

BIOLOGY (BIOL)

BIOL 102. Biology: Current Issues and Applications - S 3 Units

Term Typically Offered: Fall, Spring, Summer

Description: Selected topics from the biological sciences that focus on high-profile issues in biological sciences and their socio-scientific applications.

Note: May fulfill general education natural science requirement but does not count toward biology major or minor.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 104. Laboratory for Biology: Current Issues and Applications - SL 1 Unit

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Completion of or concurrent enrollment in BIOL 102.

Description: Hands-on laboratory experience for students not majoring in the sciences. Labs are designed to develop skills in scientific methodology, observation and critical thinking.

Note: Does not count toward biology major or minor.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 203. Scientific Information Literacy and Communication - OC 3 Units

Term Typically Offered: Spring Only

Description: To improve oral communication skills that transfer across disciplines; to fulfill a general education oral communication requirement with a course that has science-intensive content; to improve student skills in critically assessing scientific claims; and to introduce students early in their programs to work of potential research mentors.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 240. Unity of Life - S 3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): ACT score of 24 or better on the sciences section; completion with a passing grade or enrollment in BIOL 102 (or department approved equivalent) in prior semester; Biology placement test score of 10 or better; or completion with a passing grade or enrollment in BIOL 242 in prior semester.

Description: Basic biological principles; macromolecules, biology of cells, metabolism, genetics, and evolution.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 242. Diversity of Life 3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): ACT score of 24 or better on the sciences section; completion with a passing grade or enrollment in BIOL 102 (or department approved equivalent) in prior semester; Biology placement test score of 10 or better; or completion with a passing grade or enrollment in BIOL 240 in prior semester.

Description: Taxonomy and classification, form and function of monerans, fungi, protists, plants and animals; survey of ecology.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 244. Principles of Biology Laboratory - SL 2 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Successful completion of BIOL 240 and completion of, or concurrent enrollment in, BIOL 242; or completion of BIOL 242 and completion of, or concurrent enrollment in, BIOL 240.

Description: A comprehensive laboratory in Biology involving experiments at the cellular/genetics level through organismic diversity. An emphasis is placed on critical analysis of scientific data through application of the scientific method.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 257. Introduction to Microbiology - S 3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): BIOL 102 or BIOL 240, or equivalents; and CHEM 105 or CHEM 201 (CHEM 101 accepted for Dental Hygiene students only).

Description: Survey of microorganisms including structure-function relationships, growth and its control, metabolism and genetics. Diversity will be discussed with emphasis on infectious diseases, epidemiology, and basic immunology.

Note: Does not count towards biology major or minor.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 258. Introduction to Microbiology Laboratory - SL 1 Unit

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Completion of or concurrent enrollment in BIOL 257.

Description: The introductory microbiology laboratory teaches students basic microbiological techniques that are necessary to study and safely handle microorganisms and their viruses. Because this course relies on participation, attendance will be included in the evaluation.

Note: Does not count toward biology major or minor.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 260. Human Anatomy & Physiology I 3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): BIOL 102 or BIOL 240 or equivalent with a grade of C or better and completion of CHEM 101 or CHEM 105 with a grade of C or better; restricted to students in the Nursing and Dental Hygiene programs.

Description: A general introduction to structure and function of the human body. Basic concepts related to anatomical terminology, cells, tissues, and integumentary, the skeletal, muscular, nervous, and endocrine systems are covered. Interrelationships of organ systems are also emphasized.

Note: This course is intended for students majoring in nursing or dental hygiene.

Note: Does not count toward a biology major or minor.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

