BOTANY AND PLANT PATHOLOGY (BOT)

BOT 101, *BOTANY: A HUMAN CONCERN, 4 Credits
Introductory botany for non-majors, emphasizing the role of plants in the environment, agriculture and society. Includes molecular approaches to the study of plant function and genetic engineering. Lec/lab. (Bacc Core Course)
Attributes: CPBS – Core, Pers, Biological Science

BOT 220, *INTRODUCTION TO PLANT BIOLOGY, 4 Credits
Introduction to plant biology including an overview of major groups of plants, plant cells and cell types, plant anatomy and architecture, physiology and function, and ecology and the roles of plants in the environment. Laboratory exercises build on lecture themes and provide hands-on learning experiences including field trips. Lec/lab. (Bacc Core Course)
Attributes: CPBS – Core, Pers, Biological Science

BOT 313, PLANT STRUCTURE, 4 Credits
The structural components of vascular plants and how plant structure relates to function, development, environment, evolution, and human use of plants. Field trip. Lec/lab.
Prerequisite: (((BI 212 with D- or better or BI 212H with D- or better) and ((BI 211 with D- or better or BI 211H with D- or better) or (BI 213 with D- or better or BI 213H with D- or better)) ) or ((BI 221 with D- or better or BI 221H with D- or better) and (BI 222 [D-] or BI 222H [D-]) or (BI 205 [D-] and BI 206 [D-]))
Recommended: BI 213 or BI 213H or BI 223 or BI 223H
Available via Ecampus

BOT 321, PLANT SYSTEMATICS, 4 Credits
Vascular plant classification, diversity, and evolutionary relationships. Lab emphasizes the collection and identification of ferns, gymnosperms, and flowering plants in Oregon. Field trips. Lec/lab.
Recommended: BI 213 or BI 213H or BI 223 or BI 223H
Available via Ecampus

BOT 322, ECONOMIC AND ETHNOBOTANY: ROLE OF PLANTS IN HUMAN CULTURE, 3 Credits
Economic and cultural (ethnobotanical) uses of plants and fungi by humans, including domesticated cultivated plants as well as wild-growing plants, and uses of plants and fungi by indigenous cultures. Ecampus course only.
Available via Ecampus

BOT 323, ^FLOWERING PLANTS OF THE WORLD, 3 Credits
Global perspective of plant biodiversity with a focus on evolutionary origins, classification, and evolutionary relationships of the major groups of plants. Development and application of scientific writing and utilization of online information resources in plant evolutionary biology. (Writing Intensive Course)
Attributes: CWIC – Core, Skills, WIC
Recommended: (BI 211, BI 212, BI 213) or (BI 221, BI 222, BI 223) or (BI 204, BI 205, BI 206)
Available via Ecampus

BOT 324, *FUNGI IN SOCIETY, 3 Credits
Explores the diverse roles played by fungi in relation to human civilization and the natural environment. (Bacc Core Course)
Attributes: CSST – Core, Synthesis, Science/Technology/Society
Recommended: One course in biological sciences.
Available via Ecampus

BOT 325, *INTERSECTIONS BETWEEN PLANTS AND HUMANITY, 3 Credits
The unique attributes of plants—including aspects of their biochemistry, growth, structure, and physiology—have influenced all aspects of life on earth, from biogeochemical cycles to the rise and expansion of human civilizations. Plants are sources of medicines, stimulants, hallucinogens, fibers and woods, resins and latex, oils and waxes; plants have inspired technological innovation, exploration, and exploitation of people and the environment. This course critically examines the intersections of plants with society and technology by exploring the roles plants have played in both historical and modern contexts. (Bacc Core Course)
Attributes: CSST – Core, Synthesis, Science/Technology/Society
Recommended: One course in biological sciences and junior standing.

