

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 | patterj@uw.edu | (206) 543-7767 | 318 Hitchcock Hall, Box 355320 |
| Janet Germeraad | janetjg@uw.edu | (206) 543-6647 | Office Phone 206-543-9120 |
| Daniel Lopez | dl1724@uw.edu | (206) 221-7372 | |

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

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

Zoom Drop-In Hours: Monday through Thursday 9:00AM-12:00PM and 1:00PM-4:00PM
(refer to website for Zoom Link)

List Serv: Join the Biology listserv: <https://mailman12.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 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 VIII.***

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

I. INTRODUCTORY BIOLOGY: (15 credits)

| | |
|---------------------------|--|
| BIOL 180, 200 220 (5,5,5) | <i>CHEM 152, 153 or 220 can be a co-requisite of 200</i> |
|---------------------------|--|

II. SUPPORTING COURSES IN CHEMISTRY AND MATHEMATICS:

| | | |
|--|---|--|
| Chemistry (Select <u>one</u> option): | | (15-23 credits) |
| 1. CHEM | 120,220,221 (5,5,5) | Hybrid Chem Series |
| 2. CHEM | 142/143, 152/153 (5,5) and 223, 224 (4,4) | Standard Chem/Short Org Chem |
| 3. CHEM | 142/143, 152/153, 162 (5,5,5) and 237, 238, 239 (4,4,4) | Standard Chem, Long Org Chem |
| Physics (choose <u>one</u> 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 |
| Mathematics (choose <u>one</u> option): | | (9-10 credits) |
| 1. MATH | 124, 125 (5,5) | Calculus with Analytic Geometry |
| 2. QSCI | 291, 292 (5,5) | Calculus for Biologists |
| 3. QSCI/STAT | 381/311, 482 (5,5) | Quantitative Statistical Reasoning |
| 4. Combine 1 Stats and 1 Calculus class | (4/5,5) | Statistics (381,311 or BIOST. 310) and Calculus (124 or 291) |

III. GENETICS REQUIREMENT (Select one of the following courses): (3-5 credits)

| | | |
|--------------|---------|---|
| 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>Autumn only</i>) |

IV. LAB, RESIDENCY AND 400 LEVEL BIOLOGY REQUIREMENTS:

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

- **Two laboratory courses at a minimum.** Two course numbers marked with “L” which may overlap with natural history, breadth, and/or advanced electives. If using research to cover one lab, then a minimum of four credits of 499 (please read approval process in end notes) can substitute for only one laboratory.
- **15 credits** must be 400 level with the **BIOL** department prefix. Courses such as Biochemistry (BIOC) and Microbiology (MICROM) are from other departments and **will not** count toward this requirement.
- **15 credits** of 300 and 400 level **BIOL** Electives must be taken in residency at the University of Washington-Seattle campus. ***This requirement can overlap with the departmental 400 level requirement above.***
- *A cumulative GPA of a 2.0 is required for all classes used toward the major and are taken at the University of Washington.*
- Only 15 credits in your last 60 credits can be taken outside of the UW-Seattle campus.

V. BREADTH REQUIREMENT:

(3 credits)

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.

Select only **one** course: *Breadth is a separate requirement from your Advanced Electives.*

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|-----------------|-------------|------------|--|
| BIOL | 280 | (4) | History of Life |
| BIOL/FISH | 311L | (5) | Biology of Fishes |
| BIOL | 350 | (4) | Foundations in Physiology |
| BIOL/BIO A | 385/355 | (3) | Evolutionary Medicine and Public Health ⁴ |
| BIOL | 406 | (3) | Conservation of Large Vertebrates |
| BIOL | 413L | (5) | Survey of Human Anatomy ³ |
| BIOL | 427L | (5) | Biomechanics |
| BIOL/FHL | 430L | (5) | Marine Zoology (FHL) |
| BIOL | 434L | (5) | Invertebrate Zoology |
| BIOL | 438L | (5) | Analytical Paleobiology* |
| 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 | 453L | (5) | Comparative Anatomy of Vertebrates |
| BIOL | 465 | (3) | Comparative Endocrinology |
| BIOL | 468 | (3) | Comparative Animal Physiology |
| BIOL | 468L | (4) | Ecology of Animal Movement |
| ENVIR | 280 | (5) | Natural History of the Puget Sound Region |
| ESRM | 435 | (3) | Insect Ecology |
| FHL | 432L | (9) | Marine Invertebrate Zoology (FHL) |
| FISH | 310L | (5) | Marine Invertebrate Diversity |
| FISH | 450 | (3) | Salmonid Behavior and Life History |
| NURS | 301 | (4) | General Anatomy ³ |

