

P B - Plant Biology

Plant Biology: P B

Lower-Division Courses

Upper-Division Courses

Graduate Courses

P B 380C. Advanced Conservation Biology.

Explore principles and concepts of ecology to the preservation of wild plant and animal species and to the preservation, management, and restoration of natural and semi-natural ecosystems. Focus on biological aspects of issues such as endangered species protection, invasive species, preserve design, and forest management, via a set of case studies. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 380C, Ecology, Evolution, and Behavior 380C, Plant Biology 380C. Prerequisite: Graduate standing.

P B 380E. Advanced Microbial Ecology.

Examine microbial population, community, and ecosystem ecology. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 380E, 384K (Topic 22), 384K (Topic: Advanced Topics in Microbial Ecology), Ecology, Evolution, and Behavior 380E, Plant Biology 380E. Prerequisite: Graduate standing.

P B 380P. Population Genetics.

Introduction to population genetics. Focus on quantitative understanding of evolutionary change caused by selection, drift, mutation, and migration. Explore phenotypic and molecular evolution. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 380P, 385K (Topic 4), Ecology, Evolution, and Behavior 380P, Plant Biology 380P.

P B 180R, 280R, 380R. Advanced Readings in the Biological Sciences.

For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

P B 380T. Topics in Current Biology Concepts.

Designed for beginning graduate students seeking a review of modern biological concepts. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, consent of instructor, and the graduate advisor.

P B 381E. Ecology Seminar.

Listen to and discuss presentations ranging from research progress reports to practice conference talks and well-versed presentations of long term research programs. Three lecture hours a week for one semester. May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, consent of the graduate advisor, and consent of instructor

P B 381P. Advanced Plant Physiology.

Explore general principles of mineral nutrition, water relations, metabolic activities, growth, and development of green plants. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 381, 381P, 389 (Topic 12), Plant Biology 381P. Prerequisite: Graduate standing.

P B 182, 282, 382, 682, 982. Advanced Study and Research.

For each semester hour of credit earned, the equivalent of one lecture hour a week for one semester. May be repeated for credit. Prerequisite: Graduate standing and consent of instructor and the graduate advisor.

P B 382K. Topics in Computational and Statistical Biology.

Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 4: Numerical Ecology in R. Examine basic concepts and methods of laboratory and field analysis in various fields of biology. Explore systematics and ecology of natural populations. Biology 384K (Topic: Numerical Ecology in R) and Plant Biology 382K (Topic 4) may not both be counted. Additional prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

Topic 5: Meta Analysis. Explore a quantitative approach for synthesizing results from diverse research studies that address a similar hypothesis. Only one of the following may be counted: Biology 382K (Topic: Meta Analysis), 384K (Topic: Meta Analysis), Ecology, Evolution, and Behavior 382K (Topic 5), Plant Biology 382K (Topic 5). Additional prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

Topic 6: Programming for Biology. Explore programming skills that are relevant to research in the biological sciences, including but not limited to programming in Python, R, Perl, C++. Only one of the following may be counted: Biology 382K (Topic 6), Ecology, Evolution, and Behavior 382K (Topic 6), Plant Biology 382K (Topic 6).

Topic 7: Ecological Theory and Modeling. Explore concepts and methods of modeling ecological systems including populations, communities, and ecosystems. Focus on the methodology and utility of ecological theory and modeling. Examine the basic techniques and classic insights derived from differential equation, statistical, and individual based models with emphasis on the ability to interpret and evaluate models in the literature. Only one of the following may be counted: Biology 382K (Topic 7), Ecology, Evolution, and Behavior 382K (Topic 7), Plant Biology 382K (Topic 7).

Topic 8: Introduction to Biology for Data Science. Explore biological concepts and methods (including its assumptions and limitations), particularly in the areas of systems biology, medical and evolutionary genomics, and neuroscience. Focus on approaches that produce a lot of data but are analysis-challenged. Only one of the following may be counted: Biology 382K (Topic: Intro to Bio for Data Science), 382K (Topic 8), Ecology, Evolution, and Behavior 382K (Topic 8), Plant Biology 382K (Topic 8).

P B 384K. Topics in Ecology, Evolution, and Behavior.

Examine basic concepts and methods of laboratory and field analysis in various fields of biology. Explore systematics and ecology of natural populations. Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor; additional prerequisites vary with the topic.

Topic 1: Chemical Ecology. Explore the breadth of chemical ecology, from its historical focus on pheromonal communication, plant-insect interactions, and coevolution to new frontiers, including novel methods in metabolomics and the community and ecosystem effects of chemically mediated species interactions. Only one of the following may be counted: Biology 384K (Topic: Chemical Ecology), Ecology, Evolution, and Behavior 384K (Topic 1), Plant Biology 384K (Topic 1).

