

GENERAL BOTANY

This program provides a broad background in the biology of plants, from the molecular to the whole-plant level. Botany students study anatomy, biochemistry, ecology, genetics, physiology, taxonomy, and molecular biology of plants. This flexible major combines the faculty and resources of two UF colleges to prepare students for career success.

About this Program

- **College:** Agricultural and Life Sciences (<http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/>)
- **Degree:** Bachelor of Science
- **Specializations:** General Botany (p. 1) | Botanical Research (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/BTY_BS/BTY_BS04/)
- **Credits for Degree:** 120
- **More Info**

To graduate with this major, students must complete all university, college, and major requirements.

Department Information

The Department of Biology studies life at all levels from molecules to the biosphere to understand the evolution, structure, maintenance and dynamics of biological systems. The department's teaching and research provide the integrative and conceptual foundations of the life sciences.

Website (<https://biology.ufl.edu/>)

CONTACT

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Map (<http://campusmap.ufl.edu/#/index/0747>)

Curriculum

- Biology UF Online
- Biology | CALS
- Biology | CLAS
- Botany Minor
- Botany | CALS
- Botany | CLAS
- Combination Degrees
- Zoology
- Zoology Minor

This option is intended for students who do not plan to attend graduate or professional school, but are planning a career in government, public service, or secondary education. A student must achieve a minimum grade of C in all required courses for the major.

Small classes are taught by faculty who have a commitment to undergraduate education. Students participate in mentored research, assisting faculty with research projects on campus and abroad. The major prepares students for careers in industry and government agencies, for graduate and professional schools, and for teaching jobs in high schools.

Specializations

General Botany

For students who may not intend to pursue a graduate degree but are interested in a career in plant biology. This specialization provides some flexibility in tailoring the courses needed in order to pursue specific interests. Students are encouraged to consult with an advisor and botany faculty member when deciding on which courses to take.

Botanical Research

For students who intend to pursue a graduate degree and requires research with a faculty member. This specialization provides some flexibility in tailoring the courses needed in order to pursue specific interests. Students are encouraged to consult with an advisor and botany faculty member when deciding on which courses to take.

Coursework for the Major

Required coursework is dependent upon the specialization. Coursework for each specialization can be found below under Critical Tracking and Model Semester Plan.

Relevant Minors and/or Certificates

Students majoring in Botany can minor in most other disciplines, and this is a good way to organize students' electives around areas of interest. Note that botany majors cannot minor in Biology, nor can Biology majors minor in Botany (the curricula for the Botany and Biology majors are too similar).

UFTeach Program

There is a severe shortage of qualified secondary science teachers in Florida and nationwide. Students interested in becoming part of this high-demand profession should see a botany advisor or the UFTeach advisor. UFTeach students complete the UFTeach minor in science teaching with their BS in Botany and have the coursework and preparation for professional teacher certification in Florida when they graduate.

More Info (<http://education.ufl.edu/uf-teach/>)

Research

Botany majors are strongly encouraged to participate in research, and research is required for the Botanical Research specialization. Research experience is valuable on many levels: it diversifies the college experience; it teaches students how scientists apply the knowledge gained in the classroom to real world questions; it provides the opportunity to work with and get to know researchers who are the best in their field; it introduces students to cutting edge scientific questions and techniques; it can enhance a student's resume/CV when applying to graduate or professional school; and finally it is essential in helping students determine if science is a good career choice.

CALS botany majors may participate in research for course credit, as a scholar (e.g., University Scholar, Science for Life Scholar, Beckman Scholar), as a volunteer, or, in rare cases, as a paid research assistant. Please visit Undergraduate Research for information regarding course credit. Students who plan to enroll for course credit must contact potential research mentors, develop a project, and turn in the required application and proposal no later than the week before drop/add. If the window is missed, students should still contact potential research mentors, if only to discuss upcoming opportunities.

