

# PLANT BIOLOGY

## BACHELOR OF SCIENCE IN BIOLOGY

The **Plant Biology** option provides students with strong and broad training in plant biology, ranging from the cellular, physiological and systematic levels to an ecological, horticultural, and restoration perspective on a macro level.

*Each option is complemented by the College of Arts and Sciences general educational requirements such as English Composition, Writing, Foreign Language, QSR, VLPA, and I&S.*

### **Biology Department Admission Requirements**

This competitive admission process is designed not to limit access to the major but to assist students in careful planning and preparation for success in the Biology Major. An electronic application can be found on the biology website and will be due the second Friday of Autumn, Winter, Spring, & Summer quarters by 11:59pm.

To apply for a Biology Major you must meet these minimum application requirements:

- 1. Be a matriculated student at the UW Seattle Campus and in good academic standing.**
- 2. Complete the Introductory Biology series or equivalent courses to UW BIOL 180, 200, 220 and have a minimum grade of 2.0 in EACH course.**
- 3. Have a minimum 2.5 Cumulative GPA for any supporting Chemistry, Physics, Math, Biology or other courses intended for use in the Biology major that are complete at the time of application.**

**Meeting these minimum requirements does not guarantee admission to the Biology major.** *Other factors in admission include review of essay questions, space availability in the major, and time to degree set by UW Satisfactory Progress Policy. We strongly encourage students who do not meet the minimum application requirements to meet with a Department of Biology Academic Adviser to discuss their options. If you plan to pursue a double major or degree, a detailed plan for all requirements is required upon admission.*

Academic Advisers	EMAIL	PHONE	Biology Undergraduate Office
Jason Patterson	<a href="mailto:patterj@uw.edu">patterj@uw.edu</a>	(206) 543-7767	318 Hitchcock Hall, Box 355320
Sheryl Medrano	<a href="mailto:smedrano@uw.edu">smedrano@uw.edu</a>	(206) 616-8147	University of Washington
Janet Germeraad	<a href="mailto:janetjg@uw.edu">janetjg@uw.edu</a>	(206) 543-6647	Office Phone 206-543-9120

Visit the Biology website for dept. info, scholarships, research, etc.: <http://www.biology.washington.edu/>

**Appointments:** Email adviser directly; each adviser makes their own appointments.

**Walk In Advising Hours:** Monday, Tuesday, Wednesday, Friday 9:00AM-12:00PM and 1:00PM-4:00PM  
Thursday 9:00AM-12:00PM and 1:30PM-4:00PM in 318 Hitchcock Hall

**List Serv:** Join the Biology listserv: <https://mailman2.u.washington.edu/mailman/listinfo/biostudent>

**Must be a UW address**

### **Departmental Honors in Biology**

Departmental honors allow students seeking extra challenges and opportunities to do so while completing a Biology Degree. Students may request an invitation to departmental honors in Biology once they and have been admitted to the Biology Major. The request **must** be submitted 3 quarters prior to graduation; requests made later will not be reviewed. ***More details about honors can be found in Section VII.***

**Option Requirements.** A minimum of 90 credits to be distributed as follows:

**I. SUPPORTING COURSES IN CHEMISTRY, PHYSICS, AND MATHEMATICS:**

<b>Chemistry</b> (choose <b>one</b> option) (15-27 credits) 1. CHEM 120, 220 <sup>^</sup> , 221 (5,5,5) 2. CHEM 142/143, 152/153 <sup>^</sup> (5,5) <b>and</b> CHEM 223, 224 (4,4) ( <i>O Chem labs are not required for major</i> ) 3. CHEM 142, 152 <sup>^</sup> , 162 (5,5,5) <b>and</b> CHEM 237, 238, 239 (4,4,4) ( <i>O Chem labs are not required for major</i> )
<b>Physics</b> (choose <b>one</b> option): (8-10 credits) 1. PHYS 114, 115 (4,4) Algebra based physics ( <i>labs are not required for the major</i> ) 2. PHYS 121, 122 (5,5) Calculus based physics
<b>Mathematics</b> (choose <b>one</b> option): (9-10 credits) 1. MATH 124, 125 (5,5) Calculus with Analytic Geometry 2. QSCI 291, 292 (5,5) Calculus for Biologists 3a. QSCI 381, 482 (5,5) Quantitative Statistical Reasoning 3b. STATS/QSCI 311, 482 (5,5) Introductory Statistics and Quantitative Statistical Reasoning 4. Combine 1 Stats and 1 Calculus class Calculus ( <i>124 or 291</i> ) and Statistics ( <i>381, 311 or BIOST 310</i> )  <b>A third quarter of calculus or a course in probability and statistics is strongly recommended.</b>

**II. INTRODUCTORY BIOLOGY:** (15 credits)

BIOL 180, 200 <sup>^</sup> , 220 (5,5,5)	<sup>^</sup> CHEM 152, 153 or 220 can be a co-requisiten of 200
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**III. GENETICS REQUIREMENT:** (3-5 credits)

