

**420 History of Sexuality since the 18th Century**  
Fall, Spring. 3(3-0) Interdepartmental with History. Administered by Department of History. R: Not open to freshmen

Changing gender roles, sex in the Victorian era, prostitution, pornography, birth control, emergence of homo- and heterosexuality, sex under fascism, the sexual revolution, contemporary conflicts.

**425 Women and Criminal Justice**  
Spring of even years. 3(3-0) Interdepartmental with Criminal Justice. Administered by School of Criminal Justice. RB: (CJ 220 Or WS 201) R: Open only to juniors or seniors.

Theories on women's victimization and criminality. Women's experiences as victims, offenders, and criminal justice employees. Laws and their effects on the rights of women in the criminal justice system.

**453 Women and Work: Issues and Policy Analysis**  
Spring. 3(3-0) Interdepartmental with Environmental Economics and Policy; Economics. Administered by Department of Agricultural Economics. RB: (EC 201 or EC 202 or EEP 201 or concurrently) R: Not open to freshmen or sophomores.

Current and past quantity and quality of women's participation in the labor force. Gender differentials in earnings and occupations. Employment discrimination. Laws, especially affirmative action laws. Social policy effects. International issues.

**482 Theory and Practice of Feminist Literary Criticism**  
Spring. 3(3-0) Interdepartmental with English. Administered by Department of English. P: (ENG 353 or ENG 379 or WS 202) and completion of Tier I writing requirement. R: Open only to juniors or seniors in the Department of English or Women's Studies Program or English disciplinary minor.

Feminist literary critical theory and its implications for reading and studying literature.

**490 Independent Study**  
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: (WS 201 or WS 202 or WS 203) R: Open only to juniors or seniors; approval of program.

Individual reading and research on women and gender.

**491 Special Topics**  
Fall, Spring. 3 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. RB: (WS 201 Or WS 202 Or WS 203) R: Not open to freshmen or sophomores.

In-depth study of special topic emphasizing women and gender.

**492 Women's Studies Senior Seminar (W)**  
Spring. 4(4-0) P: (WS 201 and WS 203) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores.

Synthesis and elaboration of ideas and perspectives central to women's studies. Current areas of interest and research in feminist scholarship.

**493 Internship**  
Fall, Spring, Summer. 2 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. P: (WS 201 or WS 202 or WS 203) R: Not open to freshmen or sophomores. Approval of program.

Integration of feminist knowledge through work experience related to women's concerns. Experience in legislative, community, or educational settings.

**890 Individual Reading**  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of program.

Faculty supervised graduate level reading in special topics.

## WRITING, RHETORIC AND AMERICAN CULTURES WRA

### Department of Writing, Rhetoric and American Cultures College of Arts and Letters

**1004 Preparation for College Writing**  
Fall, Spring. 3(3-0) P: Designated score on English placement test. C: ATL 0102 concurrently.

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

**110 Writing: Science and Technology (I)**  
Fall, Spring. 4(4-0) P: (ATL 1004) Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 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.

**115 Writing: Law and Justice in the United States**  
Fall, Spring. 4(4-0) P: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 or ATL 150 or ATL 195H.

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

**120 Writing: American Philosophy, Literature, and the Arts**  
Fall, Spring. 4(4-0) P: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 125 or ATL 130 or ATL 135 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: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 130 or ATL 135 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: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 125 or ATL 135 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, persuasion, analysis, and documentation.

**135 Writing: Public Life in America**  
Fall, Spring. 4(4-0) P: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 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 civic tradition and community service-learning experiences to develop skills in narration, persuasion, analysis, and documentation.

**140 Writing: Women in America**  
Fall, Spring. 4(4-0) P: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 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: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 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, analysis, and documentation.

**150 Writing: The Evolution of American Thought**  
Fall, Spring. 4(4-0) P: (ATL 1004) or designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 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.