<p>BIOL 261. Human Anatomy & Physiology II 3 Units Term Typically Offered: Fall, Spring, Summer Prerequisite(s): BIOL 260 with a grade of C or better; restricted to students in the Nursing and Dental Hygiene programs. Description: A general introduction to structure and function of the human body. Basic concepts related to anatomical terminology, cells, tissues, and integumentary, the skeletal, muscular, nervous, and endocrine systems are covered. Interrelationships of organ systems are also emphasized. Note: Does not count toward biology major or minor.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 304. Plant Taxonomy & Ecology 3 Units Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 240, BIOL 242 and BIOL 244. Description: Introduction to the principles and methods of identifying, naming, and classifying plants. Focus on ecologically significant plants of North America and Kentucky, and discussion of the importance of specific species in maintaining ecosystem structure and function. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 262. Human Anatomy & Physiology Lab 1 Unit Term Typically Offered: Fall, Spring, Summer Prerequisite(s): Completion of BIOL 260 with a grade of C or better and concurrent enrollment in BIOL 261. Description: A study and correlation between the anatomy and physiology of selected organ systems. Note: Does not count towards biology major or minor.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 308. Vertebrate Zoology 3 Units Term Typically Offered: Fall Only Prerequisite(s): BIOL 240, BIOL 242, and BIOL 244. Description: Vertebrate Zoology explores the anatomy, ecology, and behavior of vertebrates from an evolutionary perspective. Laboratory work centers on anatomy and includes species identification, data collection, analysis, and presentation activities. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 263. Environmental Biology 3 Units Term Typically Offered: Fall, Spring, Summer Description: A study of the biological principles of environmental effects on living organisms; emphasis on ecological relationships of humans, including resource exploitation, pollution, environmental degradation, and human behavior. Note: Does not count toward biology major or minor. Note: Students who have already received credit for BIOL 363 may not receive credit for this course.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 310. Animal Behavior 3 Units Term Typically Offered: Fall Only Prerequisite(s): BIOL 240, BIOL 242 and BIOL 244. Description: Survey of the field of animal behavior. Topics include communication, learning, mate choice, fighting and aggression, and mating systems. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 300. Plant Biology 3 Units Term Typically Offered: Fall Only Prerequisite(s): BIOL 240 and BIOL 242. Description: This course examines the biology of plants and other organisms with cell walls (including bacteria, fungi, protists, and algae). These distantly related organisms include primary producers that energize the biosphere, decomposers that recycle nutrients and economic species that provide most of humanity's food, fiber and medicine. As part of the course content, students compose an original manuscript based on in-class experiments. This manuscript includes a literature review. Students submit this manuscript as a draft, receive comments, and then revise their final version based on those comments. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 329. Cellular and Molecular Biology 3 Units Term Typically Offered: Fall, Spring, Summer Prerequisite(s): BIOL 240, BIOL 242, and CHEM 201. Description: Processes at the molecular and cellular levels integrated with the science of biology and biodiversity. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 330. Genetics and Molecular Biology 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 329. Description: Genetics presented from a Mendelian to a molecular point of view. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 329. Cellular and Molecular Biology 3 Units Term Typically Offered: Fall, Spring, Summer Prerequisite(s): BIOL 240, BIOL 242, and CHEM 201. Description: Processes at the molecular and cellular levels integrated with the science of biology and biodiversity. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 331. Genetics and Molecular Biology: Laboratory 2 Units Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 330 (or concurrent). Description: The laboratory portion of BIOL 330 with exercises in genetics, cellular, and molecular biology. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 330. Genetics and Molecular Biology 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 329. Description: Genetics presented from a Mendelian to a molecular point of view. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>