Select <b>one</b> of the following courses:		
1. GENOME 361 (3)	Fundamentals of Genetics and Genomics	
2. GENOME 371 (5)	Introductory Genetics ( <i>Autumn only</i> )	
3. BIOL/FISH 340 (5)	Genetics and Molecular Ecology ( <i>Spring Only</i> )	

**IT IS YOUR RESPONSIBILITY TO REGULARLY ASSESS YOUR DEGREE PROGRESS BY REFRESHING AND CHECKING YOUR DEGREE AUDIT. SHOULD YOU HAVE A QUESTION OR NOTICE A DISCREPANCY, IT IS YOUR RESPONSIBILITY TO ADDRESS THIS WITH A DEPARTMENT OF BIOLOGY ACADEMIC ADVISER.**

**For scheduling future classes:**

- **Many elective courses have pre-requisite courses.**
- **In planning your courses, be sure to use the course catalog and matrix to plan schedules that include the necessary pre-requisites so you are able to register for your chosen selections!**

**IV. BREADTH REQUIREMENT:**

Biologists often concentrate on one level of biological organization, but it is important to know about broader biological topics that can be studied. To broaden your perspective, you are required to take at least one biologically based course that provides breadth outside your area of concentration that will explore the realm of animals. **Breadth is a separate requirement from Advanced Electives.**

Select **one** of the following courses:

(3 credit minimum)

BIOL	280	(4)	History of Life
BIOL	310L	(5)	Survey of Human Anatomy
BIOL/FISH	311L	(3/5)	Biology of Fishes #
BIOL	313L	(4)	Civilizational Biology ( <i>Summer Only</i> )
BIOL	350	(3)	Foundations in Physiology
BIOL	355	(3)	Foundations in Molecular Cell Biology
BIOL/BIO A	385/355	(3)	Evolutionary Medicine and Public Health
BIOL	420	(4)	Game Theory in Biology
BIOL	427L	(5)	Biomechanics
<b>BIOL/FHL</b>	<b>430L</b>	<b>(5)</b>	<b>Marine Zoology (FHL)</b>
BIOL	434L	(5)	Invertebrate Zoology
BIOL	437L	(5)	Herpetology
BIOL	439L	(5)	Functional Morphology
BIOL	443L	(5)	Evolution of Mammals and Their Ancestors
BIOL	444L	(5)	Ornithology
BIOL	448L	(5)	Mammalogy
BIOL/ESS	451L	(5)	Invertebrate Paleontology
BIOL	452L	(5)	Vertebrate Biology
BIOL	455	(4)	Human Immunology & Pathology of Infectious Diseases
ENVIR	280	(5)	Natural History of the Puget Sound Region
ESRM	350	(5)	Wildlife Biology and Conservation
ESRM	435/436L	(3/2)	Insect Ecology
ESRM	453	(3)	Biology & Ecology of Mammals
ESRM	456	(3)	Biology and Conservation of Birds
<b>FHL</b>	<b>432L</b>	<b>(9)</b>	<b>Marine Invertebrate Zoology (FHL)</b>
FISH	450L	(3/5)	Salmonid Behavior and Life History #
FISH	475L	(5)	Marine Mammalogy

**V. NATURAL HISTORY/BIODIVERSITY:**

Natural History is the study of the characteristics, life cycles, and biological background of some taxonomic group. Biodiversity deals with a whole suite of organisms that inhabits a particular environment. These classes are often field oriented in which students either see or study organisms and their interaction with their natural habitats as well as their infrastructure.

Select **one** of the following courses.

(3 credits minimum)

BIOL/ESRM	331	(3)	Landscape Plant Recognition
BIOL	440L	(5)	General Mycology
<b>BIOL/FHL</b>	<b>445L</b>	<b>(5)</b>	<b>Marine Botany (FHL)</b>
BIOL	447L	(5)	Greening the Earth
BIOL	472L	(5)	Community Ecology

**VI. PLANT BIOLOGY ELECTIVES:**

(29 credits minimum)

- You are required to have a minimum of **29 credits** from the selection below.
- Within these 29 credits, all three courses in **Plant Form and Function** must be taken, and at least two courses from the **Electives pool**:

<b>Plant Core Classes – all 3 required:</b>			
BIOL	317L	(5)	Plant Identification and Classification ( <i>Spring, Summer</i> )
BIOL	425L	(5)	Adv. Plant Physiology & Development ( <i>Winter</i> )
BIOL	441L	(5)	Trends in Land Plant Evolution ( <i>Autumn</i> )