BOT 331, PLANT PHYSIOLOGY, 4 Credits
Survey of physiological processes in plants, including photosynthesis and plant metabolism, mineral nutrition and ion uptake processes, plant cell/water relations, regulation of plant growth and development, and transpiration and translocation. Lec/rec.
Prerequisite: (((BI 212 with D- or better or BI 212H with D- or better) and (BI 213 [D-] or BI 213H [D-])) or ((BI 221 with D- or better or BI 221H with D-) and (BI 222 [D-] or BI 222H [D-])) or (BI 205 [D-] and BI 206 [D-]))
Recommended: (BI 213 or BI 213H or BI 223 or BI 223H) and (CH 123 or (CH 233 and CH 263))
Available via Ecampus

BOT 332, LABORATORY TECHNIQUES IN PLANT BIOLOGY, 3 Credits
Laboratory experiences in the manipulation and observation of physiological processes in plant systems. Analysis and interpretation of physiological data generated in experimentation with plant systems. Training in basic laboratory skills, including the principles and procedures involved in the use of common items of laboratory instrumentation. Lab.
Recommended: BOT 331 or BI 314 or BB 314
Available via Ecampus
BOT 341, PLANT ECOLOGY, 4 Credits
Study of higher plants in relation to their environment. The relationship of plant physiology and reproduction to environmental factors; competition and other species interactions; the structure, dynamics and analysis of vegetation. Field trips. Lec/lab. 
**Recommended**: BOT 321 and ((BI 213 or BI 213H) or (BI 223 or BI 223H)) 
**Available via Ecampus**

BOT 350, INTRODUCTORY PLANT PATHOLOGY, 4 Credits
Symptoms, causal agents, diagnosis, and prevention of plant diseases, with emphasis on fungi, bacteria, nematode, and virus pathogens. Lec/lab. 
**Prerequisite**: ((BI 211 with D- or better or BI 211H with D- or better) and (BI 212 [D-] or BI 212H [D-]) and (BI 213 [D-] or BI 213H [D-])) or ((BI 221 [D-] or BI 221H [D-]) and (BI 222 [D-] or BI 222H [D-]) and (BI 223 [D-] or BI 223H [D-])) or (BI 204 [D-] and BI 205 [D-] and BI 206 [D-]) 
**Available via Ecampus**

BOT 401, RESEARCH, 1-16 Credits
*This course is repeatable for 16 credits.*

BOT 403, THESIS, 1-16 Credits
*This course is repeatable for 16 credits.*

BOT 405, READING AND CONFERENCE, 1-16 Credits
*This course is repeatable for 6 credits.*

BOT 406, PROJECTS: CURATORIAL ASSISTANT, 1-6 Credits
Students assist with curatorial projects in the OSU Herbarium. Admission is by application to the Department of Botany & Plant Pathology. 
*This course is repeatable for 6 credits.*

BOT 407, SEMINAR, 1 Credit
Section 1: Departmental seminar. Section 2: Lichens and Bryophytes Research (1). Weekly one-hour meetings for reporting and discussion of active research projects, discussion of proposal research, review and discussion of recent literature, and mini-workshops on particular problems. Normally graded P/N. 
**Equivalent to**: BI 407H, BOT 407H 
*This course is repeatable for 16 credits.*

BOT 407H, SEMINAR, 1 Credit
Section 1: Departmental seminar. Section 3: Lichens and Bryophytes Research (1). Weekly one-hour meetings for reporting and discussion of active research projects, discussion of proposal research, review and discussion of recent literature, and mini-workshops on particular problems. Normally graded P/N. 
**Attributes**: HNRS – Honors Course Designator 
**Equivalent to**: BOT 407 
*This course is repeatable for 16 credits.*

BOT 408, WORKSHOP, 1-16 Credits
*This course is repeatable for 16 credits.*

BOT 410, INTERNSHIP, 1-16 Credits
*This course is repeatable for 16 credits.*

BOT 413, FOREST PATHOLOGY, 3 Credits
Effects of diseases on forest ecosystems. Recognition of important groups, prediction of pathogen responses to environmental changes, and management strategies for protection of forest resources. Field trips. Lec/lab. CROSSTLISTED as BOT 413/FOR 413. 
**Prerequisite**: BI 204 with C or better or BI 212 with C or better or BI 213H with C or better or BI 213 with C or better or BI 212 with C or better or BI 213H with C or better or BI 221 with C or better or BI 221H with C or better or BI 213 with C or better or BI 213H with C or better or BI 221 with C or better or BI 221H with C or better 
**Equivalent to**: FOR 413

BOT 414, AGROSTOLOGY, 4 Credits
Classification and identification of grasses, with emphasis on the modern system of grass classification; laboratory practice in keying grass specimens to genus and species. Lec/lab. 
**Recommended**: BOT 321

