

**Ecology & Evolutionary Biology Courses  
2008-09**

Undergrad Course Number	Graduate Course Number	Course Title	
EEB 115a/F&ES 315a M W & HTBA 10:30-11:20 OML 202	E&EB 515a	<b>Conservation Biology.</b> An introduction to the basic ecological and evolutionary principles underpinning efforts to conserve the Earth's biodiversity. These principles examined in the context of efforts to halt the rapid increase in disappearance of both plants and animals. Case studies examined in detail. Sociological and economic issues are discussed.	<u>Powell, Cooley</u>
EEB 118a T, Th 2:30-3:45 102 KBT		<b>Human Genetic Variation and Evolution.</b> An introduction for non-science majors to the patterns of DNA sequence variation among modern humans and the causes of those patterns.	<u>Kidd</u>
E&EB 122b MWF 11:30-12:20 OML 202 WR	E&EB 522b	<b>Principles of Evolution, Ecology and Behavior.</b> The major principles of evolution, ecology, and behavior explained and illustrated by recent advances that have changed the field. Emphasis on major events in the history and key transitions in the organization of life. Ecological processes from organisms through populations and communities to the biosphere. Foraging, mating, selfish and cooperative behavior placed in evolutionary and ecological context. <i>Recommended preparation: MCDB 120a or equivalent. Writing Intensive.</i>	<u>Stearns</u>
E&EB 123Lb TWTW 1:30, OML, 212, 213	E&EB 523Lb	<b>Lab for Principles of Evolution, Ecology &amp; Behavior.</b> Experimental approaches to organismal and population biology, including study of the diversity of life. <i>Concurrently with or after E&amp;EB 122b.</i>	<u>Wells</u>
E&EB 125b G&G 125b T TH 11:35-12:50; lab TBA		<b>History of Life.</b> Examination of fossil and geologic evidence pertaining to the origin, evolution, and history of life on Earth. Emphasis on major events in the history of life, on what the fossil record tells us about the evolutionary process, on the diversity of ancient and living organisms, and on the evolutionary impact of the changing environment of the Earth.	<u>Gauthier, Briggs, Hickey</u>
MCDB 215a STAT 101a T, Th 1-2:15		<b>Intro to Statistics: Life Sciences.</b> A basic introduction to statistics, including numerical and graphical summaries of data, probability, hypothesis testing, confidence intervals, and regression. Each course focuses on applications to a particular field of study and is taught jointly by two instructors, one specializing in statistics and the other in the relevant area of application. The Tuesday lecture, which introduces general concepts and methods of statistics, is attended by all students. The course separates for Thursday lectures, which develop the concepts with examples and applications.	<u>Reuning-Scherer</u> (in charge,
E&EB 220a MWF 10:30-11:20 ESC 110	E&EB 520a	<b>General Ecology.</b> A broad consideration of the theory and practice of ecology, including the ecology of individuals, population dynamics and regulation, community structure, ecosystem function, and ecological climate change, fisheries management, and infectious diseases will be placed in an ecological context. <i>Prerequisites: Math 112a or b or 115a or b or equivalent.</i>	<u>Buss/Cooley</u>

