Management. (3)** (Prerequisite: TKB 4283 and TKB 4543). Three hours lecture. Presents the strategic, financial and tactical knowledge and skill needed to manage an effective and efficient call center.

**TKT 3303. Coordination of Vocational Student Organizations. (3)** Three hours lecture. Learning experiences which lead to an understanding of purposes, objectives, and successful operation of vocational student organizations. Emphasis on business and marketing vocational student organizations.

**TKT 3463. Computer Repair and Maintenance. (3)** (Prerequisite: TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency). Two hours lecture. Two hours laboratory. An exploration into hardware functions, operating system and software installation, diagnostic and troubleshooting techniques, and safety.

**TKT 3623. Designing Technology Training. (3)** (Prerequisite: TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency, TKB 2132, TKB 2122). Three hours lecture. Learning strategies, design and development of technology training programs for organizations.

**TKT 4000. Directed Individual Study.** Hours and credits to be arranged.

**TKT 4073/6073. Instructional Materials Development and Use in Vocational Education.** (3) Three hours lecture. Development and use of lesson plans and supporting written and audio-visual materials.

**TKT 4103/6103. Delivery of the Vocational-Technical Instructional Program.** (3) Three hours lecture. Methods and techniques of instructing vocational-technical students in the classroom and laboratory setting.

**TKT 4143/6143. History and Philosophy of Vocational and Technology Education.** (3) Three hours lecture. History and development, aims and purposes of vocational education.

**TKT 4183/6183. Coordination of Part-Time Education.** (3) Three hours lecture. Principles of promotion, organization, and operation of part-time cooperative classes in vocational education: instruction in analyzing needs, preparing schedule of processes, developing instructional materials.

**TKT 4213/6213. Teaching Basic Business Subjects.** (3) (Prerequisite: Acceptance to teacher education.) Three hours lecture. Objectives, materials, and methods of teaching basic business subjects.

**TKT 4223/6223. Management of the Vocational-Technical Learning Environment.** (3) Three hours lecture. Techniques for organizing and managing vocational-technical education facilities, equipment, supplies, and instructional programs. Methods of managing and controlling student laboratory activities.

**TKT 4233/6233. Design of the Vocational-Technical Instructional Program.** (3) Three hours lecture. Identifying and sequencing teaching content. Planning and designing vocational-technical programs and courses.

**TKT 4253/6253. Evaluation and Measurement of Students in Vocational Education and Technology.** (3) Three hours lecture. Construction, selection, interpretation, and uses of cognitive and psychomotor evaluation instruments used in vocational-technical programs.

**TKT 4343. Information Technology Project Management.** (3) (Prerequisite: TKT 1273 or BIS 1013 or CSE 1013 and keyboarding proficiency). Three hours lecture. Concepts, skills, tools and techniques involved in information technology project management as it applies in today's contemporary business environment.

**TKT 4623. Delivery of Technology Training.** (3) (Prerequisite: TKT 3623). Three hours lecture. Advanced design, live and computer-based strategies, development, delivery, and evaluation of technology training programs for organizations.

**TKT 4683. Senior Seminar in Information Technology Services.** (3) (Prerequisites: TKT 3213, TKT 3463, TKB 4283, TKT 4623, TKT 4633, and senior standing). Three hours seminar. Field experience under supervision of university staff for directed experience and report in end-user support, project management, and training.

**TKT 4713/6713. Hypermedia for Instruction.** (3) Three hours lecture. (Prerequisite: TKT 4273/6273 or consent of instructor). A hands-on study of object-oriented programming applied to instruction, using HyperCard as a tool.

**TKT 4733/6733. Technology Laboratory Management.** (3) Three hours lecture. Physical, mechanical, and electronic considerations for effective management of technology-based learning laboratories.

**TKT 4743/6743. Elements of Electronic Desktop Publishing.** (3) (Prerequisites: TKB 2543, 4543 or consent of instructor). Two hours laboratory and two hours lecture. Design applications utilizing electronic desktop publishing technologies.