BOT 416, AQUATIC BOTANY, 4 Credits
Taxonomy and ecology of aquatic vegetation, emphasizing freshwater and marine algae and the submergent vascular plants. Morphology, physiology, and classification of the algae; morphological and physiological adaptations of aquatic vascular plants; and primary production in aquatic ecosystems. Laboratory practice in the identification of local taxa. Field trips. Lec/lab. 
**Recommended**: (BI 213 or BI 213H) or (BI 223 or BI 223H)

BOT 417X, PHYCOLOGY, 4 Credits
A field and laboratory based introduction to micro- and macro-algal biology, reproduction and evolution. Emphasis is placed on how the endosymbiosis theory ties algae together as a functional group. Algal diversity will be explored through lectures, laboratory and field trips. The laboratory experience will include methods for isolation, culturing and maintenance of algae for aquaculture and research. 
**Recommended**: One year of biology

BOT 425, FLORA OF THE PACIFIC NORTHWEST, 3 Credits
Vascular plant identification, terminology, and diagnostic characteristics of plant families. Lab emphasizes the use of keys for identification to the species level and ability to recognize by sight those plant families found in the Pacific Northwest. Field trips. Lec/lab. 
**Recommended**: BOT 321

BOT 440, FIELD METHODS IN PLANT ECOLOGY, 4 Credits
Concepts and tools for describing, monitoring, and experimenting on vegetation. Combines Web-based material, field experience at the student’s location, and student projects. 
**Recommended**: Course in ecology and a course in statistics. 
**Available via Ecampus**

BOT 442, PLANT POPULATION ECOLOGY, 3 Credits
Ecological aspects of plant form and reproduction; demography and population modeling; species interactions, including competition, mutualism, and herbivory. Lec/lab. 
**Recommended**: BOT 341
**BOT 458, ECOSYSTEMS GENOMICS, 3 Credits**

Genomic approaches used to understand species interactions with a focus on plant-associated microbes. Learning the conceptual framework and computational techniques of genomics to study the ecology of plant-microbe interactions at the ecosystem level.

**Prerequisite:** (BI 311 with D- or better or BI 311H with D- or better) and (BI 314 [D-] or BI 314H [D-] or BB 314 [D-] or BB 314H [D-])

**BOT 460, FUNCTIONAL GENOMICS, 3 Credits**

Functional genomics describes a set of conceptual approaches and associated laboratory techniques that rely on large-scale DNA sequence datasets to investigate the function of, and interactions between, genes as well as their RNA/protein products. This course will provide an overview of these techniques, including a) approaches to predicting protein function based on sequence analysis, b) large-scale genetic approaches to identifying novel genotype-phenotype associations, and c) transcriptomic, proteomic and metabolomic approaches that reveal gene functions by measuring changes in abundance/modification of associated RNA transcripts, proteins and metabolites.

**Prerequisite:** (BI 311 with C- or better or BI 311H with C- or better) and (BI 314 [C-] or BI 314H [C-] or BB 314 [C-] or BB 314H [C-])

**BOT 461, MYCOLOGY, 4 Credits**

Broad taxonomic survey of the fungi and their biology. Examines fungal life histories, systematics, ecology, and genetics, as well as ethnomycology. Introduces approaches to mycology in the field, including collection and preparation of specimens.

**Prerequisite:** (((BI 211 with C- or better or BI 211H with C- or better) and (BI 212 [C-] or BI 212H [C-]) and (BI 213 [C-] or BI 213H [C-])) or (BI 204 [C-] and BI 205 [C-] and BI 206 [C-]) or ((BI 221 [C-] or BI 221H [C-]) and (BI 222 [C-] or BI 222H [C-]))) and (BI 223 [C-] or BI 223H [C-])

**BOT 465, LICHENOLOGY, 4 Credits**

Biology of lichens; includes structure, life histories, classification, and ecology. Field trip fee. Lec/lab. Offered alternate years.

**Recommended:** (BI 231 or BI 231H) or (BI 223 or BI 223H) and two botany courses

**BOT 466, BRYOLOGY, 4 Credits**

Biology of bryophytes; includes structure, life histories, classification, and ecology. Field trip fee. Lec/lab. Offered alternate years.