<p>BIOL 347. Comparative Vertebrate Anatomy 4 Units Term Typically Offered: Spring Only Prerequisite(s): BIOL 240, BIOL 242, and BIOL 244. Description: Phylogeny and comparative morphology of classes of vertebrates; structure and organ systems of lamprey, shark, and cat. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 372. Evolutionary Ecology of Disease 3 Units Term Typically Offered: Fall Only Prerequisite(s): BIOL 240, BIOL 242, or consent of instructor. Description: An overview of genetic, parasitic, and environmental causes of disease; topics include evolution of virulence and antibiotic resistance, emerging diseases, and options for controlling disease. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 350. Biostatistics 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): MATH 180 or MATH 205. Description: A survey course of statistical procedures commonly used in the life sciences. It is taught at an introductory level and will focus on the application of statistical procedures to data. Note: This lecture course is supplemented with a separate recitation section.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 382. Entomology 3 Units Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 363. Description: Examination of the morphology, physiology, behavior, evolution and ecology of the major groups of insects. A collection of common insect families is required. The laboratory will include observations on live and preserved animals and possible field trips. Students will learn to: 1) use terms and concepts that describe the diversity of insects, 2) compare and contrast major insect groups with respect to structure and function, and 3) collect and prepare museum-quality specimens for scientific study.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 357. General Microbiology 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): CHEM 202; BIOL 329 or BIOL 330. Description: A comprehensive discussion of prokaryotic and eukaryotic microorganisms and their viruses including their diversity, structure-function relationships, and growth and its control, metabolism and genetics and ecology. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 388. Biology Honors Seminar 1 Unit Term Typically Offered: Fall, Spring Prerequisite(s): Permission of instructor. Description: Completion of BIOL 240 and BIOL 242 with a minimum grade of B. A 1-credit seminar course to introduce sophomores to undergraduate research opportunities at UofL with the purpose of finding a laboratory in which to do an honors thesis project by junior year.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 358. Microbiology Laboratory 1 Unit Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 357 (or concurrent) or BIOL 485 (or concurrent). Description: Discussion and exercises using basic and advanced microbiological laboratory techniques. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 389. Undergraduate Seminar 1 Unit Grading Basis: Pass/Fail Term Typically Offered: Fall, Spring Description: Undergraduate seminar in varied aspects of biology; subject to be announced in the schedule of courses. Note: No more than 2 hours of BIOL 389 may be counted toward the major in biology.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 359. Microbial Genetics and Pathogenesis 3 Units Term Typically Offered: Spring Only Prerequisite(s): BIOL 330 and BIOL 357 recommended. Description: A literature-based introduction to current microbial genetics and pathogenesis. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 390. Special Topics 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): Biology core or faculty consent. Description: Special topics in biology. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>
<p>BIOL 363. Principles of Ecology 3 Units Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 240, BIOL 242, and BIOL 244. Description: A majors' core course providing an overview of the basic principles and concepts of Ecology and an understanding of how those principles and concepts can aid in identifying and seeking solutions for human environmental problems. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>BIOL 391. Special Topics in Biology 1-4 Units Term Typically Offered: Occasionally Offered Description: Topics to be indicated in the Schedule of Courses. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>

BIOL 392. Microbes and Core Concepts in Ecology and Evolution 3 Units

Prerequisite(s): BIOL 357, BIOL 363, or BIOL 409.

Description: Core concepts in ecology and evolution using microbes as primary examples. Students will read primary scientific literature and write scientific reviews of the literature in order to enhance their understanding of these concepts.

Note: Approved for the Arts and Sciences upper-level requirement for written communication (WR).

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 395. Basic Pharmacology 3 Units

Term Typically Offered: Spring Only

Prerequisite(s): BIOL 260, BIOL 261, BIOL 465, or consent of instructor.

Description: Students will gain knowledge of the properties and actions of pharmacological agents.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 396. Preview to Dentistry 3 Units

Term Typically Offered: Spring Only

Prerequisite(s): BIOL 329 and BIOL 330 or equivalent, and consent of instructor.

Description: This course is designed for pre-dental students and students considering dentistry as a career. The purpose of the course is to expose pre-dental students to the art, science, and practice of dentistry.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 400. Histology 4 Units

Term Typically Offered: Fall Only

Prerequisite(s): BIOL 329 or consent of instructor.

Description: The microscopic anatomy and function of vertebrate tissues and organs.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 401. Advanced Ecology 3 Units

Term Typically Offered: Occasionally Offered

Prerequisite(s): BIOL 363.

Description: Major concepts in evolutionary ecology. Theoretical and experimental studies of adaptation, population growth and regulation, competition, predation, diversity, life histories, and ecosystems.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 402. Advanced Ecology Lab 2 Units

Term Typically Offered: Occasionally Offered

Prerequisite(s): BIOL 401 (or concurrently).

Description: Field and laboratory experiments to investigate ecological principles. Discussion of research and practice of basic biostatistics and experimental design.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 404. Undergraduate Research 1-3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Faculty and chair consent.

Description: Undergraduate Research in a select subject area with a student-selected faculty member.

Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS.

Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 405. Undergraduate Research 1-3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Faculty and chair consent.

Description: Undergraduate Research in a select subject area with a student-selected faculty member.

Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 406. Undergraduate Research (WR) 1-3 Units

Term Typically Offered: Fall, Spring, Summer

Prerequisite(s): Faculty and chair consent; minimum cumulative grade point average of 3.0 and completion of biology core.

Description: Undergraduate Research in a select subject area with a student-selected faculty member.

Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).

Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS.

Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 409. Evolutionary Biology Term Typically Offered: Fall Only Prerequisite(s): BIOL 363 or consent of instructor. Description: A review of basic evolutionary principles and processes including speciation, natural selection, sexual selection, extinction, heritability, genetic drift, inbreeding, outbreeding, heterochrony and Darwinian medicine. Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.	3 Units	BIOL 430. Undergraduate Teaching Assistant Term Typically Offered: Fall, Spring Prerequisite(s): BIOL 240, BIOL 242, BIOL 244, BIOL 329, BIOL 330 and BIOL 331; CHEM 341; minimum Junior standing; Biology major; 3.25 GPA in major; permission of instructor. Description: A guided learning experience in inquiry-based instructional techniques and best practices in STEM education that includes a field experience as an undergraduate teaching assistant. 2.5 GPA in major to be eligible. Note: Majors only, permission to enroll required, minimum cumulative 3.0 Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.	3 Units
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	
BIOL 410. Misuse of Biology in Film and Pop Culture Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 329, BIOL 330, and CHEM 341. Description: This course will examine how biology and themes in the biological sciences are portrayed in films and popular culture with a mind towards evaluating whether the science is appropriate or being misused. In the process of these analyses, we will explore such questions as: What is science and what is not? Also what is pseudo-science or bad science? For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 435. Chemical Ecology Term Typically Offered: Spring Only Prerequisite(s): BIOL 240, BIOL 242, and CHEM 201. Description: This course will explore the remarkable world of chemical ecology. Where ecological outcomes between or among individuals are influenced or determined directly or indirectly by chemicals produced by individuals. A key focus will be the chemical ecology of plants. Though we will also explore chemical ecology in animals as well. Considerable ecological information is derived from chemicals produced by organisms both to other members of the same species or to a different species, and affect both natural and sexual selection. We will use an interactive discussion/seminar-style to interrogate the primary literature for current knowledge of how chemical cues influence a diverse array of ecological interactions. From the African savannas to galling insects in our own backyard. Students will have flexibility to choose their own research topics to pursue focused critical thinking and hypothesis generation. Discussions will span a range of disciplines including genetics, molecular biology, biochemistry, natural products, ecology, and evolution. As such, this course is intended for students who have some prior knowledge of ecology and/or biochemistry. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
BIOL 415. Biology of the Cell Term Typically Offered: Spring Only Prerequisite(s): BIOL 329 and BIOL 330. Description: Cellular, molecular, and biochemical aspects of cellular function. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.	3 Units		
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)			
BIOL 416. Biotechnology Methods Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 330, BIOL 331, and CHEM 344; and consent of instructor. Description: Designed for Biology and Chemistry students concentrating in Genetics/Subcellular. Provides hands-on experience with basic methods used in molecular biology, including but not limited to, agarose and polyacrylamide gel electrophoresis of nucleic acids and proteins, restriction digestion of DNA, Southern and Northern hybridization, PCR, DNA sequencing, and transformation of various cell types (including bacteria, fungi, plants, insects and vertebrates). Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).	4 Units	BIOL 440. Global Change Ecology Term Typically Offered: Fall Only Prerequisite(s): BIOL 363, GEOS 363, or GEOS 365; or permission of instructor. Description: Human causes of global-scale changes in climate, air and water resources, and biodiversity, and impacts on people; approaches to addressing these problems that promote sustainable societies. Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.	3 Units
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	