## VI. PLANT BIOLOGY ELECTIVES, continued:

**Electives** – select at least **two** courses: Additional classes may be sampled from Natural History/Biodiversity

BIOL	302L	(3)	Laboratory Techniques in Cell and Molecular
BIOL	305	(3)	Science Communication: Video Storytelling in Biology
BIOL	354	(3)	Foundations in Evolution and Systematics
BIOL	355	(3)	Foundations in Molecular Cell Biology
BIOL	356L	(3)	Foundations in Ecology
BIOL	359	(3)	Foundations in Quantitative Biology
BIOL	360L	(4)	Cellular Anatomy
BIOL	396	(1-4)	Peer Facilitation in Biology <sup>1</sup>
BIOL	399	(2-12)	Biology Internship Program
BIOL	416	(3)	Molecular Genetics of Plant Development
BIOL	419	(4)	Data Science for Biologists
BIOL	422	(3)	Physiology of Plant Behavior
BIOL/ESRM	424/478L	(5)	Plant Eco-Physiology
BIOL	438L	(5)	Analytical Paleobiology
BIOL	475L	(3-5)	Intensive Field Experience in Biology
BIOL	476L	(5)	Conservation Biology
BIOL	480L	(4)	Field Ecology
BIOL	481L	(5)	Experimental Ecology and Evolution
BIOL	483	(1-3)	Sr. Seminar in Paleobiology
BIOL	485	(1-3)	Seminar in Cellular, Molecular and Developmental Biology
BIOL	489	(1-3)	Seminar in Plant Biology
BIOL	492	(3)	Teaching Biology Inclusively to Diverse Audiences
BIOL	494	(3)	Controversies in Biology
BIOL	495L	(3)	Biology of Fermentation
BIOC	405	(3)	Introduction to Biochemistry <sup>2</sup>
BIOC	406	(3)	Introduction to Biochemistry <sup>2</sup>
BIOC	440	(4)	Biochemistry <sup>2</sup>
BIOC	441	(4)	Biochemistry <sup>2</sup>
BIOC	442	(4)	Biochemistry
ESRM	250	(5)	Introduction to Geographic Information Systems
ESRM	325	(3)	Environmental Applications of Plants
ESRM	362	(5)	Intro to Restoration Ecology
ESRM	404L	(5)	Plant Microbiology Laboratory
ESRM	409	(5)	Soil Ecology
ESRM	411	(3)	Plant Propagation: Principles and Practice
ESRM	412	(3)	Native Plant Production
ESRM	415	(5)	Terrestrial Invasion Ecology
ESRM	430	(5)	Remote Sensing of the Environment
ESRM	441	(5)	Landscape Ecology
ESRM/FISH	457/455	(3/5)	Fish and Wildlife Toxicology
ESRM	473L	(5)	Restoration in North America
ESRM	472	(5)	Wetland Ecology and Management
ESRM	480	(5)	Landscape Plant Science and Sustainability Management
Various DEPT	<b>499L</b>	<b>(4)</b>	<b>Undergraduate Research</b> ( <i>Must be Approved, see notes</i> )**

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## VII. LAB, RESIDENCY AND 400 LEVEL BIOLOGY REQUIREMENTS:

*These requirements may overlap with other requirements such as Breadth, Natural History/Biodiversity, or Advanced Electives.*

- A minimum of **15 credits** must be 400 level through the **Department of BIOLOGY**. Courses such as Biochemistry (BIOC) and Microbiology (MICROM) are from other departments and **will not** count toward this requirement.
- A minimum of **15 credits** of 300 and 400 level Advanced **BIOL** Electives must be taken in residency at the University of Washington-Seattle campus. This requirement **can be shared** with the departmental 400 level requirement above.
- At least **two** laboratory courses, chosen from any course marked with an “L”, must be taken. A minimum of four credits of 499 (**please read end note about approval process**) can substitute for one laboratory.

## VIII. DEPARTMENTAL HONORS REQUIREMENTS:

General Requirements for completing Departmental Honors include:

- UW Cumulative GPA: 3.3
- Major Cumulative GPA: 3.4
- Complete two 400 level BIOL courses for Ad Hoc credit (*Requires online agreement form*)
- Complete two approved Senior level BIOL Seminars
- Complete 9 credits of Undergraduate Research (*Research approval form required*)
- Complete a research paper based on approved research credits
- Present your research work at the Undergraduate Research Symposium or other approved venue

## IX. ADDITIONAL NOTES:

- A cumulative GPA of a 2.0 is required for all classes counting toward the major that are taken at the University of Washington.
- Courses listed in more than one category **can only count for one area requirement.**
- **Cross Campus equivalencies are not guaranteed for BIOL 180/200/220 registration purposes.** Complications may arise during registration if you have taken courses at other campuses and it is up to the student to inquire and be prepared. You will need to submit a petition for any other courses from the other campuses.
- **Experiential learning:** A maximum of 10 credits of a combined **396/399/498/499** can be applied to your degree. You will need a faculty code from your faculty sponsor to sign up for any of these credits.
- **Undergraduate Research:** Any 499 credit **must** be approved by petition; see a Biology Adviser or visit the website for a Research Approval Form. A minimum of 4 credits on the same project are required for a petition to count towards a lab.
- *For other classes of interest that are not listed, please contact an advisor about the possibility of petitioning. The course will need to be at the 300 to 400 level and have a biological basis to be considered.*

## X. SYMBOLS:

(**FHL**) Indicates course taught at Friday Harbor Labs

<sup>1</sup> 396 is regulated and administered by professor permission. To Peer facilitate an introductory course, contact the lab coordinator of the specific class. For other courses, prior experience with the class and permission of acting instructor is necessary for enrollment.

# Indicates a class that has a lecture only (3 credits) or a lecture and lab component (5 credits).

<sup>2</sup> Only 1 class per pair can count as an elective from 405/440 and 406/441