## Writing, Rhetoric and American Cultures—WRA

- 195H Writing: Major Topics in American Thought**  
Fall, Spring. 4(4-0) RB: Designated score on English placement test. Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 115 or ATL 120 or ATL 125 or ATL 130 or ATL 135 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.
- 202 Introduction to Professional Writing**  
Fall. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 202  
Basic principles of rhetoric and composition applied to professional writing. Page design, field definition, research tools and practices, genres and conventions, and professional style.
- 210 Introduction to Web Authoring**  
Fall, Spring. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 210  
Analyzing, evaluating, and authoring Web sites. Principles of design rhetoric. Practices of Web accessibility.
- 260 Rhetorical Analysis of American Cultures for Professional Writing**  
Fall, Spring. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 260  
Rhetorical analysis of consumer, corporate, organizational, and popular cultures appropriate to professional settings.
- 290 Independent Study**  
Fall, Spring, Summer. 1 to 4 credits. R: Open only to freshmen or sophomores. Approval of department.  
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.
- 308 Invention in Writing**  
Spring. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 308  
Theory and practice of invention in writing. Strategies and theories of generating and exploring thought in civic and professional writing contexts.
- 320 Technical Writing**  
Fall, Spring. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 320  
Principles and practices of effective writing in the workplace. Technical, scientific, and electronic-mediated writing. Includes audience and organizational needs, visual rhetoric, information design, electronic publication, ethics, technical style, usability testing, and team writing.
- 331 Writing in the Public Interest**  
Spring of odd years. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 331  
Various forms of public writing and rhetoric and their roles in democracy and public culture. Practice in modes of public and civic discourse, including deliberative strategies and a range of public literacies.
- 341 Writing Nature and the Nature of Writing**  
Fall. 3(3-0) Interdepartmental with Fisheries and Wildlife. P: Completion of Tier I writing requirement. SA: AL 341  
Writing- and reading-intensive course focusing on the language of scientists, poets, essayists, naturalists, environmentalists, and biologists, and on their various responses to and representations of the natural environment.
- 355 Writing for Publication Workshop**  
Fall. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 355  
Workshop for students developing writing for a variety of print and online publications.
- 360 Visual Rhetoric**  
Spring. 4(4-0) P: Completion of Tier I writing requirement. SA: AL 360  
Visual literacy, design, and rhetoric. Effects of visual elements in print and online documents. Intensive writing and design.
- 361 Rhetoric, Persuasion, and Argument**  
Fall of odd years. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 361  
Traditional and contemporary approaches to rhetoric, persuasion, and argument both in written and visual texts. Includes feminist, digital, political, and postmodern approaches.
- 370 Editing and Style in Professional Writing**  
Spring. 3(3-0) P: (WRA 202) and completion of Tier I writing requirement. SA: AL 370  
Theories, practice, and processes of editing in professional writing contexts. Rhetoric and style.
- 410 Advanced Web Authoring**  
Spring. 3(3-0) P: (WRA 210) and completion of Tier I writing requirement. SA: AL 410  
Developing and maintaining large-scale, interactive Web sites. Visual design, usability, audio and video integration, ongoing site management, and web accessibility.
- 415 Digital Rhetoric**  
Fall. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 415  
Rhetorical, social, political, economic, and ethical dimensions of electronic writing and publishing. Rhetorical dynamics of computer-mediated writing spaces such as the Internet, World Wide Web, e-mail, and synchronous chat.
- 417 Multimedia Writing**  
Fall. 4(4-0) P: (WRA 210) and completion of Tier I writing requirement. RB: Prior experience with graphical computer applications. SA: AL 417  
Visual rhetoric and design theories applied to digital short subjects. Write, direct, critique, and produce motion-based digital compositions that include multiple media.
- 420 Advanced Technical Writing**  
Spring. 3(3-0) P: (WRA 320) and completion of Tier I writing requirement. SA: AL 420  
Applied theory and specialized practices. User-centered design, project and document management, information and interface design. Issues in digital writing, technical editing, and writing for scientific and technical journals.
- 444 Writing In American Cultures**  
Fall, Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. P: (WRA 260) and completion of Tier I writing requirement. SA: AL 444  
Analysis of rhetorical practices in selected academic and professional disciplines, communities, and public cultures.
- 445 Writing in American Cultures: Rhetoric and Music**  
Spring of even years. 3(3-0) P: (IAH 201 or IAH 202 or IAH 203 or IAH 204 or IAH 206 or IAH 207 or IAH 208) and completion of Tier I writing requirement. RB: (AL 260) R: Open only to juniors and seniors. SA: AL 445  
Exploration of forms of writing about music. Links between music and oral cultures. Practice in modes of writing about and evaluating critiques of music.
- 446 American Indian Rhetorics (N)**  
Spring. 3(3-0) P: Completion of Tier I writing requirement. RB: (WRA 260 or WRA 360) or 3 credits in other ethnic studies coursework. SA: AL 446  
Theoretical approaches to Native rhetorics. Historical and contemporary debates about the production and reception of visual and written Native texts.
- 451 Managing Large-Scale Publication Projects**  
Spring of even years. 3(3-0) P: (WRA 202 or WRA 320) and completion of Tier I writing requirement. SA: AL 451  
Design theory, task management research, collaborative problem-solving approaches, and team processes involved in designing and creating large-scale publications.
- 453 Grant and Proposal Writing**  
Fall. 3(3-0) P: (WRA 202) and completion of Tier I writing requirement. SA: AL 453  
Researching and writing grants and proposals for corporations, nonprofit organizations, businesses, and government agencies.
- 455 Portfolio Seminar**  
Fall, Spring. 3(3-0) P: Completion of Tier I writing requirement. SA: AL 455  
Workshop for students preparing professional document portfolios in print and digital formats, including application materials for career, graduate study, and professional positions.
- 493D Internship in Professional Editing and Publishing**  
Spring of odd years. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement. RB: (WRA 370 and WRA 355) R: Approval of college. SA: AL 493D  
Supervised work in editing and publishing.
- 493E Internship in Professional Writing**  
Spring. 3 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: (WRA 202) and completion of Tier I writing requirement. RB: Web-authoring course or experience. R: Approval of college. SA: AL 493E  
Supervised work as writers and editors in a corporate or organizational setting. Required workshop component.

