104. Preparation for Writing, FALL, SPRING, 3(3-0)


110. Writing: Science and Technology, FALL, SPRING, 4(4-0)

P: Designated score on English placement test or ATL 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AT 110 or AT 120 or AT 125 or AT 130 or AT 145 or AT 150 or AT 195H. Drafting, revising, and editing compositions derived from readings on American science and technology to develop skills in narration, persuasion, and analysis.

115. Writing: Men in America, FALL, SPRING, 4(4-0)

P: Designated score on English placement test or AT 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AT 110 or AT 120 or AT 125 or AT 130 or AT 145 or AT 150 or AT 195H. Drafting, revising, and editing compositions derived from readings on men in America to develop skills in narration, persuasion, analysis, and documentation.

150. Writing: The Evolution of American Thought, FALL, SPRING, 4(4-0)

P: Designated score on English placement test. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AT 110 or AT 120 or AT 125 or AT 130 or AT 140 or AT 145 or AT 150 or AT 195H. Drafting, revising, and editing compositions derived from American historical, social, and cultural texts to develop skills in narration, persuasion, analysis, and documentation.

290. Independent Study, FALL, SPRING, SUMMER, 1 to 4 credits.

R: Open only to freshmen and sophomores. Approval of department. Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

315. Writing: The American Ethnic and Racial Experience, FALL, SPRING, 4(4-0)

P: Designated score on English placement test or AT 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AT 110 or AT 120 or AT 125 or AT 140 or AT 145 or AT 150 or AT 195H. Drafting, revising, and editing compositions derived from readings on American ethnic and racial groups to develop skills in narration, persuasion, analysis, and documentation.

320. ANATOMY

320. Writing: American Radical Thought, FALL, SPRING, 4(4-0)

P: Designated score on English placement test or AT 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AT 110 or AT 120 or AT 125 or AT 140 or AT 145 or AT 150 or AT 195H. Drafting, revising, and editing compositions derived from readings on American radical thought to develop skills in narration, persuasions, analysis, and documentation.

551. Medical Gross Anatomy, FALL, 7(4-6)

R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Gross anatomy of the human body using dissections, medical imaging, clinical correlations, case studies, video tapes, and computer-aided instruction.

552. Medical Histology, SPRING, 3(2-0)

R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Histology of the human body.

565. Human Gross Anatomy Dissection, FALL, SPRING, SUMMER, 2 to 7 credits.

A student may earn a maximum of 15 credits in all enrollments for this course. R: ANT 551. R: Graduate-professional students in colleges of Human and Osteopathic Medicine. Dissection of selected regions of the human body.

610. Veterinary Gross Anatomy, FALL, 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: ANT 515. R: Open only to graduate-professional students in College of Veterinary Medicine. Dissection and preservation of selected regions of domestic animals.

611. Research Problems in Veterinary Anatomy, FALL, SPRING, 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Veterinary Medicine. Approval of department. Veterinary gross anatomy, cell biology, histology, or neurobiology.

813. Problems in Anatomy
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course.
R: Approval of department. Fields such as gross anatomy, histology, tissue culture, cytology, neurology, and embryology.

814. Graduate Seminar
Spring of even-numbered years. 1 to 3 credits. R: Open only to graduate students in Anatomy. Supervised practice in evaluating abstracts and delivering oral presentations of anatomical sciences. Organization, timing, and effective illustrations.

820. Advanced Neuroanatomy
Summer of odd-numbered years. 1 to 5 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of department. Current topics in anatomy and physiology and processes of central nervous system cells.

839. Systems Neuroscience
Spring of odd-numbered years. 4(4-0) Interdepartmental with Pharmacology and Toxicology, and Physiology. R: Open only to graduate students in the College of Human Medicine, Osteopathic Medicine, Agriculture and Natural Resources, Natural Science, and Veterinary Medicine. Anatomy, pharmacology, and physiology of multicellular neural systems. Sensory, motor, autonomic, and chemo-regulatory systems in vertebrate brains.

885. Vertebrate Neural Systems
Spring of odd-numbered years. 3(2-2) Interdepartmental with Physiology. Comparative analysis of major component systems of vertebrate brains. Evolution, ontogeny, structure, and function in fish, amphibians, reptiles, birds, and mammals.

