

**Descriptions — American Studies  
of  
Courses**

**999. Doctoral Dissertation Research**  
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 30 credits in all enrollments for this course.  
R: Approval of college.

**AMERICAN THOUGHT AND  
LANGUAGE ATL**

**Department of American Thought  
and Language  
College of Arts and Letters**

**0102. Preparation for College Writing**  
Fall, Spring. 0(0-2)[1(0-2) See page A-2, item 3.]

C: ATL 1004. R: Designated score on English placement test.

Practice in applying the principles of English grammar, syntax, and word usage to writing.

**1004. Preparation for College Writing**  
Fall, Spring. 3(3-0)

C: ATL 0102. R: Designated score on English placement test.

Composing, revising, and editing. Active reading and pre-writing strategies. Style, mechanics, and usage. Organization and proofreading.

**101. Library Resources**  
Fall, Spring, Summer. 1(1-0)

Use of libraries for researching college assignments and papers. Emphasis on bibliographic and reference tools.

**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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on American science and technology to develop skills in narration, persuasion, analysis, and documentation.

**120. Writing: American Philosophy,  
Literature, and the Arts**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on American philosophy, literature, and the arts to develop skills in narration, persuasion, analysis, and documentation.

**125. Writing: The American Ethnic and  
Racial Experience**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on the experience of American ethnic and racial groups to develop skills in narration, persuasion, analysis, and documentation.

**130. Writing: American Radical Thought**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on American radical thought to develop skills in narration, persuasions, analysis, and documentation.

**140. Writing: Women in America**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 145 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on women in America to develop skills in narration, persuasion, analysis, and documentation.

**145. Writing: Men in America**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 150 or ATL 195H.

Drafting, revising, and editing compositions derived from readings on men in America to develop skills in narration, persuasion, and analysis, and documentation.

**150. Writing: The Evolution of American  
Thought**  
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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 195H or ATL 195H.

Drafting, revising, and editing compositions derived from American historical, social, and cultural texts to develop skills in narration, persuasion, analysis, and documentation.

**195H. Writing: Major Topics in 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 ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 140 or ATL 145 or ATL 150.

Drafting, revising, and editing compositions derived from readings on major topics in American thought to develop advanced 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.

**ANATOMY ANT**

**Department of Anatomy  
College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine**

**316. General Human Anatomy**  
Spring. 3(3-0)

P: BS 110 or BS 111 or approval of department.  
Human structure. Major systems of the human body.

**480. Special Problems in Anatomy**  
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 15 credits in all enrollments for this course.

R: Approval of department.  
Topics from an anatomical field such as gross anatomy, histology, tissue culture, cytology, neurology, or embryology.

**515. Comparative Veterinary Gross Anatomy**  
Fall. 6(2-10)

R: Open only to graduate-professional students in the College of Veterinary Medicine.  
Canine anatomy. Comparisons with ruminant, porcine, and equine anatomy.

**516. Veterinary Histology and Cell Biology**  
Fall. 4(3-2)

R: Open only to graduate-professional students in the College of Veterinary Medicine.  
Principles of developmental, cellular, and molecular biology as related to veterinary medicine.

**517. Veterinary Neuroanatomy**  
Spring. 1(1-0)

R: Completion of 1 semester of the graduate-professional program in the College of Veterinary Medicine.  
Introduction to the anatomy of the nervous system using the canine species as a model.

**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 prosections, medical imaging, clinical correlations, case studies, video tapes, and computer aided instruction.

**552. Medical Neuroscience**  
Spring. 4(3-2) Interdepartmental with Physiology and Radiology.

R: Graduate-professional students in colleges of Human and Osteopathic Medicine.

Correlation of normal structure and function of the human nervous system with clinical testing, classical lesions, and common diseases.

**562. Medical Histology**  
Spring. 3(2-2)

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

**585. 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.

P: 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 Dissection**  
Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.

P: ANT 515. R: Open only to graduate-professional students in College of Veterinary Medicine.  
Dissection and prosection of selected regions of domestic animals.