VI. NATURAL HISTORY/BIODIVERSITY:

(3 credits)

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** course: *Natural history is a separate requirement from your Advanced Electives.*

| | | | |
|-----------------|-------------|------------|-------------------------------------|
| BIOL/ESRM | 331 | (3) | Landscape Plant Recognition |
| BIOL/FHL | 445L | (5) | Marine Botany (FHL) |
| BIOL | 447L | (5) | Greening the Earth |
| BIOL | 472L | (5) | Community Ecology |
| BIOL | 481L | (5) | Experimental Ecology and Evolution* |

VII. 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**:

| | | | |
|---|------|-----|---|
| Plant Core Classes – all 3 classes are required: | | | |
| BIOL | 425L | (5) | Adv. Plant Physiology & Development (<i>Winter</i>) |
| BIOL | 441L | (5) | Trends in Land Plant Evolution (<i>Autumn</i>) |
| BIOL | 446L | (5) | Plant Identification and Classification (<i>Spring, Summer</i>) |

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VII. 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 | (4) | Foundations in Molecular Cell Biology |
| BIOL | 356L | (3) | Foundations in Ecology |
| BIOL | 359 | (3) | Foundations in Quantitative Biology |
| BIOL | 396 | (1-4) | Peer Facilitation in Biology ¹ |
| BIOL | 399 | (2-12) | Biology Internship Program |
| BIOL | 403 | (4) | Knowledge Synthesis in Cell Biology |
| BIOL | 416 | (3) | Molecular Genetics of Plant Development |
| BIOL/ESRM | 424/478L | (5) | Plant Eco-Physiology |
| BIOL | 426 | (3) | Comparative Immunology |
| BIOL | 436 | (3) | Molecular Parasitology |
| BIOL | 438L | (5) | Analytical Paleobiology* |
| BIOL | 442 | (3) | Genetics of Plant Innovations |
| BIOL | 476 | (3) | Conservation Biology |
| BIOL | 480L | (4) | Field Ecology |
| BIOL | 485 | (1-3) | Seminar in Cellular, Molecular and Developmental Biology |
| BIOL | 489 | (1-3) | Seminar in Plant Biology |
| BIOL | 495L | (3) | Biology of Fermentation |
| BIOC | 405 | (3) | Introduction to Biochemistry ² |
| BIOC | 406 | (3) | Introduction to Biochemistry ² |
| BIOC | 440 | (4) | Biochemistry ² |
| BIOC | 441 | (4) | Biochemistry ² |
| ESRM | 250 | (5) | Introduction to Geographic Information Systems |
| ESRM | 325 | (3) | Environmental Applications of Plants |
| ESRM | 362 | (5) | Intro to Restoration Ecology |
| ESRM | 411 | (3) | Plant Propagation: Principles and Practice |
| ESRM | 412 | (3) | Native Plant Production |
| ESRM | 415 | (5) | Terrestrial Invasion Ecology |
| ESRM | 422 | (2) | Plant Microbiology Seminar |
| ESRM | 430 | (5) | Remote Sensing of the Environment |
| ESRM | 441 | (5) | Landscape Ecology |
| ESRM | 447L | (5) | Watershed Ecology |
| ESRM | 473L | (5) | Restoration in North America |
| L ARCH | 322 | (3) | Introduction to Plant Design |
| Various DEPT | 499L | (4) | Undergraduate Research (<i>Must be Approved, see notes</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:

- **Other department may restrict their classes to their majors during the registration periods.**
- **Many elective courses have pre-requisite courses, check the catalog.**
- **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!**

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VIII. DEPARTMENTAL HONORS REQUIREMENTS

Contact Janet Germeraad, janetjg@uw.edu with questions about the requirements and application

General Requirements for completing Departmental Honors include:

- Applying for Departmental Honors 1 year prior to graduation.
- UW Cumulative GPA: 3.3 and a 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 by the start of the final quarter
- Present your research work at the Undergraduate Research Symposium or other approved venue

IX. ADDITIONAL NOTES:

- **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.
- **Experiential learning:** A maximum of 10 credits of a combined **381/382/383/396/399/498/499** can be applied to your degree. You will need a faculty code from your faculty sponsor to sign up for any of these credits.
- BIOL seminars, 496, and 497 are variable topic courses and will vary how and if they count for degree requirements. Quarterly information on how they apply is sent through the listserv.
- Courses listed in more than one area 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.
- *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

* Indicates course that can only count for one area requirement, either natural history or electives or breadth

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

(FHL) Indicates course taught at Friday Harbor Labs

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

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

³ Credit can only be received for one course BIOL 413 or NURS 301 due to content overlap

⁴ Credit can only be received for one course BIOL 385 or BIO A 351 due to content overlap

Remember!