**TKT 4753/6753. Electronic Presentation.** (3) (Prerequisite: TKT 4743/6743 or consent of the instructor). Two hours lecture. Two hours laboratory. The study of using various electronic technologies in the development of visual electronic presentations.

**TKT 4853/6853. Philosophy and Principles of Vocational-Technical Instruction.** (3) Three hours lecture. Philosophy, objectives and methods of vocational-technical instruction. Introduction to teaching-learning principles and concepts.

**TKT 4873. Professional Seminar in Vocational/Technical Education.** (3) (Prerequisites: Admission to Teacher Education and senior standing). Three hours lecture. A seminar dealing with legal, professional, administrative, and curriculum issues as they relate to vocational/technical education.

**TKT 4886, 4896. Student Teaching in Vocational/Technical Education.** (6,6) (Both courses to be taken concurrently). (Prerequisites: Admission to Teacher Education and senior standing). Supervised observation and directed teaching in respective fields of endorsement.

**TKT 4990/6990. Special Topics in Technology Teacher Education.** (1-9) Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in exist-

ing courses. (Courses limited to two offerings under one title within two academic years).

**TKT 7000. Directed Individual Study.** Hours and credits to be arranged.

**TKT 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**TKT 8163. Business Education in Post-Secondary Institutions.** (3) Three hours lecture. Procedures and practices for teaching business education subjects in post-secondary institutions.

**TKT 8193. Improvement of Instruction in Office Procedures and Communications.** (3) Three hours lecture. A study of secretarial skills in the office, office systems technology and techniques, and the communicative process.

**TKT 8200. Internship in Vocational Education and Technology.** (1-6) Opportunity under supervision of regular university staff for directed experience and reporting in the major area of interest.

**TKT 8213. Content and Method of Teaching in Vocational Education.** (3) Three hours lecture. The content of various types of courses in trade, industrial, and distributive education; instruction in appropriate techniques and methods.

**TKT 8233. Occupational Survey, Placement and Follow-Up.** (3) Three hours lecture. Problems, methods and procedures involved in planning, organizing, and conducting of occupational surveys: and in the placement and follow-up of students.

**TKT 8263. Philosophy and Administration of Vocational Education.** (3) Three hours lecture. Development of well-rounded, comprehensive programs suitable to various types of schools and communities; correlation with other school programs.

**TKT 8273. Seminar in Vocational Education and Technology.** (3) Three hours lecture. Individual and group study of current trends and related problems.

**TKT 8703. Emerging Technologies.** (3) Three hours lecture. An examination of modern technologies which shape instructional delivery in a dynamic society.

**TKT 8723. Instructional Design for Industry.** (3) Three hours lecture. Techniques; strategies, and development of instruction for industry.

**TKT 8733. Telecommunications: Applications in Scholarship.** (3) Three hours lecture. The study and application of the telecommunications to professional scholarship and research endeavors; includes data search mechanisms applicable to and in support of graduate program demands.

**TKT 8743. Interactive Media.** (3) Two hours lecture. Two hours laboratory. Investigation and development of a variety of computer-interactive instructional media.

**TKT 8763. Seminar in Planning for Instructional Technology.** (3) Three hours lecture. An analytical study of techniques and strategies contributing to the establishment and effective operation of functional instructional technology.

**TKT 8773. Production of Technology-Aided Instruction.** (3) Six hours laboratory. Application of the electronic curriculum (computer and media) to the development of audio and visual aids for industry and education.

**TKT 8793. Directed Project in Instructional Technology.** (3) Design, development, and presentation of a complex, comprehensive instructional product integrating learning theories with contemporary and/or emerging technologies. Evaluation by jury.

**TKT 8803. Design and Evaluation of Instructional Software.** (3) Two hours lecture. Two hours laboratory. (Prerequisite: TKT 4273/6273 and hypermedia authoring experience). Analysis, synthesis, and evaluation of instructional software designed for and applied to varied learning situations.

