# Ecology and Evolutionary Biology Minor Requirements

Program in Biology Student Services
: 2200 Biological Sciences Bldg. (BSB) : http://www.lsa.umich.edu/biology
: lsa-biology-advising@umich.edu : 734-763-7984

**Why study Biology?**

Biology as a discipline is connected to many aspects of our everyday lives. From development and disease, to the food we eat, to the environment around us, studying biology brings us a deeper understanding of the world around us and allows us to benefit society through medicine, agriculture and environmental stewardship. Biology is a rapidly advancing area as we learn more every day about biological concepts ranging from our cells to our planet. Mastering biology opens up diverse careers in health science (medicine, dentistry, public health), biotechnology and pharmaceutical sciences, biological research, environmental policy, conservation and wildlife biology, ecological monitoring, and farming.

**Who should minor in Ecology and Evolutionary Biology?**

The academic minor in Ecology and Evolutionary Biology trains biologists interested in the origins and complex interactions of the Earth's biodiversity and ecosystems with both fundamental knowledge in these areas and the basic skills of scientific inquiry. The academic minor covers the material of the major to a lesser depth for students who wish to supplement a major in another area with additional biological expertise. The academic minor in Ecology and Evolutionary Biology is not recommended for students interested in graduate work in the biological sciences.

**Exclusions:** Students who elect an academic minor in Ecology and Evolutionary Biology may not elect the following majors: Biology; Biology, Health, and Society (BHS); Plant Biology; Ecology, Evolution, and Biodiversity; Microbiology; or Biochemistry. They also may not elect an academic minor in Biology.

**How do I declare?**

Students interested in any major or minor in the biological sciences are encouraged to meet with an advisor to discuss their academic plans as soon as possible! Students should have completed the introductory biology sequence with a 2.0 or better and be in good academic standing. Make an advising appointment online through the Biology website: www.lsa.umich.edu/biology.

**What courses should I take first?**

The introductory biology sequence consists of: BIOLOGY 171, BIOLOGY 172 or 174, and BIOLOGY 173. Students should take 171 or 172/174 first and then follow with the second lecture course and 173. ***(Note that the introductory biology sequence courses cannot be taken pass/fail.)***

- Students with an appropriate AP/IB score receive credit for BIOLOGY 195, which is the equivalent of BIOLOGY 171 & 172/174, but does NOT grant credit for 173.
- Transfer students who receive credit for BIOLOGY 191 should take BIOLOGY 192 and BIOLOGY 173 to complete the introductory biology sequence.

| | |
|---|---|
| BIOLOGY 171<br>…focuses on ecology, biodiversity, and genetics and evolutionary processes. Students engage with biological hypotheses dealing with prominent current issues such as human evolutionary origins, emerging diseases, conservation biology, and global change. | BIOLOGY 172 or 174<br>**(prerequisite: prior or concurrent credit for CHEM 130)**<br>…focuses on how cells, organs, and organisms work. (174 covers the same material as 172 but is geared toward students who prefer a more problem-solving approach to understand biology, rather than a more traditional lecture-based course.) |
| BIOLOGY 173 **(prerequisite = BIOLOGY 171, 172, 174, 191, or 195)**<br>…is the accompanying lab component to the introductory sequence. The course provides an integrated introduction to experimental biology. Topics focus on biochemistry, molecular genetics, evolution, and ecology. | |

**Can I transfer courses from another institution?**

The Program in Biology will review classes taken at other institutions to determine equivalency to University of Michigan Biology courses. *(**Note that 300- and 400-level courses will not be evaluated for equivalent credit**.)* If an external class is determined to be equivalent to a U-M course, it can be posted to your transcript as the U-M Biology course (with a "T") when you successfully complete the course *and* the transfer steps listed on the Biology website: www.lsa.umich.edu/biology/transfercredit. [Note: You are welcome to request review of a course *before you take it*. You will need to provide a detailed syllabus, and must obtain one from the instructor in advance.] **At least 9 of the 15 credits required for a minor must be taken in-residence.**