**Recommended:** (BI 231 or BI 231H) or (BI 223 or BI 223H) and two botany courses

**BOT 474X, INTRODUCTION TO GENOME BIOLOGY, 3 Credits**

Explores how genomes underlie and influence biological phenomena, across the diversity of life, from prokaryotic microbes to eukaryotic multicellular organisms. Covers genome organization: the structure of chromosomes and chromatin; genes and gene families; and mechanisms that remodel genomes, such as mutation, recombination and transposable elements in the first part of the course. Focuses on genome expression and regulation: gene expression, cellular functions and biochemical pathways; transcriptional and post-transcriptional regulatory mechanisms; and genotype-to-phenotype relationships in the second part of the course. Emphasizes the use of recent technological advances and genome-wide assays that enable investigation of these topics.

**Prerequisite:** BI 311 (may be taken concurrently) with C- or better or BB 314 (may be taken concurrently) with C- or better

**Equivalent to:** BDS 474X

**BOT 475, COMPARATIVE GENOMICS, 4 Credits**

Explores principles of comparative genomics. Examines methods for genome assembly and annotation. Discusses genomic approaches for the study of structural change, whole genome duplication, gene family evolution, gene networks, gene regulation and epigenetics. Lab topics include the analysis of next generation sequencing data and conducting comparative genomic analyses. CROSSLISTED as BDS 475/BOT 475 and BDS 575/BOT 575/MCB 575.

**Prerequisite:** (BB 314 with D- or better or BB 314H with D- or better) and (BI 311 [D-] or BI 311H [D-] or PBG 430 [D-])

**Equivalent to:** BDS 475

**Recommended:** Basic working knowledge of cell and molecular biology and genetics

**BOT 476, INTRODUCTION TO COMPUTING IN THE LIFE SCIENCES, 3 Credits**

Introduction to management of large datasets (e.g., nucleic acids, protein), computer programming languages, application of basic mathematical functions, and assembly of computational pipelines pertinent to life sciences.

**Recommended:** Cell and molecular biology or genetics. Familiarity with text editing software and unix/linux operating system is advantageous

**BOT 478, FUNCTIONAL GENOMICS, 3 Credits**

Introduces conceptual approaches and associated laboratory techniques that rely on genome-scale datasets to investigate the function of, and interactions between, genes as well as their RNA/protein products. Examples include: predicting protein function based on nucleotide and amino acid sequence analysis; large-scale genetic approaches to identifying novel genotype-phenotype associations; and analysis of transcriptomic, proteomic and metabolomic datasets, which measure changes in RNA transcripts, proteins and metabolites, respectively, to explore gene function and cellular/organismal networks. Provides a conceptual framework for understanding how the wide range of available large-scale technologies can be applied to solve biological problems.

**Prerequisite:** BB 314 with C- or better or BB 314H with C- or better

**Equivalent to:** BDS 478, BOT 460
BOT 480, PHOTOSYNTHESIS AND PHOTOBIOLOGY, 3 Credits
Explores the diverse use of light in biological systems, with particular emphasis on photosynthesis. Lectures will discuss the nature of light, light in the natural environment, light absorption in biological systems, use of light energy for photosynthesis, communication, defense, motility, and vision, as well as deleterious effects of light and its use for global monitoring satellite systems.
Recommended: One course in plant physiology or ecology

BOT 488, ENVIRONMENTAL PHYSIOLOGY OF PLANTS, 3 Credits
Introduces students to mechanisms of plant responses to environmental change caused by humans, including atmospheric, nutrient, water, and global climate factors. Concepts are built around principles of plant environment relations. Lec/lab.
Recommended: One course in plant physiology or one course in ecology.

BOT 499, SPECIAL TOPICS, 0-16 Credits
Equivalent to: BOT 499H
This course is repeatable for 16 credits.

BOT 499H, SPECIAL TOPICS, 0-16 Credits
Attributes: HNRS – Honors Course Designator
Equivalent to: BOT 499
This course is repeatable for 16 credits.

BOT 501, RESEARCH, 1-16 Credits
Graded P/N.
This course is repeatable for 16 credits.

BOT 503, THESIS, 1-16 Credits
This course is repeatable for 999 credits.

BOT 505, READING AND CONFERENCE, 1-16 Credits
This course is repeatable for 16 credits.