E&EB 225b T, Th 11:30- 12:45 KBT 102	E&EB 525b	<b>Evolutionary Biology.</b> An introduction to the study of evolution from both a macro- and micro-evolutionary perspective. Principles of population genetics, systematics, paleontology, and molecular evolution are addressed as well as application of evolutionary thinking to issues in animal behavior, ecology, and molecular biology. <i>After 122b.</i>	<u>Turner/Monteiro</u>
E&EB 226Lb W 1:30 OML 204	E&EB 526Lb	<b>Laboratory for Evolutionary Biology.</b> The companion laboratory to E&EB 225b. Study of patterns and processes of evolution, including collection and interpretation of molecular and morphological data in a phylogenetic context. Focus on methods of analysis of species-level and population-level variation in natural populations. <i>Concurrently with or after E&amp;EB 225b.</i>	<u>Caccone</u>
*E&EB 230a *Evst 221a, *F&ES 30022 T 1-2 Th 1-5 OML 122	E&EB 530a	<b>Field Ecology.</b> A field-based introduction to methodology used by ecologists in field studies. Descriptive studies, comparative analysis, modeling, and experimental approaches are explored using class or small-group projects relevant to major topics in ecology.	<u>Cooley</u>
EEB 240a M W 9- 10:15, 1HTBA – WR OML 201	E&EB 540a	<b>Animal Behavior.</b> An introduction to the study of animal behavior from an evolutionary and ecological perspective. History and methods of studying animal behavior. Topics include foraging, predation, communication, reproduction, cooperation and the role of behavior in conservation. <i>After E&amp;EB 122b.</i>	<u>Alonzo</u>
E&EB 250a ESC 110 11:35-12:50	E&EB 550a	<b>Biology of Terrestrial Arthropods.</b> Evolutionary history and diversity of terrestrial arthropods (body plan, phylogenetic relationships, fossil record); physiology and functional morphology (water relations, thermoregulation, energetics of flying and singing); reproduction (biology of reproduction, life cycles, metamorphosis, parental care); behavior (Migration, communication, mating systems, evolution of sociality; ecology (parasitism, mutualism, predator-prey interactions, competition, plant-inset interactions). <i>After E&amp;EB 122b.</i>	<u>Wells</u>
E&EB 251La OML 227	E&EB 551La	<b>Lab for Terrestrial Arthropods.</b> Comparative anatomy, dissections, identification, and classification of terrestrial arthropods; specimen collection; field trips. <i>Concurrently with or after E&amp;EB 250a.</i>	<u>Wells</u>
E&EB 264a MWF 1:30- 3:20, ESC 110	664a	<b>Ichthyology.</b> A survey of fish diversity, including jawless vertebrates, chimaeras and sharks, lungfishes, and ray-finned fishes. Topics include the evolutionary origin of major extant fish lineages, biogeography, ecology, and reproductive strategies of fishes.	<u>Moore</u>
EEB 265La W 1:30 ESC 210	EEB 665La	<b>Laboratory for Ichthyology.</b> Laboratory and field studies of fish diversity, form, function, behavior and classification. The course primarily involves study of museum specimens and of living and fossil fishes. <i>Concurrently with E&amp;EB 264a.</i>	<u>Moore</u>
E&EB 272b MWF 9:25- 10:15 ESC 110	672b	<b>Ornithology.</b> Structure, function, behavior, evolution, and diversity of birds. A general overview of avian biology and evolution. Topics include the evolutionary origin of birds, avian phylogeny, anatomy, physiology, neurobiology, behavior, breeding systems, and biogeography	<u>Prum</u>

E&EB 273Lb T 2:30, ESC	673Lb	<b>Ornithology Lab.</b> Laboratory and field studies of avian morphology, diversity, phylogeny, classification, identification, and behavior. <i>Must be taken concurrently with E&amp;EB 272b.</i>	<u>Prum</u>
E&EB 365a F&ES, T, Th 10-11:20 Bowers Hall	E&EB 565a	<b>Landscape Ecology.</b> An introduction to the study of large-scale ecological patterns and processes. Topics include species viability, ecosystem management, and the design of nature reserves. Focus on when and how to integrate a spatial perspective into consideration of major ecological questions. <i>After E&amp;EB 220a.</i>	<u>Skelly</u>
E&EB 426a T, Th 2:30- 3:45 OML 201	826a	<b>Phylogenetics and Macroevolution.</b> The tools of phylogeny reconstruction have had a dramatic impact on evolutionary biology. This course describes the methods of phylogenetic inference, provides the student with practical experience in reconstructing evolutionary histories from comparative data, especially molecular sequence data, and applies these techniques to understanding selected issues in macroevolution – evolution above the species level. Phylogenetics has become the organizing principle for macroevolutionary studies, and it has provided new levels of quantitative understanding and rigor, especially in problems relating to the tempo and mode of evolutionary change. The course emphasizes development of quantitative skills, conceptual understanding, and appreciation for biological examples ranging from the evolution of viral pathogens to the origins of major clades of animals and green plants.	<u>Near</u>
E&EB 427La T 2-4 Phelps Mac Lab	827La	<b>Lab for Phylogenetics and Macroevolution.</b> The course emphasizes methodological approaches to phylogenetic analysis that are used in many research areas of ecology and evolutionary biology. Introduction to methods of phylogeny reconstruction and evolutionary comparative analysis. Computer-lab based exercises and lessons provide experience obtaining genetic data from Internet resources, and the tools used to build phylogenetic trees. Additional topics and methods include biogeographic analyses, estimating divergence times with molecular data, and independent contrast analysis.	<u>Near</u>
E&EB 470 a or b		<b>Tutorial.</b> Individual or small group study for qualified students who wish to investigate an area of ecology or evolutionary biology not <i>presently covered by regular courses</i> . A student must be sponsored by a faculty member who sets requirements and meets weekly with the student. One or more written examinations and/or a term paper are required. To register, the student must submit a written plan of study approved by the faculty instructor to the director of undergraduate studies. Students are encouraged to apply during the term preceding the tutorial. The proposal must be submitted by Wednesday, September 17, for the fall term and Wednesday, January 28, for the spring term. The final paper is due in the office of the director of undergraduate studies by the beginning of reading period. (In special cases, with approval of the director of undergraduate studies, this course may be elected for more than one term, but only one term will count as an elective for the major). Normally, faculty sponsors must be members of the EEB department. <i>One term of this course fulfills the senior requirement for the B.A. degree if taken in the senior year.</i>	<u>Wells</u>
E&EB 475a		<b>Research.</b> One term of original research in an area relevant to ecology	<u>Wells</u>

