Spring 2023 Registration

[Check SPIRE for your enrollment start date. It will be in one of the date ranges listed below.]

Seniors (87 credits & above)	**Nov 7-8 (M,T)**
Juniors (57-86 credits)	**Nov 14-15 (M, T)**
Sophomores (27-56 credits)	**Nov 21-22 (M, T)**
Freshmen (26 credits & below)	**Nov 30-Dec 1 (W,TH)**

Note: Enrollment start times and eligibility to register for courses that are restricted by level are determined by a student's potential credit total, which includes the credits he or she is enrolled in currently (i.e. Fall 2022 courses). The Biology Department does not assign a specific advisor to our majors. Biology Majors do not need advisor permission to enroll. Advising is NOT mandatory but we are happy to meet with you and help with your course selection.

UNDERGRADUATE ADVISING OFFICE:
PLEASE SCHEDULE ADVISING APPOINTMENTS EARLY
https://umass.campus.eab.com/
Morrill Science Center III, Room 216
413.545.2287

Biology Peer Advising Fall 2022

Check here for hours:
https://docs.google.com/spreadsheets/d/1fQYPMdzRjpy0W-uAU3rmMUppjXAzouvnUMJ0B-zyu-g/edit#gid=0

Use this link —> https://umass.campus.eab.com/ You will need to log in with your NET ID and password and then click on the blue make appointment button in the upper right corner of the screen. Select that you would like to make an appointment with a biology peer advisor.

To drop in with a peer advisor:
You can access the Peer Advising meeting in Zoom using this link: https://umass-amherst.zoom.us/s/96882561838. Peers will only be available through this link at the times listed above.

REGISTRATION TIPS

COURSE OVERRIDE PERMISSION FORMS: If you would like to enroll in a class that is full, monitor the course on SPIRE to see if someone drops. Some instructors may accept "extra" students. If an instructor agrees to an override, have him or her sign a course override form. Send the completed form, including a signature or other indication of approval from the faculty supervisor, to Sue Clevenger (clevenge.umass.edu).
To help us efficiently process your override, please drop all conflicting courses and apply for credit overload if the course you would like to add will put you over 19 credits.
SPECIAL NOTE: SPIRE WILL STOP PROMOTING STUDENTS FROM WAITLISTS TO COURSE OPENINGS AFTER THE FIRST DAY OF CLASSES (Monday, February 6, 2023).

Dean's Office, College of Natural Sciences

Morrill II Room 220
413.545.1969

Elizabeth Connor, Associate Dean
Rebecca Schneider, Life Sciences Academic Advisor
Cathy Eden, Director Pre-Med/Pre-Dent/Pre-Health

You need a dean's approval for:
Credit Overload: Apply online https://secure.cns.umass.edu/webforms/credit-overload-petition
Withdrawal from a course after mid-semester: Apply online
https://secure.cns.umass.edu/webforms/late-withdrawal-petition

CHANGING YOUR MAJOR

To change your major, contact a representative in the undergraduate department of the **NEW** major. They will change your record in SPIRE and/or inform you of any additional steps in the process.

TRANSFER STUDENTS

Transfer credit BIOL 151/152/153

Students who have transfer credit from another school for these Introductory Biology courses may not be able to add courses for which the intro courses are prerequisites (for example: Biology 285, 287, 311). If you encounter this problem, please call or stop by the undergraduate office (413-545-2287, 216 Morrill). We will verify that you have satisfied the prerequisites and then manually add the course you desire to your class schedule, if the course is not full.

TRANSCRIPTS/TRANSFER CREDIT

If you have completed courses at another University but they do not appear on your UMass transcript, please have the school at which you took the courses send a transcript to the Records Office, 207 Whitmore Administration Building.

PARTICIPATE IN A RESEARCH LAB FOR INDEPENDENT STUDY CREDIT OR JUST FOR THE EXPERIENCE.

