

# PLANT BIOLOGY & CONSERVATION (PBC)

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## **PBC 401-0 Plant Evolution & Diversity Lab (1 Unit)**

Modern systematics emphasizing application and major themes in the evolution of vascular plants. Taught with BIOL\_SCI 350-0.

## **PBC 402-0 Plant Community Ecology (1 Unit)**

The purpose of this class is 1) to introduce students to the scope of the science of ecology at more complex levels of organization, and 2) to develop sophistication in understanding community and ecosystem ecology literature through the exploration of both classical and recent literature. Taught with BIOL\_SCI 349-0.

## **PBC 405-0 Ecosystem Ecology (1 Unit)**

Concepts and principles of ecosystem ecology, with an emphasis on terrestrial ecosystems under the context of global change. Mass and energy flows through living and non-living ecosystem components as well as their environmental controls.

## **PBC 410-0 Plant-Animal Interactions (1 Unit)**

This course explores interactions between plants and animals, including antagonistic ones (e.g., herbivory), mutualistic ones (e.g., pollination, seed dispersal, ant-plant associations), and interactions among multiple species and across trophic levels. Through survey of the primary literature, we will investigate the causes of the interactions and their consequences for individual organisms, populations, communities, and entire ecosystems. Finally, we will examine how these various interactions are responding to global change, including habitat destruction and climate change.

## **PBC 415-0 Spring Flora (1 Unit)**

This course takes a field-based approach to learning the process of identifying major components of the local flora in an evolutionary context. Understanding vegetative and reproductive structures of plants, and use of this knowledge to identify plants with taxonomic keys is emphasized. Ecological interactions, and related conservation issues are also covered.

## **PBC 418-0 Soils and the Environment: The Earth's Critical Zone (1 Unit)**

Taught with ENVR\_SCI 390-0.

## **PBC 420-0 Field Methods in Plant Conservation (1 Unit)**

The science of plant conservation broadly encompasses the knowledge of many ecological field techniques. This course is designed to give students a real understanding of and hands-on experience in plant conservation practices with conservation practitioners in the greater Chicago area. Students will be exposed to a broad range of conservation issues, learn how they are being addressed, conduct relevant field projects, analyze the data, and interpret the results. Every other class meeting will be an all day trip to a field site. The alternating class meetings will deal with the analysis of the data collected. On field days, be sure to dress appropriately for the weather.

## **PBC 425-0 Molecular Ecology (1 Unit)**

The aim of this course is to explore the relevance of Evolutionary theory and modern molecular lab techniques to Ecological Research. Ecology is the study of the distribution and abundance of living organisms and how they are affected by interactions with other organisms and their environment. Evolution has played an important role in determining a species, and a populations, origin, distribution and the intraspecific and abiotic interactions they experience, and these factors will go on to affect the future evolutionary trajectory of that species or population. Hence in

this course we will explore important evolutionary concepts in reference to ecological processes and biological concepts.

## **PBC 430-0 Conservation Genetics (1 Unit)**

In this course we will learn how basic evolutionary and genetic principles inform the conservation and management of wildlife, game, and plant populations. We will read and discuss current research in the primary literature, examine case studies of current practices, and engage in group problem-solving and computer simulation exercises. Taught with BIOL\_SCI 332-0.

## **PBC 435-0 Biostatistics (1 Unit)**

This is an applied statistics class geared toward students interested in biology, ecology, and environmental science, and others are welcome. The course goal is for students to be able to use the skills, experience, information, and software learned in class after class. During the course, students will learn many approaches and techniques for solving diverse statistical problems. Student will use the software R for all quantitative methods practiced in class. R is a very flexible and powerful program that scientists and statisticians can use for any statistical problem they encounter.

## **PBC 450-0 Field and Laboratory Methods in Plant Biology and Conservation (2 Units)**

This course is aimed to provide students with the knowledge, critical thinking, and practical skills to design, execute, and analyze plant biology and conservation research in order to help find solutions to real conservation problems. As this often requires the mastery of many skill sets across disciplines, the course is team taught and includes hands on training in topics such as experimental design, sampling methods, managing data, soil analyses, pollinator and breeding studies, DNA extraction, PCR, and DNA fingerprinting.

## **PBC 451-0 Critical Topics in Ecology and Conservation (1 Unit)**

This course provides students with the conceptual and theoretical framework within the field of plant biology (especially ecology) and conservation. This is a seminar style class based on reading and discussion of works ranging from historical literature to recent studies including topics such as conservation policy, economics of conservation, climate change, invasive species, habitat fragmentation, and applied conservation case studies. Taught with BIOL\_SCI 339-0.

## **PBC 470-0 Special Topics in Plant Biology and Conservation (1 Unit)**

This seminar-style course will focus on a wide range of rotating current topics in the field of conservation science and practice. Taught with ENVR\_SCI 390-0.

## **PBC 499-0 Independent Study (1-3 Units)**

This is a required course for the master's degree in plant biology and conservation in which students will work with an instructor of their choice conducting independent literature, lab, or field research.

Prerequisites: Permission of instructor.

## **PBC 590-0 Research (1-4 Units)**

This course will allow students in our new PhD program to sign up for research credit once they have completed a set of core basic courses. Students will be working on their independent research projects while taking this course.