or b		<p>or evolutionary biology. This may involve, for example, laboratory work, field work or mathematical or computer modeling. Students may also work in areas related to environmental biology such as policy, economics, or ethics. The research project may not be a review of relevant literature but must be original. In all cases, students must have a faculty sponsor who will oversee the research and be responsible for the rigor of the project. Students are expected to spend ten hours per week on their research projects. Using a form available from the office of undergraduate studies, or from the Classes server, students must submit a research proposal that has been approved by the faculty sponsor to the office of the director of undergraduate studies, preferably during the term preceding the research. A research paper is due at the end of the term. The proposals are due Wednesday, September 17, for the fall term and Wednesday, January 28, for the spring term. The final paper is due in the office of the director of undergraduate studies by Friday December 5, for the fall term and Monday, April 27, for the spring term. Research will be presented in the E&amp;EB Senior Symposium at the end of classes. <i>One term of this course fulfills the senior requirement for the B.A. degree if taken in the senior year.</i></p>	
E&EB 495		<p><u>Intensive Senior Research</u> (4 credits - yr only) Two terms of intensive original research during the senior year done under the sponsorship of a faculty member. Similar to E&amp;EB 475a or b except a more substantial portion of the student's time should be spent on the research project (an average of twenty hours per week). A research proposal approved by the sponsoring faculty member using the form available from the office of undergraduate studies or from the Classes server must be submitted to the office of the director of undergraduate studies before reading period of the term preceding the course, usually the spring term of the junior year. Interim oral reports and a written research paper are required. Research will be presented in the E&amp;EB Senior Symposium at the end of classes. The final paper is due Monday, April 27. <i>Fulfills the senior requirements and leads to the intensive B.S. degree.</i></p>	<u>Wells</u>
	E&EB 627a or b TBA	<u>Research Topics in Molecular Ecology</u>	<u>Caccone</u>
	E&EB 632b HTBA	<p><u>E&amp;EB 632b The analysis of ecological time-series.</u> An introduction to the theory and practice of time series analysis in ecology. Topics will include detrending, model fitting, and frequency-domain analysis of univariate and multivariate data, with a particular emphasis on linking biological and physical processes. Students will develop practical skills by addressing a variety of contemporary ecological problems using data of their own choosing.</p>	<u>Vasseur</u>
	E&EB 678b	<p><u>Mathematical Models and Quantitative Methods in Evolution and Evolutionary Innovations.</u> This course examines a variety of approaches used to model population level processes in evolution and ecology including population genetics, optimality processes in evolution and ecology including population genetics, optimality modes, game theory, and population dynamic equations. We also discuss</p>	<u>Alonzo/Smith</u>

		experimental design, statistical analyses, and other quantitative methods	
	E&EB 810b T, Th 11:30- 12:45 OML 201	<u>Dynamics of Evolving Systems.</u> An introduction to the ways in which the structure and behavior of evolving biological systems can be described, modeled, and analyzed. Examination of model systems as well as modeling of laboratory and field phenomena.	<u>Vaisnys</u>
	E&EB 500 a or b	<u>Laboratory Rotations.</u>	<u>DGS</u>
	E&EB 900a/b	<u>First Year Introduction to Research and Rotations.</u>	<u>DGS</u>
	E&EB 930b G&G 703b F 2:30-4 ESC 110	<u>Seminar in Systematics.</u>	<u>Gauthier</u>
	E&EB 950	<u>Second Year Research</u> by arrangement with faculty.	<u>Staff</u>