It's up to you to first make arrangements with a faculty member who will sponsor your project. Check out our Biology faculty and their research interests at http://www.bio.umass.edu/biology/faculty/faculty-listing. When you're ready to enroll in independent study credits, fill out the Independent Study Form (for Biology majors and students working with a Biology faculty member only). Send the completed form, including a signature or other indication of approval from the faculty supervisor to Sue Clevenger (clevenge@umass.edu). If you're a sophomore sign up for BIOL 296; if you're a junior, BIOL 396; seniors sign up for BIOL 496. You may sign up for the same Independent Study number during multiple semesters. It is always a good idea to check your student enrollment list (classes you are enrolled in) prior to the end of the add/drop period to make sure it is correct. Also, if you need to get credit overload approval you should apply for it https://bua.bio.umass.edu/promptly (http://www.cns.umass.edu) and notify the staff in the

Undergraduate Advising Office so they are aware of it and will place a note on your course permission form. They cannot add you until your Academic Dean has approved your credit overload.

The Biology Undergraduate Apprenticeship (BUA) advertises research positions beginning on the first day of classes each semester. The BUA website allows Biology undergraduates to see and apply to research opportunities in faculty laboratories focusing on biological research. Undergraduates at any stage of their training and interest can apply. BUA has matched over 100 undergraduates and research projects since fall 2010! Visit BUA at https://bua.bio.umass.edu/. BUA positions for the upcoming semester will be posted at the beginning of the semester.

NOTE: If you are doing research for an Honor's thesis, you should contact the Honor's Program to register. It is also important that you then notify the staff in the Biology Undergraduate Advising office so they will know which faculty member should deliver your grade.

Integrative Experience - Required for Biology majors

1. Take Biology 494 LI, Life After Biology (1-cr seminar, offered every semester)

2. Make sure that your upper-level elective courses include at least one of the following courses:

    Biology 372 Introductory Neurobiology
    Biology 383H Gene and Genome Analysis
    Biology 421 Plant Ecology
    Biology 422 Field Ecology: An Experimental Approach
    Biology 477H Bioimaging
    Biology 486H Tackling Biomedical Problems with Molecular Biology
    Biology 487H Tropical Field Biology
    Biology 514 Population Genetics
    Biology 523 Histology
    Biology 550 Animal Behavior
    Biology 551 Animal Communication
    Biology 572 Advanced Neurobiology
    Biology 582 DNA to Diversity