BOT 507, SEMINAR, 1-16 Credits
Section 1: Departmental seminar (F, W, S). Section 2: Communication in Ecology (F). Section 3: Community and Habitat Analyses (W). Section 4: Lichens and Bryophytes Research (S). Weekly one-hour meetings for reporting and discussions of proposal research, review and discussion of recent literature, and mini-workshops on particular problems. Graded P/N.
This course is repeatable for 16 credits.

BOT 508, WORKSHOP, 1-16 Credits
This course is repeatable for 16 credits.

BOT 510, INTERNSHIP, 1-16 Credits
This course is repeatable for 16 credits.

BOT 513, FOREST PATHOLOGY, 3 Credits
Effects of diseases on forest ecosystems. Recognition of important groups, prediction of pathogen responses to environmental changes, and management strategies for protection of forest resources. Field trips. Lec/lab. CROSSLISTED as BOT 513/FOR 513.
Equivalent to: FOR 513
Recommended: BI 204 or BI 212 or BI 212H or BI 213 or BI 213H

BOT 514, AGROSTOLOGY, 4 Credits
Classification and identification of grasses, with emphasis on the modern system of grass classification; laboratory practice in keying grass specimens to genus and species. Lec/lab.
Recommended: BOT 321

BOT 516, AQUATIC BOTANY, 4 Credits
Taxonomy and ecology of aquatic vegetation, emphasizing freshwater and marine algae and the submergent vascular plants. Morphology, physiology, and classification of the algae; morphological and physiological adaptations of aquatic vascular plants; and primary production in aquatic ecosystems. Laboratory practice in the identification of local taxa. Field trips. Lec/lab.
Recommended: BI 213 or BI 213H

BOT 517X, PHYCOLOGY, 4 Credits
A field and laboratory based introduction to micro- and macro-algal biology, reproduction and evolution. Emphasis is placed on how the endosymbiosis theory ties algae together as a functional group. Algal diversity will be explored through lectures, laboratory and field trips. The laboratory experience will include methods for isolation, culturing and maintenance of algae for aquaculture and research.
Recommended: One year of biology

BOT 525, FLORA OF THE PACIFIC NORTHWEST, 3 Credits
Vascular plant identification, terminology, and diagnostic characteristics of plant families. Lab emphasizes the use of keys for identification to the species level and ability to recognize by sight those plant families found in the Pacific Northwest. Field trips. Lec/lab.
Recommended: BOT 321

BOT 540, FIELD METHODS IN PLANT ECOLOGY, 4 Credits
Concepts and tools for describing, monitoring, and experimenting on vegetation. Combines Web-based material, field experience at the student's location, and student projects.
Available via Ecampus

BOT 542, PLANT POPULATION ECOLOGY, 3 Credits
Ecological aspects of plant form and reproduction; demography and population modeling; species interactions, including competition, mutualism, and herbivory. Lec/lab.
Recommended: BOT 341

BOT 543, PLANT COMMUNITY ECOLOGY, 3 Credits
The structure, diversity, and successional dynamics of terrestrial plant communities; methods of analysis. Lec/lab.
Recommended: BOT 341 or equivalent.
BOT 547, NUTRIENT CYCLING, 3 Credits
Reviews and discusses ecosystem-level biogeochemical concepts for terrestrial and freshwater ecosystems, primarily by reading and discussing classic and current literature to determine the state-of-knowledge and uncertainties associated with it. Topics include root nutrient uptake mechanisms, soil chemical and biochemical transformations in different soil and ecosystems, measuring soil solution and watershed fluxes, soil organic matter formation and structure, the meaning of sustainability, the concept of N saturation in terrestrial ecosystems, and the use of natural abundance and tracer isotopes in ecosystem biogeochemistry. While forest biogeochemical processes will be emphasized, desert, aquatic, wetland, and prairie ecosystems will also be explored. CROSSLISTED as BOT 547/SOIL 547.
Equivalent to: FS 547, SOIL 547
Recommended: College-level chemistry and biology and one class in ecology (eg. BI 370) and/or soils (eg. SOIL 205)

BOT 550, PLANT PATHOLOGY, 5 Credits
Causal agents of plant disease, diagnosis, pathogenesis, epidemiology, and disease management principles and strategies. Field trip. Lec/lab/rec. Offered alternate years.
Recommended: BI 213 or BI 213H