**TKT 8813. Issues in Distance Education.** (3) Three hours lecture. This course investigates such issues as administration, implementation, instructional challenges, and evaluation in distance education environments including interactive video and online courses.

**TKT 8833. Design and Implementation of Data Networks.** (3) Three hours lecture. This course explores the design and implementation of data networking systems that are appropriate for instructional and research environments.

**TKT 8990. Special Topics in Technology Teacher Education.** (1-9) Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**TKT 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

**TRANSPORTATION**

Office: 301 McCool

(For departmental information, see **MARKETING**, **QUANTITATIVE ANALYSIS** and **BUSINESS LAW**.)

**TR 2990. Special Topics in Transportation. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**TR 3313. Principles of Transportation. (3)** (Prerequisites: MKT 3013 or consent of instructor and junior standing). Three hours lecture. Transportation development; freight rate differential; transportation and the industrial pattern; valuation and rate making.

**TR 4000. Directed Individual Study.** Hours and credits to be arranged.

**TR 4313/6313. Physical Distribution Management. (3)** (Prerequisites: BQA 2113 and MKT 3013). Functions of physical distribution in

business management; analysis of shippers, distribution problems in relation to carrier types, services and functions; methods of reducing distribution costs, use of internal and external data in warehouse and factory location; study of rate of structure and rate changes.

**TR 4393. Transportation Seminar. (3)** (Prerequisite: TR 3313). Three hours lecture. A course designed for those students engaged in intensive study and analysis of problems of a particular mode of transport.

**TR 4990/6990. Special Topics in Transportation. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**UNIVERSITY HONORS COURSES**

Office: 45 Magruder Street

Specialized Honors courses are offered under UHP numbers; departmental Honors courses are listed under departmental abbreviations and numbers. The titles of departmental Honors courses clarify their equivalency to regular courses in relation to transfer credits and Core Curriculum and degree requirements. The sections available for honors credit are identified in the MSU Master Schedule each semester.

**UHP 1081-2091. Honors Forum. (1)** One hour lecture. Weekly meeting of honors students. Discussion led by faculty and/or students on various topics.

The following course, UHP 3183, may be taken only by students who have the consent of the instructor. Since the content of the course will vary from year to year, the student should check with the instructor for more information.

**UHP 3183. Interdisciplinary Seminar in the Humanities. (3)** An investigation of an interdisciplinary problem or theme in man's experience. Lectures, readings, discussions, and reports.

**UHP 3198. Internship. (8)** (Prerequisites: Junior standing or consent of instructor). Individual work experience in a governmental or public agency in Washington, D.C., under the guidance of an MSU faculty member.

**ADVANCED PLACEMENT CREDIT.** (See Index) may be utilized to earn Phase I or II in the Honors Program. A UHP student may petition to use AP credit for a given subject to meet UHP requirements **after** successfully completing an MSU honors course in the same subject core area - humanities/fine arts, social sciences, natural sciences, or mathematics. For example: a student with AP credit for Calculus I may petition for six hours of UHP credit after completing Honors Calculus II, or a student with AP credit for history may petition for six hours after completing an honors economics, history, psychology, sociology or political science course.

**DEPARTMENTAL HONORS COURSES.** Honors sections of departmental courses are identified by the letter "H" before the section number and/or with the word "Honors" in the title of the course. The course numbers are consistent with those listed in the Core Curriculum Requirements (see Index) and in degree program requirements. Honors sections are identified in both the departmental schedule and in the master schedule of the University Honors Program, listed in alphabetical order in the printed schedule and on the university Web site.