Spring 2023 BIOLOGY COURSES

Subject	Course No.	Section	Course Name	Instructor	Day	Time
BIOL	105	LEC 1	Biology of Social Issues	Riley	MWF	1:25
BIOL	105H	LEC 1	Biology of Social Issues	TBA	TuTh	10:00-11:15
BIOL	110	LEC 1	Intro Biology for Science Majors	Zehnder	MW	2:30-3:45
BIOL	151	LEC 1	Intro Biology 1	Laney	TuTh	2:30-3:45
BIOL	151	LEC 2	Intro Biology 1	Francis	MWF	1:25
BIOL	152	LEC 1	Intro Biology 2	Rounds	MW	2:30-3:45
BIOL	152	LEC 2	Intro Biology 2	Houlihan	TuTh	10:00-11:15
BIOL	152	LEC 3	Intro Biology 2	Healey	TuTh	1:00-2:15
BIOL	152	LEC 4	Intro Biology 2	Zehnder	MWF	9:05
BIOL	152	LEC 5	Intro Biology 2 (BioPioneers RAP)	Zehnder	MWF	11:15
BIOL	153	LAB1-36	Intro Biology Lab	Rocheleau	various	various
BIOL	162H	LEC 1	Quantitative Systems Biology	Riley	TuTh	1:00-2:15
BIOL	280	LEC 1	Evolution	Porter	MWF	12:20
BIOL	284	LAB 1	Genetics Lab	Loomis	Tu	1:00-5:00
BIOL	284	LAB 2	Genetics Lab	Loomis	Th	1:00-5:00
BIOL	285	LEC 1	Cell & Molecular Biology	Rounds	TuTh	10:00-11:15
BIOL	285	LEC 2	Cell & Molecular Biology	Francis	MWF	11:15
BIOL	287	LEC 1	Intro Ecology	Seidler	MWF	10:10
BIOL	288	LEC 2	Intro Physiology	Stager	TuTh	11:30-12:45
BIOL	288	LEC 2	Intro Physiology	Lonthair	TuTh	2:30-3:45
BIOL	311	LEC 1	General Genetics	Loomis	MWF	9:05
BIOL	311	LEC 2	General Genetics	Moscarella	TuTh	10:00-11:15
BIOL	312	LEC 1	Writing in Biology	Spracklen	TuTh	11:30-12:45
BIOL	312	LEC 2	Writing in Biology	Normark	W	8:30-11:00
BIOL	312	LEC 3	Writing in Biology	TBD	TuTh	4:00-5:15
BIOL	312	LEC 4	Writing in Biology	Brewer	F	1:25-3:45
BIOL	312	LEC 5	Writing in Biology	Lonthair	MW	2:30-3:35
BIOL	312	LEC 6	Writing in Biology	Podos	TuTh	2:30-3:45
BIOL	312	LEC 7	Writing in Biology	TBD	TuTh	1:00-2:15
BIOL	372	LEC 1	Intro Neurobiology	Vazey	MWF	1:25
BIOL	372	LEC 1	Intro Neurobiology	Cuadra	TuTh	4:00-5:15
BIOL	379H	LEC 1	Genomics and Bioinformatics	Babbitt	TuTh	2:30-3:45
BIOL	397MH	LAB 1	Cell and Molecular Biology Lab	Laney	MF	1:25-4:25
BIOL	401	LEC 1	Great Papers in Biology	Hazen, Pallas	TuTh	2:30-3:45
BIOL	477H	LEC 1	BioImaging	Wadsworth	TuTh	8:30-9:45
BIOL	484	LEC 1	Cancer Genetics	Phillis	M	12:20
BIOL	487H	LEC 1	Tropical Field Biology	Sievert et al.	TuTh	4:00-5:15
BIOL	491G	LEC 1	Functional Genomics	Walker	TuTh	10:00-11:15
BIOL	494LI	LEC 1	Life After Biol: Biol Integrated Exp	Moscarella	W	2:30-3:45
BIOL	514	LEC 1	Population Genetics	Caicedo	TuTh	1:00-2:15
BIOL	523	LEC 1	Histology	Spracklen	TuTh	8:30-9:45
BIOL	544	LEC 1	Ornithology	Byers	TuTh	11:30-12:45
BIOL	548	LEC 1	Mammalogy	Moscarella	TuTh	1:00-2:15
BIOL	550	LEC 1	Animal Behavior	Houlihan	TuTh	11:30-12:45
BIOL	559	LEC 1	Cell Biology II	Fritz-Laylin	TuTh	1:00-2:15
BIOL	564	LEC 1	Human Physiology	Padilla	TuTh	11:30-12:45
BIOL	567	LEC 1	Comparative Physiology	Irschick	TuTh	10:00-11:15
BIOL	572	LEC 1	Neurobiology	Fenelon, Jensen	MW	2:30-3:45
BIOL	597NE	LEC 1	Neural Basis of Animal Behavior	Katz	TuTh	10:00-11:15

Biology Course Descriptions
Spring 2023

105/105H—Biology of Social Issues (4 cr.)
105 - (BS) Riley, Morrill3, 304A
105H - (BS) TBA
For non-science majors; not for Biology major credit. Designed to provide non-science majors with the basic knowledge that an informed citizen requires to develop thoughtful positions on sometimes controversial questions related to medical ethics, environmental degradation, cloning, biotechnology, STDs and education.

110—Introductory Biology for Science Majors (4 cr.)
(BS) Zehnder, Morrill2 348C
This is a course for non-biology majors with two components, lecture and discussion section. We will explore biological principles at all levels of organization, from molecules, cells and organs to individuals, populations and the biosphere. Have you ever wondered how basilisk lizards can literally run on water? Why we don't yet have a vaccine against the HIV/AIDS virus? Why there is no rainforest in New England? How bacteria help the Gulf ecosystem recover after the Deepwater Horizon oil spill? We will explore these and other questions to better understand how the living world works. Assessment includes evening exams, quizzes and written assignments. Not for Biology major credit. **Prerequisites:** None

151—Introductory Biology (4 cr.)
(BS) Laney, Morrill2 432; Francis, Morrill2 348A
First semester of a full year course for majors in the life sciences. Introduction to the biochemical basis of living systems, cell biology, mitosis and meiosis, principles of genetics, developmental biology. Includes lecture and discussion sections. Required for biology majors. (Gen. Ed. BS)