**See the LSA website for specific policies related to minors:**

https://lsa.umich.edu/lsa/academics/lsa-requirements/minors.html

## ECOLOGY & EVOLUTIONARY BIOLOGY ELECTIVES

**COURSES CURRENTLY APPROVED to fulfill the BIODIVERSITY REQUIREMENT**

BIO 207* Microbiology
BIO 230* Introduction to Plant Biology
BIO 252* Vertebrate Evolution and Diversity
BIO 256 Environmental Physiology of Animals
BIO 288* Animal Diversity
EEB 321* Rivers, Lakes, & Wetlands (UMBS)
EEB 330* Field Ornithology (UMBS)
EEB 348* Forest Ecosystems (UMBS)
EEB 349 Coastal Ecology and Sustainability
EEB 380 Oceanography: Marine Ecology
EEB 420 Plant Evolution
EEB 431* Biology of Animal Parasites (UMBS)
EEB 433* Ornithology
EEB 436* Woody Plants I: Biology and Identification
EEB 440 Biology of Fishes
EEB 442 Biology of Insects
EEB 443* Biology of Insects at UMBS
EEB 446 Microbial Ecology
EEB 450* Biology of Amphibians and Reptiles
EEB 451* Biology of Mammals
EEB 453* Field Mammalogy (UMBS)
EEB 455* Ethnobotany (UMBS)
EEB 457* Algae of Freshwater Ecosystems (UMBS)
EEB 468* Biology of Fungi
EEB 486* Field Studies of Freshwater Fishes (UMBS)
EEB 556* Field Botany of Northern Michigan (UMBS)

***also satisfies lab req.***

# ECOLOGY AND EVOLUTIONARY BIOLOGY MINOR REQUIREMENTS

**ECOLOGY AND EVOLUTIONARY BIOLOGY MINOR PREREQUISITES:**

| **Introductory Biology Sequence:** | **TERM:** | **COURSE:** | **GRADE:** |
|---|---|---|---|
| □ Choose Sequence A, B, or C: | | | |
| A: BIO 171, BIO 172 or 174, & BIO 173 | | | |
| B: BIO 195 (AP/IB) & BIO 173 | | | |
| C. BIO 191 (transfer credit), BIO 192, & BIO 173 | | | |

**ECOLOGY AND EVOLUTIONARY BIOLOGY MINOR:** Courses totaling at least 15 credits, distributed as follows:

**Core Courses:** Select at least <u>two</u> of the three topics listed. (Courses with an asterisk (*) may overlap with the lab requirement.)

| | | | |
|---|---|---|---|
| □ Ecology: BIO 281, BIO 282, or EEB 381* | | | |
| □ Genetics: BIO 305 | | | |
| □ Evolution: EEB 390, 391*, or 392* | | | |

**Laboratory Course** (This requirement may OVERLAP with other minor reqs.):

| | | | |
|---|---|---|---|
| □ Choose one laboratory/field course in BIOLOGY, EEB, or MCDB at the 200-level or higher.<br>• EEB/MCDB 300 or 400 (Independent Research), elected for a minimum of 3 credits in a single term, may be used to fulfill a lab requirement. (3 credit max. applies; see CONSTRAINTS below.) | | | |

**Biodiversity Course** (Courses with an asterisk (*) may overlap with the lab requirement.):

| | | | |
|---|---|---|---|
| □ Choose one course from the approved list (above). | | | |

**Additional Courses:**

| | | | |
|---|---|---|---|
| □ Choose additional specific EEB courses, to reach 15 minor credit hours. | | | |
| • ***Exclusions***: BIO 241, BIO 299, BIO 312, EEB 301, EEB 302, EEB 312, EEB 800, and non-specific (departmental) transfer courses are EXCLUDED. | | | |

**CONSTRAINTS:**

| | | | |
|---|---|---|---|
| • Prerequisites, introductory science courses, and non-specific (departmental) transfer courses are excluded from the 15 cr. required for the minor.<br>• <u>A maximum of 3 credits of independent research</u> (BIO 200, EEB/MCDB 300 or 400, et al.) may be counted toward the minor. | | | |

**Total Credits and GPA Requirement for EEB Minor**

| | | | |
|---|---|---|---|
| □ Minimum 15 cr. in Minor | | | |
| □ Minimum 2.0 GPA in Minor | | | |
| (GPA is calculated from all mandatory prerequisites, all courses used for minor requirements, and all courses in BIOLOGY, EEB, and MCDB.) | | | |