ACC 2013, 2023 Accounting Principles I, II  
 AN 1103 Introduction to Anthropology  
 ARC 1536, 1546 Architecture Design IA, IB  
 ARC 2536, 2546 Architecture Design IIA, IIB  
 ART 1113 Art Appreciation  
 ART 4833, 4843 Computer Animation I, II  
 CH 1223 Fundamentals in Chemistry  
 CO 1093 Honors Oral Communication  
 CO 1403 Introduction to Mass Media  
 CO 1503 Introduction to Theater  
 EC 1033 Economics of Social Issues  
 EC 2113 Principles of Macroeconomics  
 EC 2123 Principles of Microeconomics  
 EC 4523 History of Economic Thought  
 EG 1143 Engineering Graphics  
 EN 1103, 1113 English Composition I, II  
 EN 2213, 2223 English Literature  
 EN 2243, 2253 American Literature  
 FLF 2133, 2143 French III, IV

FLG 2133, 2143 German III, IV  
 FLS 2133, 2143 Spanish III, IV  
 GG 1113 Survey of Earth Science  
 HI 1183 Problems in Modern World Civilization  
 MA 1713, 1723, 2733, 2743 Calculus I, II, III, IV  
 PH 2213, 2223 Physics I, II  
 PHI 1103 Introduction to Philosophy  
 PHI 1123 Introduction to Ethics  
 PS 1113 American Government  
 PS 1313 International Relations  
 PS 1513 Comparative Government  
 PS 4083 Senior Research/Thesis  
 PSS 1313 Plant Science  
 PSY 1013 Introduction to General Psychology  
 SO 1003 Introduction to Sociology

Directed Individual Study for Honors credit may be arranged under departmental numbers 4000. Please see "The UHP Handbook" available from the University Honors Program for additional information about honors courses.

**ANIMAL HEALTH SCIENCES**

Office: College of Veterinary Medicine (Wise Center)

**VS 1012. Introduction to Veterinary Medicine Careers. (2)** Two hours lecture. A survey of careers available to graduate veterinarians.

**VS 2033. Diseases of Poultry. (3)** (Prerequisite: VS 2014 or course in poultry physiology). Two hours lecture. Two hours lecture-demonstration and laboratory. Survey of cause, effects, diagnosis, prevention, and control of common poultry diseases.

**VS 2990. Special Topics in Animal Health Sciences. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis

to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**VS 3014. Anatomy and Physiology. (4)** Three hours lecture. Two hours laboratory. A survey of structure and function of animal body systems and a study of their interrelationships.

## Department of WILDLIFE and FISHERIES

Office: 109 Thompson Hall

Professors Brunson, Burger, D'Abramo, Demarais, Jackson, Kaminski, Leopold (Head), Miranda\*\*, Schramm\*\*;

Professors Emeriti Arner and Jacobson;

Associate Professors Dibble and Jones;

Assistant Professors Brennan\*, Conner\*, Dinsmore, Godwin\*, Griffin\*, Hunt, Jones,

Miller\*, Minnis, Reinecke\*, and Vilella\*\* (\* - adjunct faculty; \*\* - U.S.D.I.)

**WF 1101. Wildlife and Fisheries Profession. (1)** (Prerequisite: Freshman or Sophomore standing). One hour lecture. Orientation to the interdisciplinary and applied nature of wildlife and fisheries management and related fields, emphasizing the department, college, and university; student roles and responsibilities; and career opportunities.

**WF 1213. Introduction to Wildlife and Fish Conservation. (3)** Three hours lecture. A survey of wildlife and forest conservation, stressing biological principles and management practices for renewable resources.

**WF 2990. Special Topics in Wildlife & Fisheries. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**WF 3000. Internship in Wildlife, Fisheries or Aquaculture. (1-4).** (Prerequisite: Junior standing). Professional work experience with governmental or private agencies. (Hours and credits to be arranged).

**WF 3031. Introductory Wildlife/Fisheries Practices. (1)** (Prerequisite: Junior standing). Field exercises and practical exposure to research and management of wildlife and fish species and habitats in Mississippi.

**WF 3131. Applied Aquatic and Terrestrial Ecology Laboratory. (1)** (Corequisite: WF 3133). Four hours laboratory, alternate weeks. Demonstration of ecological concepts and methodologies in the classroom and in the field.