- You're in charge! Take responsibility for your education by understanding your degree requirements. Reflect on the course choices available to you. Will your courses help you in preparation for a career or do they teach skills? Will they allow you to explore your interests or equip you for graduate or professional schools?
- Explore the course choices prior to an academic planning session or walk-in drop-in session. Ask fellow biology majors what courses they have enjoyed. Read the course descriptions on the course catalog. To make your advising appointment beneficial, advisors will need an idea of content that interests you and why.
- If you want to know if you're "on track" or will graduate "on time", you will need to create a full academic plan to be reviewed during an advising appointment. By developing your plan, you'll be able to develop a sense of how much time it will take to complete your degree requirements.
- Do you plan on incorporating service learning? A study abroad program? Internships or volunteer experience? How will that fit with your academics and which opportunities are best for you? Your education goes beyond just what courses you take.
- Biology Student Services are available to assist in many ways. Come visit Hitchcock 318 – Academic Services Office.

Speaking of Study Abroad!

- Do you know that UW has an entire office dedicated to sending you to study across the globe?
- There are several programs that might fit your needs! Wants to be gone a quarter. An entire year? Just three weeks? No problem, there are options!
- Work with the Study Abroad in 459 Schmitz Hall as well as a biology advisor to ensure you choose a program which meets your educational goals and academic plans. There are limited departmental options associated with BIOL, so direct exchanges or external programs are your best bet.
- Visit <https://www.washington.edu/studyabroad/> to get started!

Getting Involved

- Research is one of the best ways of applying what you are learning in classes to real world situations. You can use the Undergraduate Research Program (URP) <http://www.washington.edu/undergradresearch/> to find open positions or you can contact a faculty whose research interests you directly. Check the Research Symposium that happens every May in Mary Gates to see what students are doing throughout campus!
- Did you know that there are over 700 registered student organizations (RSO)? Find one that suits you, or if you can't find one, create one! <https://huskylink.washington.edu/>
- Check in with the Carlson Center and Public Service Center in MGH 171 for service learning and volunteer opportunities.
- Want to gain some hands-on experience? Consider an internship. <https://careers.uw.edu/>
- Think about other ways to connect your academics to exploring careers! Volunteering, job shadows, informational interviews, etc.

The Career Center

- Concerned about Careers for your specific major? The UW Career Center is located in MGH 134!
- The Career Center's counselors are available for one-on-one appointments, resume editing, and they host several workshops each quarter on how to make a resume, how to apply to graduate school, preparing for interviews for jobs and professional schools and more!
- Check out the Career Center website: <https://careers.uw.edu/>
- Think about other ways to connect your academics to exploring careers! Volunteering, job shadows, informational interviews, etc.
- Use Handshake to look for jobs and opportunities: <https://careers.uw.edu/>

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Goals, Courses, Ideas:

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| Course | Cr | Course | Cr | Course | Cr | Course | Cr |
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Goals, Courses, Ideas:

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Goals, Courses, Ideas:

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| Quarter Total | | Quarter Total | | Quarter Total | | Quarter Total | |

Goals, Courses, Ideas:

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|---|
| Freshman Year Goals: |
| <p>Explore Majors! Get Involved!</p> <ul style="list-style-type: none"> • Meet with advisers in various departments or UAA. • Join a student club, participate in tutoring/study groups • Volunteer • Create a pattern of attending office hours of your professors and TA's • Investigate undergrad research, internships and/or study abroad. |
| Sophomore Year Goals: |
| <p>Be more focused.</p> <ul style="list-style-type: none"> • Meet with Dept. advisors in majors you are most interest in • Find a mentor (upper level student, professor or professional) • Investigate professional exams: GRE, PCAT, DAT, MCAT • Pursue undergrad research • Create and refine your Resume or C.V. • Start doing informational interviews |
| Junior Year Goals: |
| <p>Define and Clarify Future Goals</p> <ul style="list-style-type: none"> • Develop your leadership by being a campus leader or club officer • Identify 2 faculty members who can recall your name • Evaluate and assess strengths and weaknesses in your resume • Consider whom you would like a letter of reference from • Review your progress on your freshmen and sophomore goals |
| Senior Year Goals: |
| <p>Wrap up and Final Activities</p> <ul style="list-style-type: none"> • Use the career center to create your resume/C.V. and various alternative versions. • Participate in some mock interviews • Begin your job hunt or applications for grad programs • Gather your persons for your letters of rec |