Required Foundation Courses

Code	Title	Credits
<i>Introductory Botany / Biology</i>		
Select one:		4-8
Option A (preferred)		
BOT 2010C & BOT 2011C	Introductory Botany and Plant Diversity (preferred) ¹	
Option B		
BSC 2010 & 2010L	Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory	
BSC 2011 & 2011L	Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2	
<i>Chemistry</i>		
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry Laboratory	4
CHM 2046 & 2046L	General Chemistry 2 and General Chemistry 2 Laboratory	4
CHM 2200 & 2200L	Fundamentals of Organic Chemistry and Fundamentals of Organic Chemistry Laboratory	4
<i>Mathematics</i>		
MAC 1147 or MAC 2311	Algebra and Trigonometry Analytic Geometry and Calculus 1	4
Select one:		3
STA 2023	Introduction to Statistics 1	
COP 2800	Computer Programming Using JAVA (or equivalent)	
COP 3275	Computer Programming Using C (or equivalent)	
BSC 2891	Python Programming for Biology	
<i>Physics</i>		
PHY 2004 & 2004L	Applied Physics 1 and Laboratory for Physics 2004	4
Required Courses for the General Botany Specialization		
AGR 3303	Genetics	3-4

or PCB 3063	Genetics	
PCB 4674	Evolution	4
BOT 2710C	Practical Plant Taxonomy	3
BOT 3503 & 3503L	Physiology and Molecular Biology of Plants and Physiology and Molecular Biology of Plants Laboratory	5
BSC 4936	Critical Analysis of Biological Research	2
<i>Ecology and Florida Biodiversity</i>		
Select two:		6-8
PCB 4043C	General Ecology	
PCB 3601C	Plant Ecology	
BOT 3151C	Local Flora of North Florida	
BSC 3307C	Climate Change Biology	4
<i>Cells and Tissues</i>		
BOT 4935/5225C or PCB 3023	Special Topics (Plant Anatomy) Essential Cell Biology	4
<i>Biodiversity Breadth</i>		
Select one:		3-4
BOT 2011C	Plant Diversity ¹	
ZOO 4307C	Vertebrate Biodiversity	
ZOO 4926	Special Topics in Zoology (Mammalogy)	
ZOO 4205C	Invertebrate Biodiversity	
ENY 3005 & 3005L	Principles of Entomology and Principles of Entomology Laboratory	
WIS 4934	Topics in Wildlife Ecology and Conservation (Mammalogy)	
PLP 3002C	Fundamentals of Plant Pathology	
PLP 4653C	Basic Fungal Biology	
MCB 2000 & 2000L	Microbiology and Microbiology Laboratory	
MCB 3020 & 3020L	Basic Biology of Microorganisms and Laboratory for Basic Biology of Microorganisms	
Select two from any of the above courses or other approved electives		4-8
Total Credits		65-77

¹ Students who select BOT 2011C to fulfill the foundation requirements may not use BOT 2011C to fulfill the biodiversity breadth requirements for the major.

Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (<https://cpm.flvc.org/advance-search/>) may be used for transfer students.

Semester 1

- Complete 1 of 5 critical-tracking courses, including lab: BSC 2010/BSC 2010L or BOT 2010C, BSC 2011/BSC 2011L or BOT 2011C, CHM 2045/CHM 2045L, CHM 2046/CHM 2046L; MAC 1147, MAC 2311 or STA 2023
- 2.0 UF GPA required

Semester 2

- Complete 1 additional critical-tracking course, including labs
- 2.0 UF GPA required

Semester 3

- Complete 1 additional critical-tracking course, including labs, with a 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 4

- Complete 1 additional critical-tracking course, including labs, with 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 5

- Complete all critical-tracking courses, including labs, with 2.5 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 6

- Complete at least 2 Required Courses for the General Botany specialization
- 2.0 UF GPA required

Semester 7

- Complete one of the remaining Required Foundation Courses (CHM 2200/CHM 2200L, PHY 2004/PHY 2004L, MAC 1147/MAC 2311, or STA 2023/COP 2800/COP 3275/BSC 3307C)
- Complete at least two additional (4 total) Required Courses for the General Botany specialization
- 2.0 UF GPA required

Semester 8

- Complete all remaining major course requirements
- 2.0 UF GPA required

Model Semester Plan

Students are expected to complete the Writing Requirement while in the process of taking the courses below. Students are also expected to complete the General Education International (GE-N) requirement concurrently with another General Education requirement (typically, GE-C, H, or S).