## ZOOLOGY

## ZOL

**Department of Zoology**  
**College of Natural Science**
**101 Preview of Zoology**

Fall, Spring. 1(1-0) R: Open only to freshmen in the Zoology major.

Zoology as a discipline. Availability of diverse career options. Integration of human and technical skills in scientific problem solving.

**111L Cell and Molecular Biology Laboratory**

Fall, Spring, Summer. 2(1-3) Interdepartmental with Biological Science; Microbiology and Molecular Genetics; Plant Biology. Administered by College of Natural Science. P: (BS111 or concurrently) Not open to students with credit in LBS 159H.

Principles and applications of common techniques used in cell and molecular biology.

**141 Introductory Human Genetics**

Fall, Spring. 3(3-0) R: Not open to students in the Biochemistry, Plant Biology, Entomology, Medical Technology, Clinical Laboratory Science, Physiology, Zoology, Microbiology, Biological Science-Interdepartmental, or Human Biology majors or to students in the corresponding Lyman Briggs School coordinate majors or to students in the Lyman Briggs School Biology field of concentration. Not open to students with credit in ZOL 341 or ZOL 344.

Inheritance of human traits. Impact of genetic technology on society. Ethical and legal issues. Risks and benefits of genetic technology.

**306 Invertebrate Biology**

Fall. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H)

Systematics, morphology, and natural history of invertebrate animals. Identification of live and preserved specimens. Recognition of selected groups.

**310 Psychology and Biology of Human Sexuality**

Spring of odd years. 3(3-0) Interdepartmental with Psychology. Administered by Department of Psychology. P: (PSY 101 or concurrently) and (BS 110 or concurrently or BS 111 or concurrently or LBS 144 or concurrently or LBS 145 or concurrently or LBS 148H or concurrently or LBS 149H or concurrently) Not open to students with credit in FCE 445.

Sexual behavior from biological, psychological and neuroscience perspectives. Sexual differentiation of the body. Role of hormones in development and reproduction in humans and other animals. Human sexual orientation. Fertility and contraception. Sexual disorders. Sexually transmitted diseases.

**313 Animal Behavior**

Fall, Spring. 3(3-0) P: (BS 110 or LBS 144 or LBS 148H) R: Not open to freshmen. SA: ZOL 213

Development, physiological mediation, adaptive significance and evolution of behavior.

**316 General Parasitology**

Spring. 3(3-0) P: (LBS 144 or LBS 145 or LBS 148H or LBS 149H or BS 110) or (BS 111 and BS 111L)

Identification, life history, host-parasite relationships, and epidemiology of protozoan, helminth, acanthocephalan, copepod, and arthropod parasites of animals and humans.

**316L General Parasitology Laboratory**

Spring. 1(0-2) P: (ZOL 316 or concurrently) R: Not Open to freshman

Laboratory diagnosis of protozoans, helminths, acanthocephalans, copepods, and arthropods that infect humans and animals. Animal necropsy.

**319 Introduction to Earth System Science**

Fall. 3(3-0) Interdepartmental with Entomology; Plant Biology; Geological Sciences; Sociology. Administered by Department of Entomology. RB: Completion of one course in biological or physical science.