152—Introductory Biology (3 cr.)
(BS) Houlihan, Morrill2 352
The course will cover the following broad subject areas: 1) Physiology - We will explore how the nervous system functions to collect, analyze, and respond to information from inside and outside the body. 2) Evolution - We will discuss the meaning, mechanisms, and importance of the central organizing concept in biology. 3) Ecology - We will talk about how organisms interact with their abiotic and biotic environment. 4) Applied Ecology & Evolution - We will develop a sense of how evolution and ecology are important to other sub-disciplines in biology, other fields of science, medicine, and engineering. We will not cover any of these areas exhaustively. You will have those opportunities in mid and upper-level classes on these subjects. Instead, I will pick subjects areas and model systems from each of these subjects that illustrate the major concepts in each of these sub-disciplines. The two common themes that will link these subject areas are the idea of evolution and global change biology. Although we will not be discussing evolution in depth until several weeks into the semester, we will start thinking about physiological systems within an evolutionary framework. In addition, we will focus on how research is conducted and evaluated.
Prerequisite: A grade of C or better in BIOL 151 (strictly enforced)

152—Introductory Biology (3 cr.)
(BSL) Rounds, Morrill2 354; Healey, Morrill2 356A; Zehnder, Morrill2 348C
Lecture. Second semester of a full semester course for science majors. Topics include plant and animal structure and physiology, evolution, and ecology.
Prerequisite: A grade of C or better in BIOL 151 (strictly enforced)

153—Introductory Biology Lab (2 cr.)
This course is a 2-credit laboratory experience that allows students to apply the biological concepts covered in Biology 151 and 152 Introductory Biology in laboratory and field settings. Students will develop and practice scientific research skills while exploring the areas of genetics, cell and molecular biology, evolution, and ecology. To enroll, students must be co enrolled in Biology 152 (Introductory Biology II) or have completed the 2 semester Introductory Biology Sequence (Biol 151 and 152).

162H—Quantitative Systems Biology (4 cr.)
Riley, Morrill3 304A
Applies the theme of modeling and hands-on experimentation to core concepts in evolution, physiology, and ecology. Cutting-edge research in each of these fields relies heavily on quantitative approaches to understand how organisms' function, interact with their environments, and change over evolutionary time. This course uses a combination of lectures that integrate applied math and the study of organism-level systems and labs in which students use in silico, in vitro and in vivo models to investigate those systems in detail. The course will be organized into three modules that flow naturally from one to the next: evolution (the genotype), comparative physiology and functional morphology (the phenotype), and ecology (organismal and environmental interactions).

280—Evolution: Diversity of Life Through Time (3 cr.)
Porter, Morrill1N 440
We will investigate the process of biological evolution and the evolutionary history of life on Earth. Topics to be covered include natural selection, speciation (the formation of new species), and other causes of evolutionary change; the methods that evolutionary biologists use to investigate evolutionary processes and history; and an overview of life's history, focusing on major evolutionary innovations and transitions.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162FH.

284 – General Genetics Lab
Loomis, ISB 241D
Various classical and molecular genetic techniques using prokaryotic and eukaryotic systems. Laboratory projects include genetic mapping via recombination and P element-mediated mutagenesis in Drosophila, plasmid-mediated transformation of bacteria, yeast 2-hybrid assays for protein/protein interactions, and detection of human DNA polymorphisms. Also, bioinformatics tools to perform DNA and protein sequence similarity searches and characterize the organization of specific genes.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H; BIOL 311 (C or better)

285—Cell & Molecular Biology (3 cr.)
Francis, Morrill2 348A; Rounds, Morrill2 354
Course designed for sophomores in Biology, Biochemistry, or Microbiology. Building upon concepts learned in Biology 100/101, consideration is given to structure and function. The course is equally divided between aspects of molecular and cellular biology.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H AND CHEM (111 or 121H) AND CHEM (112 or 122H) with a grade of 'C' or better.

287—Introductory Ecology (3 cr.)
Seidler, Morrill1N 239B
The scope of ecology; how organisms cope with environmental challenges; population dynamics; species interactions of competition, predation, and mutualism; community ecology; biodiversity; biogeochemical cycles; selected topics in evolutionary and behavioral ecology. Basic concepts

related to practical applications in harvesting, biological control, conservation, pollution, and global change. **Prerequisites:** C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H

288—Introductory Physiology (3 cr.)
Stager, Morrill2 427; Lonthair, Morrill3 348B
The physiology of humans and other vertebrates on a system-by-system basis (e.g., circulatory, respiratory, digestive, etc.). Emphasis on understanding fundamental physiological concepts. Concentrates primarily on human physiology, but examples from other vertebrate animals used to illustrate some physiological phenomena.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H.