BOT 552, PLANT DISEASE MANAGEMENT, 4 Credits
Analysis of host, pathogen, and environmental factors influencing the increase and spread of plant disease. Epidemiological theory will be used as a basis for developing and evaluating principles and concepts of plant disease management. Lec/lab/rec. Offered alternate years.
Recommended: BOT 350 or BOT 550

BOT 553, PLANT DISEASE DIAGNOSIS, 3 Credits
Diagnosis of plant diseases and identification of causal agents. Laboratory practice in identification techniques. Observation of symptoms exhibited by diseased plants in greenhouse and field locations. Field trips. Lec/lab. Offered alternate years in summer term.
Recommended: BOT 350 or BOT 550

BOT 554, BIOLOGY OF NEMATODES, 4 Credits
Survey of basic biology and biodiversity of nematodes. Includes taxonomy, identification, life cycles, ecology and pathology, and interaction with other organisms. Lec/lab. Offered alternate years. This course is repeatable for 4 credits.
Recommended: Plant pathology

BOT 558, ECOSYSTEMS GENOMICS, 3 Credits
Genomic approaches used to understand species interactions with a focus on plant-associated microbes. Learning the conceptual framework and computational techniques of genomics to study the ecology of plant-microbe interactions at the ecosystem level.
Recommended: BI 311 and BI 314

BOT 560, FUNCTIONAL GENOMICS, 3 Credits
Functional genomics describes a set of conceptual approaches and associated laboratory techniques that rely on large-scale DNA sequence datasets to investigate the function of, and interactions between, genes as well as their RNA/protein products. This course will provide an overview of these techniques, including a) approaches to predicting protein function based on sequence analysis, b) large-scale genetic approaches to identifying novel genotype-phenotype associations, and c) transcriptomic, proteomic and metabolomic approaches that reveal gene functions by measuring changes in abundance/modification of associated RNA transcripts, proteins and metabolites.
Recommended: (BI 311 or BI 311H) and (BI 314 or BI 314H)

BOT 561, MYCOLOGY, 4 Credits
Broad taxonomic survey of the fungi and their biology. Examines fungal life histories, systematics, ecology, and genetics, as well as ethnomycology. Introduces approaches to mycology in the field, including collection and preparation of specimens.

BOT 565, LICHENOLOGY, 4 Credits
Biology of lichens; includes structure, life histories, classification, and ecology. Field trip fee. Lec/lab. Offered alternate years.
Recommended: (BI 213 or BI 213H) and two botany courses.

BOT 566, BRYOLOGY, 4 Credits
Biology of bryophytes; includes structure, life histories, classification, and ecology. Field trip fee. Lec/lab. Offered alternate years.
Recommended: (BI 213 or BI 213H) and two botany courses.

BOT 570, COMMUNITY STRUCTURE AND ANALYSIS, 4 Credits
Quantitative methods for the analysis of biotic communities, including community concepts, estimation of community composition parameters, theoretical aspects of multivariate methods of analyzing species-importance data, and overview of multivariate tools; hands-on computer analysis of data sets. Lec/lab.
Equivalent to: BI 570
Recommended: BI 370 and (ST 412 or ST 512) and calculus

BOT 574X, INTRODUCTION TO GENOME BIOLOGY, 3 Credits
Explores how genomes underlie and influence biological phenomena, across the diversity of life, from prokaryotic microbes to eukaryotic multicellular organisms. Covers genome organization: the structure of chromosomes and chromatin; genes and gene families; and mechanisms that remodel genomes, such as mutation, recombination and transposable elements in the first part of the course. Focuses on genome expression and regulation: gene expression, cellular functions and biochemical pathways; transcriptional and post-transcriptional regulatory mechanisms; and genotype-to-phenotype relationships in the second part of the course. Emphasizes the use of recent technological advances and genome-wide assays that enable investigation of these topics.
Equivalent to: BDS 574X
BOT 575, COMPARATIVE GENOMICS, 4 Credits
Explores principles of comparative genomics. Examines methods for genome assembly and annotation. Discusses genomic approaches for the study of structural change, whole genome duplication, gene family evolution, gene networks, gene regulation and epigenetics. Lab topics include the analysis of next generation sequencing data and conducting comparative genomic analyses. CROSSTILLED as BDS 475/BOT 475 and BDS 575/BOT 575/MCB 575.
Equivalent to: BDS 575, MCB 575
Recommended: BB 314 and (BI 311 or PBG 430) and basic working knowledge of cell and molecular biology and genetics

