PLANT BIOLOGY IN THE COLLEGE OF ARTS AND SCIENCES

http://www.uvm.edu/~plantbio/

COLLEGE OF ARTS AND SCIENCES PLANT BIOLOGY MAJOR

The undergraduate Plant Biology program at the University of Vermont provides a broad introduction to the life sciences, from biochemistry and molecular biology to whole plant physiology and ecosystem ecology. Students receive individualized faculty attention via one-on-one advising to develop a personalized course of study. Popular study opportunities include a biennial trip to Costa Rica and an annual trip to the Galapagos. All students complete a senior capstone experience. Most students opt to conduct undergraduate research as part of a faculty-led research group, either in a plant science laboratory or at the internationally acclaimed Proctor Maple Research Center or at the Pringle Herbarium, the third largest plant collection in New England.

MAJORS

PLANT BIOLOGY MAJOR

Plant Biology B.A.

MINORS

PLANT BIOLOGY MINOR

Plant Biology

GRADUATE

Field Naturalist M.S.

Plant Biology M.S.

Plant Biology Ph.D.

See the online Graduate Catalogue for more information.

Courses

PBIO 004. SU: Intro to Botany. 0 or 4 Credits.
Structure, function, and reproduction of plants. Fundamental aspects of plant science with implications of botanical knowledge needed for applied plant sciences. Credit not given for both PBIO 004 and BIOL 001.

PBIO 006. SU: The Green World. 3 Credits.
Evaluation of the impact of plants on the aesthetic, cultural, social, medical, and religious lives of peoples of the world. Botany and Biological Science majors will not receive credit for PBIO 006 as part of program distribution requirements.

PBIO 090. Internship. 1-3 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PBIO 095. Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

PBIO 104. Plant Physiology. 0 or 4 Credits.
Study of the plant as a whole, growth and development, water and mineral relations, environmental factors, and regulatory processes. Prerequisites: BCOR 011 and BCOR 012, or BIOL 001 and BIOL 002, or BCOR 021; and CHEM 031 and CHEM 032, or CHEM 023 and CHEM 026, or CHEM 031 and CHEM 026; or Instructor permission.

PBIO 108. Morph & Evo of Vascular Plants. 0 or 4 Credits.
Evolutionary relationships of vascular plants as inferred from plant structure, ecology, geography, and reproductive biology. Synthesis includes both fossil and extant groups. Prerequisites: PBIO 004 or BIOL 002 or BCOR 012 or BCOR 021 or Instructor permission. Alternate years.

PBIO 109. Plant Systematics. 0 or 4 Credits.
Collection and identification of ferns and flowering plants; survey of prominent Vermont plant families; plant nomenclature, classification, and phylogeny; species concepts and speciation; floral function. Prerequisites: PBIO 004 or BIOL 002 or BCOR 012 or BCOR 021 or Instructor permission.

PBIO 117. Plant Pathology. 0 or 4 Credits.
Introduction to the causes of plant disease including the relationship of the plant, pathogen, and environment in disease development and disease management. Prerequisites: PBIO 004, or BIOL 001 and BIOL 002, or BCOR 011 and BCOR 012, or BCOR 021, or Instructor permission. Cross-listed with: PSS 117. Alternate years.

PBIO 133. SU: How Plants Can Save World. 3 Credits.
The overarching course question is the following: How can plants be used to design sustainable solutions to problems resulting from existing, unsustainable practices in agriculture, energy, and health? Prerequisites: BIOL 001 and BIOL 002, or BCOR 011 and BCOR 012, or PBIO 004, or PBIO 006.

PBIO 151. Plant Anatomy. 3 Credits.
Introduction to the structural and developmental anatomy of roots, stems, and leaves, including basic tissue types, vascular anatomy, woody plant anatomy, and reproductive anatomy. Prerequisites: BIOL 001 or BCOR 011 or BCOR 021.

PBIO 177. Biology of Fungi. 4 Credits.
Collect, identify and study major fungal groups, especially basidiomycetes (mushrooms, rusts and smuts), ascomycetes (cup fungi, yeasts and mildews), and affiliated taxa. Extensive field and lab work, with thematic lectures. Prerequisite: PBIO 004 or BIOL 002 or BCOR 12 or BCOR 021 or Instructor permission.
PBIO 185. Introduction to Biochemistry. 3 Credits.
Exploring biological processes at the molecular level and how they are controlled. Topics include enzymes, gene expression, and metabolism of carbohydrates and lipids. Restricted to Nutrition and Food Sciences and Dietetics, Nutrition and Food Sciences majors; others by Instructor permission. Prerequisite: CHEM 042; or CHEM 141 and CHEM 142; or other acceptable coursework in organic chemistry. Cross-listed with: NFS 183.

PBIO 187. Intro to Biochemistry: Lab. 1 Credit.

PBIO 190. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PBIO 191. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

PBIO 192. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PBIO 195. Intermediate Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

PBIO 196. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion. Prerequisites: Department permission.

PBIO 209. Biology of Ferns. 3 Credits.
Evolutionary biology; a survey of New England ferns and discussion of their phylogenic relationships; current research emphasizing morphological, biogeographical, genetic, and phytochemical aspects of speciation. Prerequisite: PBIO 108 (BCOR 101 recommended). Alternate years.

PBIO 223. Fundamentals of Field Science. 3 Credits.
Pattern and process in natural systems. Weekly discussion of unifying questions in science. Field labs teach sampling and analysis of vegetation, soils, and animals. Prerequisite: Graduate standing or several university courses in earth sciences, life sciences, and chemistry.

PBIO 226. Environmental Problem Solving. 1-3 Credits.
Students negotiate a contract, work as a team, and map and inventory forested natural areas as they apply problem solving skills to Vermont environmental project. Prerequisite: Instructor permission. One to three hours.

PBIO 232. Botany Field Trip. 1 Credit.
Trips to selected environments outside Vermont, led by faculty members representing different fields of botany. Overall, integrated approach to ecology, structure, and function. Prerequisite: Instructor permission.

PBIO 241. Tropical Plant Systematics. 3 Credits.
Principles and methods of angiosperm phylogeny. Recent systematic and evolutionary research on flowering plants; survey of tropical flowering plant families. Student presentations on recent research. Prerequisite: PBIO 109. Alternate years.

PBIO 260. Plant Population Biology. 3 Credits.
Study of how environmental and life-history characteristics of plants determine the dynamics and evolution of populations. Prerequisite: BCOR 102 or Instructor permission.

PBIO 261. Plant Growth & Development. 3 Credits.

PBIO 275. Global Change Ecology. 3 Credits.
Survey of global climate change including its causes, mechanisms, and ecological and societal impacts. Prerequisite: BCOR 102 or equivalent.

PBIO 281. Botany Seminar. 0 Credits.
Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of plant biology Graduate students and Seniors in botanical research programs. Without credit.

PBIO 282. Botany Seminar. 0 Credits.
Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of plant biology Graduate students and Seniors in botanical research programs. Without credit.

PBIO 290. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

PBIO 291. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.
PBIO 292. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

PBIO 294. Ecological Modeling. 3 Credits.
Provide an introduction to the modeling of ecological processes and data, emphasizing likelihood and Bayesian approaches to data modeling and analytical and computational models of ecological process. Uses R, Python, and Wolfram programming languages. Prerequisite: BCOR 102 or Instructor permission.

PBIO 295. Advanced Special Topics. 1-18 Credits.
See Schedule of Courses for specific titles.

PBIO 298. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion. Prerequisite: Department permission.