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Course	Title	Credits
Semester One		
Quest 1 (Gen Ed Humanities)		3
BSC 1920	First Year Introduction: Biology at UF (recommended elective)	1
Select one:		4
BSC 2010 & 2010L	Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory (Critical Tracking ; Gen Ed Biological Sciences)	
BOT 2010C	Introductory Botany (Critical Tracking ; Gen Ed Biological Sciences)	
Select one:		4
MAC 1147	Algebra and Trigonometry (Critical Tracking ; State Core Gen Ed Mathematics)	
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking ; State Core Gen Ed Mathematics)	
State Core Gen Ed Composition (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext); Writing Requirement		3
Credits		15
Semester Two		
Select one:		4
BSC 2011 & 2011L	Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2 (Critical Tracking ; Gen Ed Biological Sciences)	
BOT 2011C	Plant Diversity (Critical Tracking ; Gen Ed Biological Sciences)	
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry Laboratory (Critical Tracking ; State Core Gen Ed Biological and Physical Sciences)	4
State Core Gen Ed Social and Behavioral Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3

Gen Ed Composition; Writing Requirement	3
Credits	14
Semester Three	
Quest 2 (Gen Ed Social and Behavioral Sciences)	3
AEC 3033C	Research and Business Writing in Agricultural and Life Sciences 3
CHM 2046	General Chemistry 2 4
& 2046L	and General Chemistry 2 Laboratory (Critical Tracking ; Gen Ed Physical Sciences)
State Core Gen Ed Humanities (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)	3
Elective	3
Credits	16
Semester Four	
Select one:	3-4
AEB 2014	Current Economic Issues, Food and You (Gen Ed Social and Behavioral Sciences)
AEB 3103	Principles of Food and Resource Economics (Gen Ed Social and Behavioral Sciences)
ECO 2023	Principles of Microeconomics (Gen Ed Social and Behavioral Sciences)
PHY 2004	Applied Physics 1 4
& 2004L	and Laboratory for Physics 2004 (Critical Tracking)
Select one:	3
STA 2023	Introduction to Statistics 1 (Critical Tracking ; Gen Ed Mathematics)
COP 2800	Computer Programming Using JAVA (Critical Tracking ; or equivalent)
COP 3275	Computer Programming Using C (Critical Tracking ; or equivalent; Gen Ed Mathematics)
BSC 2891	Python Programming for Biology (Critical Tracking)
Gen Ed Social and Behavioral Sciences	3
Credits	13-14
Semester Five	
CHM 2200	Fundamentals of Organic Chemistry 4
& 2200L	and Fundamentals of Organic Chemistry Laboratory (Critical Tracking)
Select one:	3-4
PCB 4043C	General Ecology (Critical Tracking)
PCB 3601C	Plant Ecology (Critical Tracking)
BOT 3151C	Local Flora of North Florida (Critical Tracking)
BSC 3307C	Climate Change Biology (Critical Tracking)
PCB 4674	Evolution (Critical Tracking) 4
Gen Ed Humanities	3
Credits	14-15
Semester Six	
AEC 3030C	Effective Oral Communication 3
AGR 3303	Genetics (Critical Tracking) 3-4
or PCB 3063	or Genetics
BOT 2710C	Practical Plant Taxonomy (Critical Tracking) 3
BOT 4935/5225C	Special Topics (Critical Tracking ; Plant Anatomy) 3-4
or PCB 3023	or Essential Cell Biology
Gen Ed Mathematics (Critical Tracking) ¹	3
Credits	15-17
Semester Seven	
BOT 3503	Physiology and Molecular Biology of Plants 5
& 3503L	and Physiology and Molecular Biology of Plants Laboratory (Critical Tracking)
Select one:	3-4
PCB 4043C	General Ecology (Critical Tracking)
PCB 3601C	Plant Ecology (Critical Tracking)
BOT 3151C	Local Flora of North Florida (Critical Tracking)
BSC 3307C	Climate Change Biology (Critical Tracking)
Approved botany electives	6
Elective	3
Credits	17-18
Semester Eight	
BSC 4936	Critical Analysis of Biological Research 2
Biodiversity breadth courses	4
Electives	10
Credits	16
Total Credits	120

