



# Plant Biology Minor Requirements

## Program in Biology Student Services

📍: 1140 Undergrad. Science Bldg. (USB)

✉: lsa-biology-advising@umich.edu

🌐: <http://www.lsa.umich.edu/biology>

☎: 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 Plant Biology?

The minor in Plant Biology provides undergraduates with exposure to several areas of science that are essential to an understanding of modern Botany. This program is well-suited for those who wish to study plant biology as part of a liberal arts education, to prepare for a teaching career in secondary schools, as additional breadth for pre-professional students, or for those who simply have an interest in learning about plants. It is not intended to provide preparation for graduate study in basic and applied areas of the plant science and related fields, such as ecology, microbiology, and biochemistry. **Exclusions:** Students who elect a minor in Plant 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; Microbiology; Neuroscience; or Biochemistry. They also may not elect a minor in 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 biology introductory 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](http://www.lsa.umich.edu/biology).

### What courses should I take first?

The biological science introductory 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.

<b>BIOLOGY 171</b> ...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.	<b>BIOLOGY 172 or 174</b> <b>(prerequisite: prior or concurrent credit for CHEM 130)</b> ...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.)
<b>BIOLOGY 173 (prerequisite = BIOLOGY 171, 172, 174, 191, or 195)</b> ...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](http://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 10 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>

**PLANT BIOLOGY MINOR ELECTIVES:** Courses encompassing plant ecology, biodiversity, evolution, structure and development, and physiology. Lab courses are indicated with an asterisk (\*).

BIO 230\* Introduction to Plant Biology

BIO 255\* Plant Diversity

EEB 300\* Undergraduate Research (3 credit min./max.)

EEB 372\* General Ecology Lab

EEB 400\* Advanced Research (3 credit min./max.)

EEB 401 Advanced Topics (applicable sections only)

EEB 412 Molecular Ecology

EEB 420 Plant Evolution

EEB 436\* Woody Plants

EEB 455\* Ethnobotany (UMBS)

EEB 457\* Algae in Freshwater Ecosystems (UMBS)

EEB 459\* Systematic Botany

EEB 463\* Neotropical Plant Families

EEB 472 Plant-Animal Interactions

EEB 556\* Field Botany of Northern Michigan (UMBS)

MCDB 300\* Undergraduate Research (3 credit min./max.)

MCDB 321 Plant Physiology

MCDB 400\* Advanced Research (3 credit min./max.)

MCDB 401 Advanced Topics (applicable sections only)

MCDB 413\* Plant Molecular Biology Lab

MCDB 430 Molecular Biology of Plants

MCDB 433 Plant Biochemistry

- EEB/MCDB 300 or 400 (Independent Research), elected for a minimum of 3 credits in a single term and conducted in a plant biology research lab, may be used to fulfill the lab requirement. (3 credit max. applies; see CONSTRAINTS.)
- Any course used to fulfill the Plant Biology Course requirement cannot also be used as an Upper-Level Elective or an Additional Plant Biology Elective; i.e., a course cannot “double-count.”

## PLANT BIOLOGY MINOR REQUIREMENTS

### PLANT 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:

<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			

**PLANT BIOLOGY MINOR:** Courses totaling at least 15 credits, distributed as follows:

**Core Courses:** Select at least two of the four courses listed.

<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			

**Plant Biology Course:** (Courses with an asterisk (\*) may overlap with the lab requirement)

<input type="checkbox"/> Choose one of the following: BIO 230*, BIO 255*, or MCDB 321			
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**Upper-Level Elective:** (May overlap with the lab requirement)

<input type="checkbox"/> Choose one 300- or 400-level course from the Plant Biology Elective list (see above)			
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**Lab Requirement:** (This requirement may OVERLAP with other major reqs.)

<input type="checkbox"/> Choose one Plant Biology lab course from the Plant Biology Elective list (see above) <ul style="list-style-type: none"> <li>• Lab courses are indicated with an asterisk (*)</li> <li>• EEB/MCDB 300 or 400 (Independent Research), elected for a minimum of 3 credits in a single term and conducted in a <u>plant biology research lab</u>, may be used to fulfill the lab requirement. (3 credit max. applies; see CONSTRAINTS below.)</li> </ul>			
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### Additional Plant Biology Minor Electives

<input type="checkbox"/> Choose additional Plant Biology minor electives (see above) to reach at least 15 credits in minor.			
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### CONSTRAINTS:

<ul style="list-style-type: none"> <li>• Prerequisites, introductory science courses, and non-specific (departmental) transfer courses are EXCLUDED from the 30 cr. required for the major.</li> <li>• A maximum of 3 credits of independent research (EEB/MCDB 300 or 400) may be counted toward the major.</li> </ul>			
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### Total Units and GPA Requirement for Plant Biology Minor:

<input type="checkbox"/> Minimum 15 cr. in Minor			
<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.)			