Systems approach to Earth as an integration of geochemical, geophysical, biological and social components. Global dynamics at a variety of spatio-temporal scales. Sustainability of the Earth system.

**320 Developmental Biology**

Fall. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H) and (BS 111 or LBS 145 or LBS 149H) SA: ZOL 220

Principles of development, emphasizing vertebrates. Illustrations from morphological and experimental investigations.

**328 Comparative Anatomy and Biology of Vertebrates**

Spring. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H) and completion of Tier I writing requirement. SA: ZOL 228

Comparative morphology and natural history of vertebrates. Dissection of representatives of most vertebrate classes.

**341 Fundamental Genetics**

Fall, Spring, Summer. 4(4-0) Interdepartmental with Plant Biology. P: (BS 111 or LBS 145 or LBS 149H)

Principles of heredity in animals, plants and microorganisms. Classical and molecular methods in the study of gene structure, transmission, expression and evolution.

**343 Genetics Laboratory**

Spring. 2(0-4) P: (ZOL 341 or concurrently) and completion of Tier I writing requirement.

Experiments involving genetics of *Drosophila* and other eucaryotic organisms.

**353 Marine Biology**

Fall. 4(4-0) P: (BS 110 or LBS 144 or LBS 148H) and completion of Tier I writing requirement.

Analysis of marine and estuarine systems. Integration of biology, chemistry, and physics. Life histories of marine organisms. Biology of special marine habitats including rocky intertidal zones, upwellings, coral reefs and deep sea.

**355 Ecology**

Fall, Spring, Summer. 3(3-0) Interdepartmental with Plant Biology. P: (BS 110 or LBS 144 or LBS 148H) SA: ZOL 250

Plant and animal ecology. Interrelationships of plants and animals with the environment. Principles of population, community, and ecosystem ecology. Application of ecological principles to global sustainability.

**355L Ecology Laboratory**

Fall, Spring, Summer. 1(0-3) Interdepartmental with Plant Biology. P: (ZOL 355 or concurrently or PLB 355 or concurrently) and completion of Tier I writing requirement.

Population, community, and ecosystem ecology, utilizing plant and animal examples to demonstrate general field principles.

**360 Biology of Birds**

Fall. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H)

Behavior, ecology, evolution, and systematics of birds; biodiversity. Laboratories emphasize diversity of form and function, life history patterns, and identification.

**361 Michigan Birds**

Summer. 4(3-3) Summer: Given only at W.K. Kellogg Biological Station. P: (BS 110 or LBS 144 or LBS 148H) Not open to students with credit in ZOL 360.

Field study of avian diversity, ecology, and behavior using current systematics and habitat identification techniques.

**365 Biology of Mammals**

Spring. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H)

Analysis of the behavior, ecology, evolution, and systematics of mammals. Laboratories emphasize diversity of form and function, life history patterns, and identification. Field trips required.

**369 Introduction to Zoo and Aquarium Science**

Spring. 3(3-0) Interdepartmental with Landscape Architecture; Fisheries and Wildlife; Veterinary Medicine. P: (BS 110 or LBS 144 or LBS 148H)

Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.

**370 Introduction to Zoogeography**

Fall. 3(3-0) Interdepartmental with Fisheries and Wildlife; Geography. P: (ZOL 355)

Patterns of geographical distribution of animals and the ecological and historical processes leading to these patterns.

**384 Biology of Amphibians and Reptiles**

Fall. 4(3-3) P: (BS 110 or LBS 144 or LBS 148H)

The evolution, systematics, ecology, and behavior of amphibians and reptiles. Laboratory emphasizes diversity and identification of families and Great Lakes species. Field trips may be required.

**400H Honors Work**

Fall, Spring. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of the department.

Honors work on a topic in zoology.

**402 Neurobiology**

Fall, Spring. 3(3-0) P: (BS 110 or LBS 144 or LBS 148H) and (BS 111 or LBS 145 or LBS 149H) R: Not open to freshmen or sophomores.

Structure and function of nerve cells and nervous systems.

**404 Human Genetics**

Spring. 3(3-0) P: (ZOL 341) and (BMB 401 or concurrently or BMB 461 or concurrently) and completion of Tier I writing requirement. SA: ZOL 344

Inheritance of human traits. Medical, molecular, physiological and forensic applications. Biochemical, clinical, and molecular genetics of human disease. Prenatal, pre-symptomatic, and clinical diagnosis. Ethical, legal and social considerations.