**WF 3133. Applied Aquatic and Terrestrial Ecology. (3)** (Corequisite: WF 3131). Three hours lecture. Four hours laboratory, alternate weeks. The application of ecological principles which serve as a basis for the management of wildlife and fisheries in terrestrial and aquatic habitats.

**WF 3141. Seminar in Wildlife and Fisheries. (1)** (Prerequisite: Junior standing). One hour lecture. Current topics and job opportunities in the field of wildlife and fisheries.

**WF 4000. Directed Individual Study.** Hours and credits to be arranged.

**WF 4013. Introduction to Aquaculture. (3)** Correspondence course introducing basic principles of aquaculture production and management. Designed primarily for extension, education and other professionals and prospective fish producers.

**WF 4121. Wildlife and Fisheries Biometrics Laboratory. (1)** (Prerequisite: ST 3113; corequisite: WF 4122). Four hours laboratory, alternate weeks. Application of basic statistical analytical tools to address wildlife and fisheries management/research questions.

**WF 4122 Wildlife and Fisheries Biometrics. (2)** (Prerequisite: ST 3113; corequisite: WF 4121). Two hours lecture. Application of basic statistical analytical tools to address wildlife and fisheries management/research questions.

**WF 4133/6133. Fisheries Science (3)** (Prerequisite: ST 3113 or equivalent). Two hours lecture. Four hours laboratory, alternate weeks. Study of the biological parameters of fish populations.

**WF 4153/6153. Principles of Wildlife Conservation and Management. (3)** Two hours lecture. Four hours laboratory on alternate weeks. Principles of game management; habitat improvement; wildlife techniques; public relations.

**WF 4173/6173. Fish Physiology. (3)** Two hours lecture. Four hours laboratory, alternate weeks. Basic anatomy and physiology of major systems in fish: integration of the physiological systems as they function during development, growth and maturation.

**WF 4183/6183. Finfish Aquaculture. (3)** (Prerequisites: BIO 1504 and BIO 3524.) Two hours lecture. Four hours laboratory alternate weeks. Introduction to theory and practice of aquacultural methods to the culture of finfish.

**WF 4193/6193. Crustacean and Molluscan Aquaculture. (3)** Two hours lecture. Four hours laboratory, alternate weeks. General biology and methods associated with the various phases of culture of crustacean and molluscan species grown throughout the world.

**WF 4213/6213. Wildlife Damage Management. (3)** (Prerequisites: WF 3133/3131 or consent of instructor). Two lectures per week, labs alternate weeks. Principles and practices of wildlife damage management with emphasis on damage identification and damage prevention and control methods.

**WF 4221/6221. Limnology Laboratory. (1)** (Prerequisite: WF 3133 or consent of instructor; corequisite: WF 4222/6222). Four hours laboratory skills required to evaluate freshwater ecosystems.

**WF 4222/6222. Limnology. (2)** (Prerequisite: WF 3133 or consent of instructor; corequisite WF 4221/6221). Two hours lecture. The physical, chemical and biological processes underlying the function and productivity of freshwater ecosystems.

**WF 4243/6243. Wildlife Techniques. (3)** (Prerequisite: Junior or Senior standing or consent of instructor). Two hours lecture. Four hours laboratory. Contemporary research and management techniques and tools for wildlife populations and habitats.

**WF 4253/6253 Application of Spatial Technologies to Wildlife and Fisheries Management (3)** (Prerequisite: Sr. standing or consent of instructor). Two hours lecture. Four hours laboratory weekly. Practical Application of Global Positioning Systems and Geographic Information Systems to Wildlife and Fisheries Management.

**WF 4263/6263. Wildlife Diseases. (3)** Two hours lecture. Four hours laboratory, alternate weeks. Effects and management of parasites and diseases in wild bird and mammal populations. (Same as CVM 4263/6263).

**WF 4313/6313. Fisheries Management. (3)** (Prerequisite: WF 3133 or WF 3131 or consent of instructor). Two hours lecture. Laboratories alternate weeks. Principles of fisheries management and methods for assessment and analysis of fish populations and aquatic habitats.