**611. Research Problems in Veterinary  
Anatomy**  
Fall, Spring, Summer. 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.

**802. Clinical Surgical Anatomy**  
Spring. 4(2-4) Interdepartmental with Surgery. Administered by Surgery.

R: Open only to Master's students in Surgery.  
Review of surgical anatomy. Detailed anatomical information through lecture and dissection sessions. Clinical interpretation of anatomy and surgical approaches.

**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 Colleges 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.

**899. Master's Thesis Research**

Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 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 ANS**

**Department of Animal Science  
College of Agriculture and  
Natural Resources**

**110. Introductory Animal Agriculture**  
Fall. 3(2-2)

History of animal agriculture and its relationship to human needs, production systems, marketing, environmental considerations. Current goals of 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.

**200A. 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.

P: ANS 211. R: 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 beef cattle, sheep and swine and their carcasses. Preparation for intercollegiate competition. Field trips required.

**200B. 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: 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.

**210. Animal Products**

Fall. 4(3-3)

P: ANS 112. R: Not open to freshmen.

Edible animal products. Processing, preservation, storage and distribution of dairy, meat, and egg 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.

**212. Merchandising Purebred Livestock**

Spring of odd-numbered years. 2(1-2)

R: Open only to sophomores, juniors, and seniors.

Purebred livestock industry. Private treaty and auction sales. Advertising, animal selection and budgeting of purebred livestock sales. Field trips required.

**262. Sheep Management**

Spring. 3(2-2)

R: Open only to sophomores, juniors, and seniors.

Principles of sheep management: genetics, reproduction, nutrition, marketing, and economics. Field trips required.

**300A. Advanced Livestock Judging**

Fall of even-numbered years. 2 credits.

P: 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.

**300B. Advanced Meat Evaluation and Grading**

Fall of odd-numbered years. 2 credits.

P: 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 beef, pork, and lamb carcasses and wholesale cuts according to industry standards. Federal grading standards. Field trips to meat packing operations required. Represent MSU in intercollegiate competition.

**300C. Advanced Dairy Cattle Judging**

Fall. 2 credits.

P: 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.

Evaluation of conformation of various breeds of dairy cattle. Represent MSU in intercollegiate competition. Field trips required.

**300D. Advanced Horse Judging**

Fall. 2 credits.

P: 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. Evaluation of functional characteristics of horses. Represent MSU in intercollegiate competition. Field trips required.

**310. Livestock and Product Marketing**

Fall. 3(2-2) Interdepartmental with Food Systems Economics and Management.

P: ANS 112. R: Not open to freshmen.

Movement of livestock and products into and through market channels. Market structures, futures, options. Current issues. Field trip required.

**313. Principles of Animal Feeding and Nutrition**

Fall. 4(3-2)

P: CEM 143, BS 111.

Principles and practices of nutrition for cattle, horses, poultry, sheep and swine. Metabolism of protein, minerals, and vitamins. Diet formulation. Performance prediction. Nutritional maladies. Field trip required.

**314. Genetic Improvement of Farm Animals**

Fall. 4(3-2)

P: BS 111 and MTH 110 or MTH 116.

Qualitative and quantitative inheritance in domestic farm animals. Statistical concepts 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**

Spring. 4(3-2)

P: BS 111.

Gross and microanatomy of farm animals. Structure directed function of tissues. Endocrine integration for homeostasis. Regulation of growth, lactation, and reproduction. Homeorhesis.

**401. Issues in Animal Agriculture**

Spring. 1(2-0)

P: 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.

**405. Endocrinology of Reproduction**

Fall. 3(3-0)

P: 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(3-0) Interdepartmental with Food Science.

P: BCH 200 or BCH 401. R: Not open to freshmen and sophomores.

Fate and effects of chemicals in the food chain. Impact on animal production. Residues in food products. Food safety assessment. Control methods.

**407L. Toxicology Methods Laboratory**

Fall. 2(0-4) Interdepartmental with Food Science.

P: 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.