BOT 578, FUNCTIONAL GENOMICS, 3 Credits
Introduces conceptual approaches and associated laboratory techniques that rely on genome-scale datasets to investigate the function of, and interactions between, genes as well as their RNA/protein products. Examples include: predicting protein function based on nucleotide and amino acid sequence analysis; large-scale genetic approaches to identifying novel genotype-phenotype associations; and analysis of transcriptomic, proteomic and metabolomic datasets, which measure changes in RNA transcripts, proteins and metabolites, respectively, to explore gene function and cellular/organismal networks. Provides a conceptual framework for understanding how the wide range of available large-scale technologies can be applied to solve biological problems. CROSSTILLED as BDS 478/BOT 478 and BDS 578/BOT 578.
Equivalent to: BDS 578, BOT 560

BOT 580, PHOTOSYNTHESIS AND PHOTOBIOLOGY, 3 Credits
Explores the diverse use of light in biological systems, with particular emphasis on photosynthesis. Lectures will discuss the nature of light, light in the natural environment, light absorption in biological systems, use of light energy for photosynthesis, communication, defense, motility, and vision, as well as deleterious effects of light and its use for global monitoring satellite systems.
Recommended: One course in plant physiology or ecology

BOT 588, ENVIRONMENTAL PHYSIOLOGY OF PLANTS, 3 Credits
Introduces students to mechanisms of plant responses to environmental change caused by humans, including atmospheric, nutrient, water, and global climate factors. Concepts are built around principles of plant environment relations. Lec/lab.
Recommended: One course in plant physiology or ecology

BOT 590, SELECTED TOPICS IN MYCOLOGY, 1-3 Credits
Advanced topics in mycology through analysis of current literature. Detailed study of an aspect of mycology beyond those covered in regular classes. Seminar and discussion format.
This course is repeatable for 16 credits.
Recommended: BOT 461 or BOT 561

BOT 599, SPECIAL TOPICS, 0-16 Credits
This course is repeatable for 16 credits.

BOT 601, RESEARCH, 1-16 Credits
Graded P/N.
This course is repeatable for 16 credits.

BOT 603, THESIS, 1-16 Credits
This course is repeatable for 99 credits.

BOT 605, READING AND CONFERENCE, 1-16 Credits
This course is repeatable for 16 credits.

BOT 607, SEMINAR, 1 Credit
Section 1. Departmental seminar
This course is repeatable for 16 credits.

BOT 608, WORKSHOP, 1-16 Credits
This course is repeatable for 16 credits.

BOT 651, MOLECULAR BASIS OF PLANT PATHOGENESIS, 3 Credits
Analysis of current concepts in the physiology, biochemistry, and genetics of host-parasite interactions. Topics covered include specificity, recognition, penetration, toxin production, altered plant metabolism during disease, resistance mechanisms and regulatory aspects of gene expression during host-parasite interactions. Offered alternate years.
Equivalent to: MCB 651
Recommended: BOT 550

BOT 668, PLANT DISEASE DYNAMICS, 4 Credits
Evaluation of processes affecting the dynamics of plant disease and pathogen populations through analysis of current literature. Students will be expected to conduct extensive reading and analysis of literature and to meet with the instructor for small group discussions. Offered alternate years.
Recommended: BOT 550 and ST 412

BOT 691, SELECTED TOPICS-PLANT ECOLOGY, 1-3 Credits
Recent advances and developing problems in plant ecology, with critical evaluation of current literature. Topics vary from year to year.
This course is repeatable for 99 credits.
Recommended: Graduate-level ecology.

BOT 692, SELECTED TOPICS: PLANT PATHOLOGY, 1-3 Credits
Selected topics concerning plant pathogens and plant disease processes, emphasizing current literature and theory. Topics vary from year to year.
Equivalent to: MCB 692
This course is repeatable for 99 credits.
Recommended: BOT 550

BOT 699, SPECIAL TOPICS, 1-16 Credits
This course is repeatable for 16 credits.