

# 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 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)<br>1. CHEM 120, 220 <sup>^</sup> , 221 (5,5,5)<br>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> )<br>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)<br>1. PHYS 114, 115 (4,4) Algebra based physics ( <i>labs are not required for the major</i> )<br>2. PHYS 121, 122 (5,5) Calculus based physics  |
| <b>Mathematics</b> (choose <b>one</b> option): (9-10 credits)<br>1. MATH 124, 125 (5,5) Calculus with Analytic Geometry<br>2. QSCI 291, 292 (5,5) Calculus for Biologists ( <i>May not be used for the Bio Chem 440 Series</i> )<br>3a. QSCI 381, 482 (5,5) Quantitative Statistical Reasoning<br>3b. STATS/QSCI 311, 482 (5,5) Introductory Statistics and Quantitative Statistical Reasoning<br>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-requisite of 200 |
|--|--|

**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               |  |

**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.**

**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 <sup>#</sup>                      |
| BIOL            | 313L        | (4)        | Civilizational Biology                              |
| 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            | 397L        | (5)        | Avian Specimen Preparation                          |
| 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)        | Mammology   |
| BIOL/ESS        | 451L        | (5)        | Invertebrate Paleontology                           |
| BIOL            | 452L        | (5)        | Vertebrate Biology                                  |
| BIOL            | 453L        | (5)        | Comparative Anatomy of Vertebrates                  |
| BIOL            | 454L        | (5)        | Entomology  |
| BIOL            | 455         | (4)        | Human Immunology & Pathology of Infectious Diseases |
| 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 <sup>#</sup>     |
| 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            |
| BIOL            | 442L        | (5)        | Mushrooms and Related Fungi |
| <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 min)

- 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**:

| Plant Core Classes – all 3 required: |      |     |   |
|--------------------------------------|------|-----|---|
| 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         | 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                      |
| 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 outside the BIOL 180/200/220 and Genome equivalents. 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> This class 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