311—General Genetics (3 cr.)
Loomis, ISB 241D; Moscarella, Morrill 2 350
Introduction to genetics including Mendelian, cytological, molecular, developmental, and population genetics. Examples from a wide variety of organisms. **Prerequisites:** C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H

Biology 312—Writing in Biology (3 cr.)
Section 1 Spracklen, Morrill2 348B
Section 2 Normark, Fernald 104/204B
Section 3 Spracklen, Morrill2 348B
Section 4 Okusu, Morrill2 140
Section 5 Spracklen, Morrill2 348B
Section 6 TBA
Section 7 Brewer, Morrill3 311A

Satisfies Junior Year Writing requirement for Biology majors. Students write and revise short papers on subjects likely to be encountered by biologists. Class discussion of papers. Prerequisites: 3 biological science courses, for declared Biology majors only.

372—Intro Neurobiology (3 cr)
Vazey, Morrill4S 368A, Cuadra, LSL N240
Do you ever wonder how your brain is organized? How neurons communicate with one another, and function together, or what goes wrong in different neurological diseases. This course is an introductory survey into neurobiology, from molecular and cellular mechanisms to nervous system organization and animal behavior. We will delve into foundational knowledge about nervous system anatomy, physiology, connectivity, and function that can be built upon in future upper level courses. This course fulfills the IE criteria by requiring collaborative problem-solving using real-word bioinformatic tools, and developing oral and written communication skills.
This course is not-for-credit for those who have previously taken Psych 330 or Biol 572.

379H—Genomics and Bioinformatics (3 cr.)
Babbitt, Morrill4S 362
A practical, hands-on approach to subjects within computational molecular biology. Recently, there have been huge advances in our ability to understand the genome and how different genomes interact in an environment using next-generation sequencing. Analyzing these revolutionary new datasets will be essential for molecular biology in the future. Foundational topics will include analysis of whole transcriptome, whole genome, and microbiome sequencing. No coding experience required.
Prerequisites: Open to Honors Students ONLY. C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H; BIOL 285 OR BIOCHEM 275 OR BIOL 283 (C or better)

397MH—Cellular & Molecular Biology Lab (3 cr.)
Laney, Morrill2 432
This course is a hands-on project-based laboratory that focuses on the molecular and cellular analysis of mutations in the tumor suppressor gene p53, which is mutated in ~50% of cancerous human tumors. Students learn and apply different techniques of molecular cell biology to determine what, if any, functional defects are caused by different p53 mutations that have been identified previously in patient tumor samples. Emphasis will be placed on modeling how practicing scientists think and dissect such a biological problem, through the analysis of student-generated scientific data and the interpretation of such original experimental results.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H; BIOL 285 or 283 AND CHEM 261 (C or better)

401—Great Papers in Biology (3 cr.)
Hazen LSL N427; Pallas, Morrill2 418B
Most courses present the prevailing wisdom of the field as artistically rendered figures that summarize a large body of information and present it as dogma. However, that's not how the field advances. Breakthroughs occur when researchers publish original research papers in peer-reviewed journals. Sometime the importance of the work is obvious at the time of publication and sometimes it takes many years for the true significance of the work to be appreciated. The Great Papers in Biology course is designed to allow students to read seminal papers in biology with the goals of 1) understanding, in detail, how the experiments were conducted; 2) how the results were interpreted; and 3) how the work changed scientists' understanding of biology. Papers to be discussed will represent a wide range of fields within Biology, including developmental biology, genetics/genomics, neuroscience, cell biology, and the mechanisms of disease.
Prerequisites: Open to Junior and Senior Biology Majors Only

477H—Bioimaging (3 cr.)
Wadsworth, Morrill4S 456
In this interdisciplinary laboratory course, we will explore the topic of imaging biological material, beginning with optics and basic microscopy. Students will perform hands-on exercises in the use of the light microscope, digital cameras, and image processing and quantification. Common pitfalls in imaging biological samples will be covered. Students will perform experiments to test and quantify various aspects of cell migration, cell cycle regulation, mitosis and endocytosis. Using the methods learned in the first portion of the class, students will design and complete a hypothesis-based experiment of their own design and present their findings.