999. Master's Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 18 credits in all enrollments for this course. R: Open only to graduate students in Anatomy.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open only to graduate students in Anatomy.

ANIMAL SCIENCE

Department of Animal Science
College of Agriculture and Natural Resources

110. Introductory Animal Agriculture
Fall, Spring, 3(2-2) History of animal agriculture and its relationship to human needs, production systems, marketing, environmental considerations. Current goals and limitations affecting U.S. animal production.

112. Introductory Animal Management
Spring, 3(2-2) Principles of managing beef and dairy cattle, horses, poultry, sheep and swine throughout their life cycles. Topics include genetics, nutrition, reproduction, health, care, and economically efficient production.

130A. Introductory Judging of Livestock or Carcasses
Spring, 1 to 2 credits. A student may earn a maximum of 3 credits in all enrollments for this course.
R: ANS 211. R: Not open to freshmen. A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 300A, ANS 300B, ANS 300C and ANS 300D.

130B. Introductory Judging of Dairy Cattle or Horses
Spring, 1 to 2 credits. A student may earn a maximum of 3 credits in all enrollments for this course.
R: ANS 211. R: Not open to freshmen. A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 300A, ANS 300B, ANS 300C and ANS 300D.
Evaluation of functional conformation of dairy cattle or horses. Preparation for intercollegiate competition. Field trips required.

200. Animal Products

211. Animal and Product Evaluation
Fall of odd-numbered years. 3(1-4) Evaluation of breeding stock, market animals and carcasses. Production records and soundness of breeding animals. Quality grading, yield grading and pricing of market animals and carcasses.

312. Merchandising Purebred Livestock
Spring of odd-numbered years. 2(1-2) R: Open only to sophomores, juniors, and seniors. Preparation of purebred livestock for auctions. Advertising, animal selection and budgeting of purebred livestock sales. Field trips required.

322. Sheep Management
Spring, 3(2-2) R: Open only to sophomores, juniors, and seniors. Principles of sheep management; genetics, reproduction, nutrition, and economics. Field trips required.

390A. Advanced Livestock Judging
Fall of even-numbered years. 2 credits.
R: ANS 200A. R: Not open to freshmen. A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 300A, ANS 300B, ANS 300C and ANS 300D.
Evaluation of conformation and performance records of beef cattle, swine and sheep. Represent MSU in intercollegiate competition. Field trips required.

390B. Advanced Meat Evaluation and Grading
Fall of odd-numbered years. 2 credits.
R: ANS 200A. R: Not open to freshmen. A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 300A, ANS 300B, ANS 300C and ANS 300D.
Evaluation of conformation and performance records of beef cattle, swine and sheep. Represent MSU in intercollegiate competition. Field trips required.

400. Advanced Horse Judging
Fall. 2 credits.
R: ANS 200B. R: Not open to freshmen. A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 300A, ANS 300B, ANS 300C and ANS 300D.

310. Livestock and Product Marketing

313. Principles of Animal Feeding and Nutrition

314. Genetic Improvement of Farm Animals
Fall, 4(3-2) R: BS 111 and MTH 110 or MTH 116. Qualitative and quantitative inheritance in domestic farm animals. Statistical characteristics and probability related to animal breeding. Improvement of dairy cattle, livestock, and horses through genetics and mating systems.

315. Anatomy and Physiology of Farm Animals

401. Issues in Animal Agriculture
Spring, 3(2-0) R: ANS 313 or ANS 314 or ANS 315. R: Open only to juniors and seniors. Societal issues related to local, national and international animal agriculture.

406. Endocrinology of Reproduction
Fall, 3(3-0) R: ANS 315. R: Not open to freshmen and sophomores. Endocrine regulation of reproduction. Cellular and molecular aspects of gametogenesis, folliculogenesis, sexual cycles, fertilization, sex differentiation, gestation, and parturition. Technology to regulate reproduction.

407. Food and Animal Toxicology
Fall, 3(0-3) Interdepartmental with Food Science.

407L. Toxicology Methods Laboratory
Fall, 2(0-4) Interdepartmental with Food Science.
R: ANS 407 or concurrently. R: Not open to freshmen and sophomores. Laboratory techniques for evaluating potential toxicity of chemicals to living systems. Field trip to industrial toxicology laboratory required.

A-13