<p>BIOL 443. Developmental Biology Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 329 and BIOL 330. Description: Developmental biology approached from a biochemical, cellular, and anatomical perspective with emphasis on vertebrate systems. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>3 Units</p>	<p>BIOL 490. Biology Internship Term Typically Offered: Fall, Spring Prerequisite(s): Junior standing, 2.5 GPA, and consent of instructor. Description: Practical work experience in biological fields. Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>3 Units</p>
<p>BIOL 465. Principles of Physiology Term Typically Offered: Spring Only Prerequisite(s): BIOL 329 or consent of instructor. Description: A general study of the functions of organ systems in vertebrates. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>3 Units</p>	<p>BIOL 501. Independent Study Prerequisite(s): Faculty consent, minimum cumulative GPA of 3.0, and completion of biology core. Description: Independent study in a selected subject area with a student-selected faculty member. Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>1-3 Units</p>
<p>BIOL 480. Introduction to Immunology Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 240, BIOL 242, BIOL 329 and BIOL 330; CHEM 201 and CHEM 202 or their equivalent. Description: Lectures will present the basic principles of immunology, with an emphasis on reading and understanding primary literature. Topics include cells and organs of the immune system, the innate and adaptive response, effector molecules, and diseases of the immune system. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>3 Units</p>	<p>BIOL 502. Independent Study Prerequisite(s): Faculty consent, minimum cumulative GPA of 3.0, and completion of biology core. Description: Independent study in a selected subject area with a student-selected faculty member. Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>1-3 Units</p>
<p>BIOL 485. Microbial Physiology Term Typically Offered: Fall Only Prerequisite(s): BIOL 357 or BIOL 540; or permission of the instructor. Description: An explanation of microbial cell biology and the processes, reactions, and energetics that support microbial life in a variety of circumstances. Includes discussions of how to modify those metabolic properties to meet new demands and conditions. A general understanding of the fundamental concepts of organic chemistry is strongly recommended. Note: Approved for the Arts and Sciences upper-level requirement in communications (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>3 Units</p>	<p>BIOL 504. Independent Study Term Typically Offered: Occasionally Offered Prerequisite(s): Faculty consent, minimum cumulative GPA of 3.0, and completion of the Biology core. Description: Independent study in a selected subject area with a student-selected faculty member. Note: No more than 6 hours of Undergraduate Research (BIOL 404, BIOL 405 or BIOL 406 WR) or Independent Study (BIOL 501, BIOL 502 or BIOL 504 WR) may be used to meet the minimum in Biology for the BA or BS. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR).</p> <p>For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)</p>	<p>1-3 Units</p>

BIOL 510. Behavioral Ecology Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 363. Description: Evolution of behavioral adaptations for survival and reproduction; topics will include foraging, aggression, mate choice, mating strategies, and sociality. Note: Credit may not be earned for both BIOL 510 and BIOL 610. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 519. Ichthyology Prerequisite(s): BIOL 363. Description: Introduction to anatomy, physiology, ecology, distribution, economic importance, and classification of major groups and representative local species of fish. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
BIOL 511. Behavioral Endocrinology Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 465. Description: Interactions of hormones, brain, behavior. Note: Credit may not be earned in both BIOL 511 and BIOL 611. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Note: Cross-listed with BIOL 611. Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 522. Aquatic Ecology Prerequisite(s): BIOL 363. Description: Ecological processes in aquatic environments with primary emphasis on lakes and reservoirs. Note: Credit may not be earned in both BIOL 522 and BIOL 622. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	4 Units
BIOL 512. Endocrinology Prerequisite(s): BIOL 465. Description: Chemical regulation in animals. Note: Credit may not be earned in both BIOL 512 and BIOL 612. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 540. Intermediary Metabolism Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 329 and CHEM 342. Description: An advanced study of metabolic pathways including synthesis of macromolecules (proteins, nucleic acids, lipids, carbohydrates), mechanisms of metabolic control and utilization of metabolic intermediates. Note: Credit may not be earned in both BIOL 540 and BIOL 640. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
BIOL 514. Ornithology Prerequisite(s): BIOL 242 and BIOL 244, or consent of instructor. Description: Evolution, morphology, diversity, ecology, and behavior of birds. Lab stresses field identification of birds. Note: Credit may not be earned in both BIOL 514 and BIOL 614. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 541. Medicinal Plant Biochemistry Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 540, CHEM 445, CHEM 545, or BIOL 545. Description: A detailed study of biosynthesis and bioactivity of specialized plant metabolites (secondary metabolites). Topics will include aspects of general plant metabolism as well as specialized metabolism pathways (alkaloids, terpenes and phenolics) and will include a survey of approaches as they relate to discovery of bioactive plant metabolites and a review of known plant metabolites used to treat human diseases/disorders. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units
BIOL 515. Environmental Physiology Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 465 or consent of instructor. Description: Comparative biological and biochemical mechanisms of adaptation to ecological and environmental extremes in eukaryotic organisms. Note: Credit may not be earned in both BIOL 515 and BIOL 615. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units	BIOL 542. Gene Structure and Function Prerequisite(s): BIOL 330 or equivalent, or consent of instructor. Description: Advanced topics in genetics of prokaryotes and eukaryotes, including chromosome structure and function, and gene regulation. Note: Approved for the Arts & Sciences upper-level requirement in written communication (WR). Note: Credit may not be earned for both BIOL 542 and BIOL 642. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	3 Units

