

Biodiversity and Evolution

Specializing your Biology degree at Iowa State University

Have Questions About the Biology Major?
Contact us at 515-294-1064 or biology@iastate.edu
Or visit Student Services in 103 Bessey Hall

Biologists who specialize in studying the diversity of life uncover the histories of organisms and their characteristics through the lens of underlying evolutionary mechanisms. They develop a strong understanding of genetics, physiology, morphology, behavior, taxonomy, and systematics. Specialists may pursue a variety of careers in field or laboratory research in both the public and private sector while focusing on a group of organisms they are passionate about. Some biodiversity and evolution specialists may also work in education or in natural resource management.

The core courses of the Biology Program and appropriate advanced courses provide solid foundation for students wishing to emphasize evolution and biodiversity in their program of study. When planning advanced coursework, we recommend students take at least one course in each of these three areas: (1) evolutionary processes, (2) systematics, phylogenetics, and biodiversity, (3) natural history and comparative biology. Participating in experiential learning, such as an independent study course, related internship experience, and especially lab/field research is also advised. Many students specializing in this area pursue further education with a Masters or Ph.D.

Suggested Advanced Biology Courses for Biodiversity and Evolution Students

Evolutionary Processes

Course #	Course Name	Credits
BIOL 462	Evolutionary Genetics	3
BIOL 465	Macroevolution	3
EEOB 563	Molecular Phylogenetics	3
EEOB 566	Molecular Evolution	3
EEOB 567	Empirical Population Genetics	3
EEOB 569	Biogeography	3

Natural History and Comparative Biology

Course #	Course Name	Credits
A ECL 366	Nat. History of Iowa Vertebrates	3
ANTHR 438	Primate Evol Ecol & Behavior	3
B M S 329	Anat & Phys of Domestic Animals	3
BIOL 336	Ecol & Evol Animal Physiology	3
BIOL 351	Comparative Chordate Anatomy	5
BIOL 354&L	Animal Behavior & Lab	4
BIOL 356	Dendrology	4
BIOL 357	Biology of Plants	3
BIOL 414	Life History & Reprod. Strategies	3
BIOL 434	Endocrinology	3
BIOL 454	Plant Anatomy	4
BIOL 455	Bryophyte & Lichen Diversity	3
BIOL 456	Principles of Mycology	3
BIOL 458&L	Ornithology & Lab	3
BIOL 458&L	Mammalogy & Lab	3
EEOB 507	Advanced Animal Behavior	3
ENT 370	Insect Biology	3
ENT 471	Insect Ecology	3
NREM 357	Midwestern Prairie Plants	1
NREM 358	Forest Herbaceous Layer	1

Systematics, Phylogenetics, and Biodiversity

Course #	Course Name	Credits
A ECL 321	Fish Biology	3
ANTHR 307	Biological Anthropology	3
BBMB 430	Prokaryotic Diversity & Ecology	3
BIOL 364	Invertebrate Biology	3 to 4
BIOL 365	Vertebrate Biology	4
BIOL 366	Plant Systematics	4
BIOL 451	Plant Evolution & Phylogeny	4
BIOL 457&L	Herpetology & Lab	3
EEOB 568	Advanced Systematics	3
ENT 576	Systematic Entomology	5

Suggested Supporting Science Courses

Taking a single semester of general chemistry (CHEM 163 + CHEM 163L), organic chemistry (CHEM 231 & CHEM 231L), biochemistry (BBMB 316), and physics (PHYS 115 and PHYS 115L) is suitable for most students interested in biodiversity and evolution. Students interested in molecular phylogenetics should take a full year of general chemistry (CHEM 177 + CHEM 177L, and CHEM 178 + CHEM 178L), a full year of organic chemistry (CHEM 331 + CHEM 331L, and CHEM 332 + CHEM 332L), and a more advanced biochemistry course (i.e., BBMB 420, or BBMB 404 and BBMB 405). Taking at least one semester of statistics is recommended as well.

Resources for Biodiversity and Evolution Students

Society for the Study of Evolution: <http://evolutionsociety.org>

Society for Integrative and Comparative Biology: <http://www.sicb.org>

American Society of Plant Taxonomists: <http://aspt.net>

GRE Information: <http://www.ets.org/gre/>