**WF 4323/6323. Wildlife Nutrition and Physiology. (3)** Two hours lecture. Four hours laboratory, alternate weeks. Basic applied physiology and nutrition related to management of ruminant and nonruminant game animals.

**WF 4333/6333. Fish and Shellfish Nutrition (3)** (Prerequisites: CH 2503 and CH 2501 or BCH 3613). Three hours lecture. Fundamental and applied aspects of the nutrition of fish, crustacean, and mollusk species including feeding behavior, nutritional ecology, energetics, and nutrient requirements. (Same as NTR 6333).

**WF 4343/6343. Pond and Stream Management. (3)** (Prerequisite: Junior or Senior standing or consent of instructor). Two hours lecture. Four Hours Laboratory alternate weeks. Ecological foundations and management techniques for fisheries in small impoundments and streams.

**WF 4353/6353. Fish and Wildlife Policy and Law Enforcement. (3)** (Prerequisite: Sr. standing or consent of instructor). Three hours lecture. A survey of the major content areas of fish and wildlife policy and law enforcement. Emphasis is on the fundamentals of conservation policies and laws.

**WF 4363/6363. Wildlife and Fisheries Administration and Communication. (3)** (Prerequisite: Junior standing) Two hours lecture. Three and one-half hours lab, alternate weeks. Administrative and communicational techniques and skills in the workplace and political environments of wildlife and fisheries organizations.

**WF 4371/6371. Water Quality Management Laboratory. (1)** (Prerequisite: CH 1043 and CH 1053 or consent of instructor, corequisite WF 4372/6372). Four hours laboratory, alternate weeks. Basic analytical and laboratory skills required to evaluate water quality problems.

**WF 4372/6372. Water Quality Management. (3)** (Prerequisite: CH 1043 and CH 1053 or consent of instructor; corequisite: WF 4371/6371). Two hours lecture. Biological, chemical and physical principles affecting water quality; water quality management techniques in aquaculture, fisheries and wastewater treatment.

**WF 4383/6383. Wetlands Ecology and Management. (3)** Two hours lecture. Four hours laboratory, alternate weeks. Hydrology, soils and biogeochemistry of wetlands; structure and function of important wetland types; wetland management for wildlife and fisheries; wetland creation and restoration.

**WF 4394/6394. Waterfowl Ecology and Management. (4)** (Prerequisite: WF 3133, WF 3131, WF 4153, senior standing, or consent of instructor). Three hours lecture. Four hours laboratory. Annual ecology of North American waterfowl, habitat and population ecology, and management, waterfowl identification, field trips, management plan, and current issues.

**WF 4453/6453. International Cultures and Natural Resources Management. (3)** (Prerequisite: Jr./Sr. standing or consent of instructor). Three hours lecture. Comparative examination of how natural resources are viewed and used by various cultures and how this relates to natural resources management.

**WF 4463/6463. Human Dimensions of Fish and Wildlife Management. (3)** (Prerequisite: Jr./Sr. standing or consent of instructor). Three hours lecture. Survey of the major content areas of human dimensions. Emphasis on the considerations and implications associated with measuring, evaluating and influencing people's attitudes and behaviors.

**WF 4473/6473. Wildlife and Fisheries Practices. (3)** (Prerequisite: Senior standing). Two hours lecture. Four hours laboratory. The integration of principles of ecology, wildlife and fisheries techniques and policies for effective planning and implementation of natural resource management.

**WF 4484/6484. Upland Avian Ecology and Management. (3)** (Prerequisites: WF 3133 and WF 3131 and WF 4153 and senior standing or consent of instructor). Three hours lecture. Four hours laboratory. The application of ecological principles to management of wildlife populations, focusing on avian species and communities inhabiting upland ecosystems.

**WF 4494/6494. Large Mammal Ecology and Management. (3)** (Prerequisites: WF 3133/3131 and WF 4153 and senior standing). Three hours lecture. Four hours laboratory, alternate weeks. Ecological principles and applied methods used in the management of large mammals.