484—Cancer Genetics (4 cr.)
Phillis, Morrill3 404A
Cancer Genetics is a team-based learning course that requires students to create proposals for novel treatments for specific kinds of cancer. Students analyze the research literature to identify unaddressed opportunities for treatment based on specific criteria pertaining to the genetic defects causing disease. They then must design a novel treatment using accepted genetic methods and drug delivery systems currently used in research and clinically.

487H—Tropical Field Biology (4 cr.)
Seivert et al
Introduction to the ecology, behavior, taxonomy, and physiology of tropical organisms, with emphasis on close observation of living organisms in nature. Includes hands-on investigation of coastal and marine ecosystems. Students will participate in a field trip to Costa Rica during the Spring Break.
Prerequisites: Instructor Consent Required

491G—Functional Genomics (3cr)
Walker, Morrill4S 374C
Functional genomics is a field of genetics and molecular biology that attempts to describe gene (and therefore protein) functions. Functional genomics makes use of the vast data generated by genomic and transcriptomic projects (such as genome sequencing projects and RNA sequencing). A key characteristic of functional genomics studies is their genome-wide approach to these questions, generally involving high-throughput methods rather than the more traditional "one gene at a time" approach. In this class, you will learn about the common methods, both wet lab and computer-based, that are used to generate '-omics' data and to interpret it. There will be lectures provided, but emphasis will be placed on problem-solving and active discussion.

494LI—Life After Biology (1 cr.)
Moscarella, Morrill2 350
This 1-credit course fulfills one component of the General Education Integrative Experience requirement for Biology majors. The course is designed to help students appreciate what their academic training has been, and where it is leading them professionally. Students will learn about career options for life scientists and develop strategies and skills to position themselves to be successful. In order to satisfy the Integrative Experience requirement, BA-Biol and BS-Biol majors must also take one of the approved 3- or 4-credit Biology courses listed on their Academic Requirements Report.

514—Population Genetics (3 cr.)
Caicedo, LSL N425
This course focuses on the processes affecting the distribution of genetic variation in populations of organisms, through space and time. The processes studied are the ones that operate during evolutionary change. Topics covered will include the Hardy-Weinberg principle, gene flow, genetic drift, recombination and linkage disequilibrium, natural selection, the effect of mating systems on diversity, and the neutral theory of evolution. Examples illustrating key concepts will be drawn from various kingdoms of life. The course will consist of lectures and occasional in class discussion.
Prerequisites: Biology 280 or 283, plus Math 127 or 128 or Statistics 111 or 240 or ResEcon 211 or 212.

523—Histology (4 cr.)
Spracklen, Morrill2 348B
Lecture, lab. In this course we explore the cellular structure and function of human tissues and organ systems. The laboratory component offers a unique opportunity for you to develop and refine your skills in microscopy and visual identification of cells, tissues, and organs as well as tissue sectioning, staining, immunohistochemistry, and imaging. This includes a semester-long group project where you will prepare samples, section, stain, and analyze an organ of your choice and explore how the histology of this organ is altered by disease. This course provides a strong background for those interested in pursuing a career in health sciences or graduate school in cell biology, morphology, or physiology.
Prerequisites: Open to Biology Majors Only; C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H

544—Ornithology (4 cr.)
Byers, Morrill3 216A
Avian systematics, phylogeny, behavior, ecology, etc. Lab includes bird identification, anatomy, censusing, field studies.
Prerequisite: upper level biology course.

548—Mammalogy (4 cr.)
Moscarella, Morrill2 350
Lecture, lab. Lectures and readings on comparative biology and evolutionary relationships of mammalian groups. Lab involves detailed introduction to the New England mammalian fauna and study of selected representatives of other groups, emphasizing adaptation.
Prerequisites: any life science course beyond the introductory level; BIOL 280 & 287 highly recommended.