BIOL 548. Experimental Design and Analysis 3 Units Prerequisite(s): BIOL 350 or BIOL 651. Description: Move principles of sound experimental design, analysis and presentation from recognition to active vocabulary. Students completing the course can serve as statistical consultants for moderately complex statistical designs. Note: Approved for the Arts and Sciences upper-level requirement in written communication (WR). Course Attribute(s): CUE - This course fulfills the Culminating Undergraduate Experience (CUE) requirement for certain degree programs. CUE courses are advanced-level courses intended for majors with at least 90 earned credits/senior-level status.		BIOL 562. Ecosystems Ecology 3 Units Prerequisite(s): BIOL 363; an advanced ecology course recommended. Description: The transformations of matter and energy that link plant, animal and geochemical cycles. Implications for resource management also discussed. Note: Credit may not be earned in both BIOL 562 and BIOL 662.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
BIOL 552. Evolutionary Medicine 3 Units Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 240, BIOL 242, BIOL 372, or BIOL 409, or equivalents. Description: In-depth analyses at the interface of evolutionary biology and the health sciences using readings from the primary literature. Format involves lectures, discussion, and a library-based research project. Note: Credit may not be earned in both BIOL 552 and BIOL 652.		BIOL 563. Population and Community Ecology 3 Units Prerequisite(s): BIOL 363. Description: Introduction to population dynamics and species interactions in aquatic and terrestrial ecosystems. Review of underlying ecological theory and its applications for conserving biodiversity. Note: Credit may not be earned in both BIOL 563 and BIOL 663.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
BIOL 553. Chronic Disease Biology 3 Units Term Typically Offered: Occasionally Offered Prerequisite(s): BIOL 329 and BIOL 372. Description: The course will cover the biological bases of chronic disease, with an emphasis on the mechanisms of disease causation and the evolution of these mechanisms. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		BIOL 567. Conservation Biology 3 Units Prerequisite(s): BIOL 363 or permission of instructor. Description: This course provides an overview of theory and practice of conservation. Topics include biodiversity, habitat loss, the effects of habitat changes on populations, and the design and establishment of reserves. Among other things, students will learn: 1) key terms and concepts related to biodiversity, 2) significant threats to biodiversity and efforts to mitigate them, and 3) practical and socioeconomic elements of conservation biology. Note: Credit may not be earned for both BIOL 567 and BIOL 667.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
BIOL 555. Microbial Ecology 3 Units Prerequisite(s): BIOL 357, or BIOL 485, or consent of instructor. Description: Interrelationships between microorganisms and their environments. Note: Credit may not be earned in both BIOL 555 and BIOL 655.		BIOL 569. Evolution 3 Units Prerequisite(s): BIOL 363. Description: Offers a comprehensive overview of evolution and provides students with a review of issues that make up this critical discipline. Note: Credit may not be earned in both BIOL 569 and BIOL 669.
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
BIOL 560. Ecology of Urban and Suburban Landscapes 3 Units Prerequisite(s): BIOL 363 or GEOS 365. Description: Effects of cities and suburban sprawl on air and water chemistry, microclimate, fragmented landscapes, and responses of biotic and human communities to these conditions that degrade or promote urban resilience, adaptation and sustainability. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		BIOL 571. Selected Topics 3 Units Term Typically Offered: Occasionally Offered Description: Contents to be indicated in schedule of courses. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)
		BIOL 572. Selected Topics-Laboratory 1-4 Units Description: Contents to be indicated in schedule of courses. For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)

BIOL 591. Biology for Teachers I 3 Units

Term Typically Offered: Occasionally Offered

Prerequisite(s): Experience in teaching biology or biological principles in elementary, middle or secondary school.

Description: Teaching pre-college biology with emphasis on curriculum content, laboratory procedures, and process skills.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 593. Experimental Cell Biology for Teachers 3 Units

Prerequisite(s): BIOL 240, BIOL 242, BIOL 244, BIOL 329, BIOL 330, and BIOL 331 or equivalent; or consent of instructor.

Description: Lecture and lab activities focused on inquiry-based investigations at the cellular level suitable for secondary school classroom.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

BIOL 594. Experimental Botany for Teachers 3 Units

Prerequisite(s): BIOL 240, BIOL 242, BIOL 244, BIOL 329, BIOL 330, BIOL 331 or equivalent, or consent of instructor.

Description: This course is designed for pre-service and classroom teachers of the life sciences from elementary through high school. To increase teachers' abilities to teach sciences, especially botany, using inquiry-oriented strategies.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)