



Biology Minor Requirements

Program in Biology Student Services

📍: 1140 Undergrad. Science Bldg. (USB)

🌐: <http://www.lsa.umich.edu/biology>

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☎: 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 Biology?

The minor in Biology offers students a coherent program of study and training in the biological sciences. It provides exposure to the fundamental principles of biology, including studies of the structure, organization, and diversity of life. The minor is well-suited for students who wish to pursue a career that requires an understanding and appreciation of the life sciences, though it is not intended for students interested in graduate work in biology. **Exclusions:** Students who elect a minor in Biology may not elect the following majors: Biology; Biology, Health, and Society; General Biology; Plant Biology; Ecology and Evolutionary Biology; Ecology, Evolution, and Biodiversity; Cellular and Molecular Biology (CMB); CMB:BME; Microbiology; Molecular, Cellular, and Developmental Biology (MCDB); Neuroscience; or Biochemistry. They also may not elect a minor in Plant Biology or Ecology and Evolutionary 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.

<u>BIOLOGY 171</u> ...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.	<u>BIOLOGY 172 or 174</u> (prerequisite: prior or concurrent credit for CHEM 130) ...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.)
<u>BIOLOGY 173 (prerequisite = BIOLOGY 171, 172, 174, 191, or 195)</u> ...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:

<http://www.lsa.umich.edu/students/academicsrequirements/lsadegreesrequirements/minors>

BIOLOGY LABS (Note: An EEB course taken at the U-M BioStation counts as a laboratory class.)

- BIO 207 (4) Microbiology
- BIO 226 (2) Animal Physiology Laboratory
- BIO 230 (4) Introduction to Plant Biology
- BIO 252 (4) Vertebrate Evolution and Diversity
- BIO 255 (4) Plant Diversity
- BIO 288 (4) Introduction to Animal Diversity
- EEB/MCDB 300* (3) Undergraduate Research
- MCDB 306 (3) Intro. Genetics Laboratory
- MCDB 308 (3) Developmental Biology Laboratory
- EEB 313 (4) Geobiology
- EEB 320 (4) Rivers, Lakes, and Wetlands
- EEB 321 (5) Rivers, Lakes, and Wetlands (UMBS)
- EEB 330 (5) Biology of Birds (UMBS)
- EEB 341 (4) Parasitology
- EEB 348 (5) Forest Ecosystems (UMBS)
- EEB 372 (3) General Ecology Laboratory
- EEB 381 (5) General Ecology (UMBS)
- EEB 392 (5) Ecology (UMBS)
- EEB/MCDB 400* (3) Advanced Research
- EEB 405 (5) Biological Station Special Topics (UMBS)
- EEB/MCDB 416 (4) Introduction to Bioinformatics
- MCDB 419 (3) Endocrinology Laboratory
- MCDB 423 (3) Cellular and Molecular Neurobiology Laboratory
- MCDB 424 (2) Behavioral Neurobiology Laboratory
- MCDB 429 (3) Cell and Molecular Biology Laboratory
- EEB 431 (5) Ecology of Animal Parasites (UMBS)
- EEB 433 (4) Ornithology
- EEB 436 (4) Woody Plants
- EEB 441 (1) Biology of Fishes Laboratory
- EEB 443 (5) Biology of Insects (UMBS)
- EEB 450 (4) Biology of Amphibians and Reptiles
- EEB 451 (4) Biology of Mammals
- EEB 453 (5) Field Mammalogy (UMBS)
- EEB 455 (5) Ethnobotany (UMBS)
- EEB 457 (5) Algae in Freshwater Ecosystems (UMBS)
- EEB 468 (4) Biology of Fungi
- EEB 477 (5) Laboratory in Field Ecology
- EEB 482 (5) Limnology (UMBS)
- EEB 483 (4) Limnology: Freshwater Ecology
- EEB 486 (5) Biology and Ecology of Fishes (UMBS)
- EEB 489 (3) Soil Ecology
- EEB 493 (5) Behavioral Ecology (UMBS)
- EEB 556 (5) Field Botany of Northern Michigan (UMBS)

BIOLOGY MINOR REQUIREMENTS

BIOLOGY MINOR PREREQUISITES:

Introductory Biology Sequence:

- 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

TERM: COURSE: GRADE:

	TERM:	COURSE:	GRADE:
<input type="checkbox"/> 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			

BIOLOGY MINOR: Five courses totaling at least 15 credits, distributed as follows:

Core Courses: Select at least two of the four courses listed. (Courses with an asterisk (*) may overlap with the lab requirement.)

<input type="checkbox"/> Ecology: BIO 281 or EEB 381*			
<input type="checkbox"/> Genetics: BIO 305			
<input type="checkbox"/> Biochemistry: Choose from: MCDB 310, BIOLCHEM 415, or CHEM 351			
<input type="checkbox"/> Evolution: EEB 390, 391, or 392*			

Lab or Field Course (This requirement may OVERLAP with other minor reqs.):

<input type="checkbox"/> Choose one laboratory or field course in BIOLOGY, EEB, or MCDB from the attached list. <ul style="list-style-type: none"> • EEB/MCDB 300 or 400, elected for a min. of 3 credits in one term, may be used to fulfill a lab requirement. (3 credit max. applies; see CONSTRAINTS below.) 			
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Upper-Level Elective (May overlap with the lab requirement.):

<input type="checkbox"/> Choose one course in EEB or MCDB at the 300- or 400-level <ul style="list-style-type: none"> • EEB/MCDB 301, EEB/MCDB 302, EEB/MCDB 399, EEB/MCDB 499, MCDB 412, MCDB 461, and non-specific (departmental) transfer courses are EXCLUDED. • EEB/MCDB 300 or 400, elected for a min. of 3 credits in one term, may be used to fulfill this requirement. (3 credit max. applies; see CONSTRAINTS below.) 			
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Additional Course(s):

<input type="checkbox"/> Choose additional BIOLOGY, EEB, or MCDB elective courses at the 200-, 300-, and 400-level, to reach 15 minor credit hours. <ul style="list-style-type: none"> • BIO 241, BIO 299, EEB/MCDB 301, EEB/MCDB 302, EEB/MCDB 800, MCDB 412, MCDB 600, and non-specific (departmental) transfer credit are EXCLUDED. 			
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CONSTRAINTS:

<ul style="list-style-type: none"> • Prerequisites, introductory science courses, and non-specific (departmental) transfer courses are EXCLUDED from the 15 cr. required for the minor. • A maximum of 3 credits of independent research from any combination of BIO 200 and EEB/MCDB 300 or 400, et al., may be counted toward the minor. 			
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Total Credits and GPA Requirement for Biology Minor:

<input type="checkbox"/> Minimum 15 cr. in Minor (minimum of five courses)			
<input type="checkbox"/> 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.)			