550—Animal Behavior (4 cr.)
Houlihan, Morrill2 352
Our first goal in this course will be to examine the mechanisms that underlie the expression of behavior. For example, how do predators locate prey, how do animals avoid becoming prey, and how do animals navigate through their worlds? To help answer these questions we will apply neurobiological, hormonal, genetic, and developmental perspectives. Our next goal in the course will be to examine the evolutionary bases of behavior, asking for example why animals move, forage, hide, communicate, and socialize as they do. To address these questions, we make use of optimality theory and other behavioral ecological perspectives. Other topics in the course will include sexual selection, human behavior, and the role of behavior in establishing biodiversity. When taken with Biology 494LI, this course satisfies the Integrative Experience requirement for BA-Biol and BS-Biol students.
Prerequisites: An Introductory Level Biology or Psychology Course

564—Human Physiology (3 cr.)
Padilla, LSL N227
Mechanisms underlying organ system function in vertebrates; nervous, endocrine, cardiovascular, respiratory, muscular, digestive, excretory, reproductive systems.
Prerequisites: BIOL 285 OR BIOCHEM 275/285 (C or better)

567—Comparative Physiology (3 cr.)
Irschick, Morrill3 205C
Lectures cover the physiology of animals on a system-by-system basis (e.g., circulatory system, digestive system, etc.) with an emphasis on the vertebrates. Comparisons between animals within each system and adaptations to "extreme" environments are emphasized. Weekly problem sets provide practice in physiological reasoning for each system covered.
Prerequisites: C or better in BIOL 151 or 161H AND a C or better in BIOL 152 or 162H

572—Advanced Neurobiology (3 cr.)
Fenelon, LSL N233
This course explores the biology of nerve cells and cellular interaction in nervous systems. Lectures integrate structural, functional, molecular, and cellular approaches. Topics include membrane potentials and neuronal signaling, nervous system structure, sensory systems, control of movement, motivated behaviors, emotion, mental illness, and memory. Format includes lectures and in-class discussions. 4 exams, 2 papers, and participation in an online forum.
Prerequisites: Biology 285 or Biochemistry 275, or both Psychology 330 and Biology 151.

597NE—Neural Basis of Animal Behavior
Katz, Morrill3 412
Neuroethology is the study of the neural basis of natural behavior. This lecture course will cover topics that include the neural mechanisms underlying predatory behavior and prey escape responses, specialized senses such as magnetoreception and electroreception, echolocation, animal communication, and animal navigation.

Biology Faculty and Their Research Interests

http://www.bio.umass.edu/biology

Click on Faculty

Lynn Adler, Professor
Ecology and Evolution of Insect-Plant Interactions
lsadler@bio.umass.edu **Fernald 102D**

R. Craig Albertson, Professor
Evolutionary Developmental Biology
albertson@bio.umass.edu **Mor2 336**

Courtney Babbitt, Associate Professor
Evolutionary Genomics
cbabbitt@bio.umass.edu **Mor4S 362**

Madelaine Bartlett, Associate Professor
Plant Evo-Devo
mbartlett@bio.umass.edu **Mor4S 374B**

Tobias I. Baskin, Professor
Regulation of Plant Morphogenesis During Growth & Development
baskin@bio.umass.edu **Mor4S 375F**

Jeffrey Blanchard, Associate Professor
Anaerobic Microbiology, Microbial Ecology and Evolution, Genomics, Bioinformatics
jeffb@bio.umass.edu **LSL N571**

Steve D. Brewer, Assistant Professor
Science Education/Instructional Technology
sbrewer@bio.umass.edu **Mor3 311A**

Bruce E. Byers, Associate Professor
Songbird Vocalizations
bbyers@bio.umass.edu **Mor3 216A**

Ana Caicedo, Professor
Plant Molecular Evolution and Evolutionary Genomics
caicedo@bio.umass.edu **LSL N425**

Gerald Downes, Associate Professor
Motor Behavior and Epilepsy
gbdownes@bio.umass.edu **Mor1 N210**

Michelle Facette, Assistant Professor
Plant Biology
mfacette@umass.edu **Mor 4S 375D**

Karine Fenelon, Assistant Professor
Synaptic Transmission and Neural Circuits Underlying Sensory Information Filtering
kfenelon@umass.edu **LSL N233**

Laura Francis, Senior Lecturer
Molecular Mechanisms
lif@bio.umass.edu **Mor2 348A**

Lillian Fritz-Laylin, Assistant Professor
Quantitative Evolutionary Cell Biology
lfritzlaylin@umass.edu **Mor2 330**

Alexander Gerson, Associate Professor
Integrative Eco-physiology – Environmental Physiology of Birds
argerson@bio.umass.edu **Mor3 318A**

Samuel P. Hazen, Professor
Regulatory Networks & Natural Variation in Plant Cell Wall
hazen@bio.umass.edu **LSL N427**

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