**WF 4990/6990. Special Topics in Wildlife & Fisheries. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**WF 7000. Directed Individual Study.** Hours and credits to be arranged.

**WF 8000. Thesis Research/Thesis.** Hours and credits to be arranged.

**WF 8012. Advanced Applied Ecology. (2)** One hour lecture. Two hours laboratory. Provides a review in fundamental principles and application of community ecology, with emphasis on professional communication in teaching and research important to natural resource management.

**WF 8113. Scientific Literature and Communication for the Natural Sciences. (3)** Two hours lecture. Three hours laboratory. Experience and advanced training in multiple forms of communication useful in the renewable natural resource sciences.

**WF 8131-8231. Seminar in Fisheries and Wildlife. (1)** One hour each week. Seminar for graduates in natural history field.

**WF 8134. Research Methods in Wildlife and Fisheries Sciences. (4)** (Prerequisites: Graduate standing; ST 8114). Three hours lecture. Four hours laboratory. Graduate level introduction to application of scientific methods to wildlife and fisheries ecology and management.

**WF 8144. Theory of Wildlife Population Ecology. (4)** (Prerequisite: WF 3133, ST 3133 or consent of instructor.) Three hours lecture.

Two hours laboratory, weekly. Theory of wildlife population ecology including population growth, population regulation, predation, and competition. Basic methods of data collection and population sampling.

**WF 8154. Quantitative Applications in Wildlife Population Ecology. (4)** (Prerequisite: WF 8144, ST 8114 or consent of instructor). Three hours lecture. Four hours laboratory weekly. Application of basic statistical analytical tools to address natural resource management research questions.

**WF 8223. Management of Impounded River Ecosystems (3)** (Prerequisites: WF 6313/4313 or equivalent). A survey of guidance and criteria for managing reservoirs and associated riverine environments to enhance fisheries. Focus is on managing fish and their environment.

**WF 8243. Conservation Biology. (3)** (Prerequisites: WF 3133, BIO 3103 or consent of instructor). Three hours lecture. Theory and applications of conservation biology, measures of biodiversity, ecological geography, measures and treatments of decline.

**WF 8273. Advanced Fisheries Management. (3)** (Prerequisites: WF 4133/6133 and WF 4313/6313 or consent of instructor) Three hours lecture. Field exercises during spring break. Advanced treatment of the multidimensional aspects of fisheries management in a global setting with emphasis on setting realistic objectives and establishing appropriate strategy.

**WF 8343. Conceptual Ecology and Natural Resource Management. (3)** (Prerequisites: WF 8012 or equivalent or consent of instructor). Three hours lecture. A forum to discuss current literature and theory that advances the study of community ecology and its application to natural resource management.

**WF 8344. Wildlife Habitat Analysis and Management. (4)** (Prerequisite: BIO 4203). Three hours lecture. Four hours laboratory alternate weeks. Identification, ecology, analysis and management of plant communities of value to upland and wetland game species of North America.

**WF 8413. Advanced Fishery Science. (3)** (Prerequisites: WF 4133/6133 and ST 3113, or equivalents). Two hours lecture. Two hours laboratory. Estimation and interpretation of vital statistics of fish populations: analysis of fishery data using computers; models for assessment of fish stocks.

**WF 8990. Special Topics in Wildlife & Fisheries. (1-9)** Credit and title to be arranged. This course is to be used on a limited basis to offer developing subject matter areas not covered in existing courses. (Courses limited to two offerings under one title within two academic years).

**WF 9000. Dissertation Research/Dissertation.** Hours and credits to be arranged.

## WOMEN'S STUDIES

Office: 208 Allen Hall

**WS 1173. Introduction to Gender Studies. (3)** Three hours lecture. An introduction to theoretical concepts in Gender Studies. This course will examine the influence of the women's movement on the academic development of Gender Studies (Same as AN 1173 and SO 1173).