¹ Gen Ed Mathematics; if COP 2800 or BSC 2891 taken for computational requirement; or elective.

Approved Electives		
Code	Title	Credits
AGG 3501	Environment, Food and Society	3
AGR 4304	Plant Chromosomes and Genomes	3
AGR 4320	Plant Breeding	3
AGR 4512	Physiology and Ecology of Crops	3
ALS 4163	Challenges in Plant Resource Protection	3
BCH 5045	Graduate Survey of Biochemistry (online)	4
BCH 3023	Elementary Organic and Biological Chemistry (online)	3
BOT 2800C	Plants in Human Affairs	3
BOT 4053	Practical Experience in Teaching Botany	2
BOT 4935	Special Topics (Botany)	2-4
BOT 4935/5305	Special Topics (Paleobotany)	3
BSC 2862	Global Change Ecology and Sustainability	3
BSC 3402	Theory and Practice in the Biological Sciences	2
ENY 4161	Insect Classification	3
FNR 2071	Forests for the Environment	3
FNR 3131C	Dendrology/Forest Plants	3
FNR 3004	Forests, Conservation, and People	3
FNR 3133C	Tree Biology	3
FNR 3500C	Forest Ecology	3
FNR 4080	Sustainable Ecotourism Development	3
HOS 3305	Introduction to Plant Molecular Biology	3
HOS 4304	Horticultural Physiology	3
HOS 4313C	Laboratory Methods in Plant Molecular Biology	2
HOS 4341	Advanced Horticultural Physiology	3
MCB 4304	Genetics of Microorganisms	3
MCB 4320C	The Microbiome	3
MCB 4503	General Virology	3
MCB 4652	Environmental Microbiology	3
ORH 3513C	Environmental Plant Identification and Use	3
ORH 3773	Public Gardens	2
ORH 3815C	Florida Native Landscaping	3
PCB 4553	Population Genetics	4
PCB 5338	Principles of Ecosystem Ecology	3
PLP 2060	Fungus among Us: Mushrooms, Molds and Civilization	3
PLP 3230	Survey of Plant Pathogens	3
PLS 4601C	Principles of Weed Science	3

Academic Learning Compact

The Botany major is offered by both the College of Liberal Arts and Sciences and the College of Agricultural and Life Sciences. This major provides a foundation in the life sciences with emphasis on plant systems. Students will learn the diversity of life, the structure of organisms and ecosystems and how they function (i.e., the acquisition, flow, organization and uses of information, energy and nutrients in living systems). Students will learn the scientific method and how it facilitates the discovery of new knowledge in botany and biology, including how to critically evaluate hypotheses and conclusions.

Before Graduating Students Must

- Achieve acceptable performance in all required botany courses.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to

Student Learning Outcomes | SLOs

Content

1. Identify, describe and explain the basic terminology, concepts, methodologies, and theories used within the biological sciences.

Critical Thinking

2. Analyze biological information and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
3. Discriminate ethical behavior from unethical behavior in scientific research.

Communication

4. Communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the biological sciences.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
BOT 2011C	R	R		I
BOT 2710C	R	R		R
BOT 3503 and BOT 3503L	R/A	R/A		R/A
BSC 2010	I	I	I	
BSC 2011	I	I		
PCB 3601C	R/A	R/A	R/A	R/A
PCB 4043C	R/A	R/A	R/A	R/A

Assessment Types

- Major field test for biology
- Bioethics quiz
- Scientific paper