Topic 2: Recent Advances in Ecosystem Ecology. Explore recent advances in ecosystem ecology. Only one of the following may be counted: Biology 384K (Topic 31), Ecology, Evolution, and Behavior 384K (Topic 4) or Plant Biology 384K (Topic 2). Additional prerequisite: Undergraduate upper-division ecology course.

Topic 3: Recent Advances in Ecological and Evolutionary Genetics.

Discuss and analyze current and classic literature related to ecological and evolutionary genetics. Only one of the following may be counted: Biology 384K (Topic 38), Ecology, Evolution, and Behavior 384K (Topic 5), Plant Biology 384K (Topic 3).

P B 384L. Issues in Population Biology.

Analyze currently active areas of research in population biology. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 384L, Ecology, Evolution, and Behavior 384L, Plant Biology 384L. Offered on the credit/no credit basis only. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

P B 386K. Topics in Plant Sciences.

Three lecture hours a week for one semester. May be repeated for credit when the topics vary. Prerequisite: Graduate standing.

Topic 1: Advanced Subjects in Plant Systematics. Biology 386K (Topic 3) and Plant Biology 386K (Topic 1) may not both be counted.

P B 387J. Advanced Plant Anatomy.

Examine plant anatomy in relation to development and differentiation, systematics, and evolution. Three lecture hours a week for one semester. Biology 387J and Plant Biology 387J may not both be counted. Offered on the letter-grade basis only. Prerequisite: Graduate standing, consent of instructor and the graduate advisor, and concurrent registration in Plant Biology 187L.

P B 187L. Laboratory in Advanced Plant Anatomy.

Review cellular details and tissue systems of plant organs and discuss the preparation of plant materials for histological examination. Three laboratory hours a week for one semester. Biology 187L and Plant Biology 187L may not both be counted. Offered on the letter-grade basis only. Prerequisite: Graduate standing, consent of instructor and the graduate advisor, and concurrent registration in Plant Biology 387J.

P B 388D. Current Research in Plant Biology.

Introduction to various fields of plant biology. Attend seminars, faculty research presentations, and other meetings. Three lecture hours a week for one semester. Biology 388D and Plant Biology 388D may not both be counted. Prerequisite: Graduate standing.

P B 388E. Plant Growth and Development.

Focus on whole plant physiology, especially growth and development, water relations, and mineral nutrition of vascular plants. Three lecture hours a week for one semester. Biology 388E and Plant Biology 388E may not both be counted. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

P B 388M. Plant Molecular Biology.

Explore the fundamentals of plant molecular biology, including structure and expression of the chloroplast and mitochondrial genomes. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 388M, Molecular Biology 388M, Plant Biology 388M. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

P B 389D. Subjects and Skills for Graduate Students in Plant Biology.

Designed for first-year graduate students in ecology, evolution, and behavior. Introduction to the writing, presentation and appraisal skills needed to excel in all fields of biological research. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 384C, 389D, Ecology, Evolution, and Behavior 389D, Plant Biology

389D. Prerequisite: Graduate standing and consent of instructor and graduate advisor.

P B 390C. Fundamentals of Evolution.

Introduction to major principles and questions in evolutionary biology. Explore population genetics, genetic diversity, adaptation, origin of species, phylogenetics, molecular evolution, and macroevolution. Focus on identifying open questions, analysis and interpretation of data, and gaining familiarity with the primary scientific literature. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 390C, Ecology, Evolution, and Behavior 390C, Plant Biology 390C. Prerequisite: Graduate standing, and consent of instructor and the graduate advisor.

P B 390E. Fundamentals of Ecology.

Explore the fundamentals of ecology, ranging from organism physiology to population, species, community, and ecosystem-level processes across landscapes and biomes. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 390E, Ecology, Evolution, and Behavior 390E, Plant Biology 390E. Prerequisite: Graduate standing and consent of instructor.

P B 698. Thesis.

Three lecture hours a week for two semesters. Offered on the credit/no credit basis only. Prerequisite: For 698A, graduate standing and consent of the graduate advisor; for 698B, Plant Biology 698A or the equivalent.

P B 398R. Master's Report.

Prepare a report to fulfill the requirement for the master's degree under the report option. Three lecture hours a week for one semester. Only one of the following may be counted: Biology 398R, Ecology, Evolution, and Behavior 398R, Plant Biology 398R. Prerequisite: Graduate standing and consent of the graduate advisor.

P B 399W, 699W, 999W. Dissertation.

May be repeated for credit. Offered on the credit/no credit basis only. Prerequisite: Admission to candidacy for the doctoral degree.

Professional Courses