

PLANT PATHOLOGY (PLP)

College of Agricultural & Environmental Sciences

PLP 040 – Edible Mushroom Cultivation (2 units)

Course Description: Principles and practices of growing edible mushrooms, including culture maintenance, basic mushroom substrate preparation, composting, spawn generation techniques, inoculation methods, harvesting, and pests and pest management.

Prerequisite(s): BIS 010 or MIC 020 recommended.

Learning Activities: Lecture 1 hour(s), Discussion/Laboratory 3 hour(s).

Grade Mode: Letter.

PLP 100 – Biology of Plant Pathogens (3 units)

Course Description: Behavior, pathology, ecology, and evolution of plant pathogens with global impact on food security and environmental health. Bacteria, fungi, viruses, and other pathogens that infect plants.

Prerequisite(s): BIS 002A; BIS 002B; BIS 002C.

Learning Activities: Lecture 1.5 hour(s), Discussion 1.5 hour(s).

Grade Mode: Letter.

General Education: Oral Skills (OL); Scientific Literacy (SL).

PLP 120 – Introduction to Plant Pathology (4 units)

Course Description: The nature, cause, and control of plant diseases.

Prerequisite(s): BIS 002C; or consent of instructor; MIC 102 recommended.

Learning Activities: Lecture 2 hour(s), Laboratory 6 hour(s).

Grade Mode: Letter.

PLP 123 – Plant-Virus-Vector Interaction (3 units)

Course Description: Analysis of interactions necessary for viruses to infect plants. Interactions among insect vectors and host plants involved in the plant-virus life cycle. Evolutionary aspects of the molecular components in viral infection and modern approaches to the interdiction of viral movement.

Prerequisite(s): BIS 002A; (BIS 101 or BIS 101V); PLB 105, PLP 120, and ENT 100 recommended.

Learning Activities: Lecture 3 hour(s).

Cross Listing: ENT 123, PLB 123.

Grade Mode: Letter.

General Education: Science & Engineering (SE); Scientific Literacy (SL); Writing Experience (WE).

PLP 130 – Fungal Biology & Disease (3 units)

Course Description: Physiology, cell biology and biochemistry of fungi. Pathobiology of the diseases that fungi or their metabolites cause on plants, animals and humans. Control of fungal pathogens using fungicides.

Prerequisite(s): BIS 002A (can be concurrent); BIS 002B (can be concurrent); BIS 002C (can be concurrent); or consent of instructor.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

PLP 135 – Field Identification of Mushrooms (1 unit)

Course Description: Collection and identification of mushrooms and other fleshy fungi based on macro and microscopic features.

Prerequisite(s): Introductory course in Biological Sciences; course in mycology recommended.

Learning Activities: Fieldwork.

Grade Mode: Pass/No Pass only.

PLP 148 – Introductory Mycology (4 units)

Course Description: Systematics, ecology, evolution, and morphology of fungi. Importance of fungi to humans.

Prerequisite(s): BIS 002A; BIS 002B; BIS 002C.

Learning Activities: Lecture 2 hour(s), Laboratory 6 hour(s).

Enrollment Restriction(s): Limited enrollment.

Cross Listing: PLB 148.

Grade Mode: Letter.

General Education: Science & Engineering (SE).

PLP 150 – Fungal Ecology (3 units)

Course Description: Ecological roles of fungi as saprobes, mutualists and parasites in native and managed ecosystems. Physiological and reproductive strategies associated with adaptations to diverse habitats.

Prerequisite(s): BIS 002C; or equivalent.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

PLP 185 – Advanced Mushroom Taxonomy (2 units)

Course Description: Microscopic and molecular methods used in the identification of mushroom species; molecular characterization including PCR-amplification of ribosomal nuclear DNA, digestion of the product with restriction enzymes, and DNA sequencing; a one-day field trip is required.

Prerequisite(s): (PLP 135 or PLP 148); (BIS 101 or BIS 101V); or the equivalent to BIS 101.

Learning Activities: Discussion/Laboratory 3 hour(s), Fieldwork 1 hour(s).

Enrollment Restriction(s): Limited to 12 students.

Grade Mode: Letter.

PLP 192 – Internship (1-12 units)

Course Description: Work experience off and on campus, supervised by a member of the faculty.

Prerequisite(s): PLP 120; and consent of instructor.

Learning Activities: Internship 3-36 hour(s).

Grade Mode: Pass/No Pass only.

PLP 198 – Directed Group Study (1-5 units)

Course Description: Directed group study.

Learning Activities: Variable.

Grade Mode: Pass/No Pass only.

PLP 199 – Special Study for Advanced Undergraduates (1-5 units)

Course Description: Special study for advanced undergraduates.

Learning Activities: Variable.

Grade Mode: Pass/No Pass only.

PLP 201A – Impacts, Mechanisms & Control of Plant Disease (4 units)

Course Description: Case-studies approach to analysis of plant diseases caused by bacteria, fungi, oomycetes, and viruses, including impacts, etiology, pathogen taxonomy and epidemiology, biochemical and genetic aspects of pathogen-host interactions, virulence and resistance, and approaches to disease control.

Prerequisite(s): PLP 120; graduate student status in the Plant Pathology Graduate Program or consent of instructor.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Grade Mode: Letter.

PLP 201B – Impacts, Mechanisms & Control of Plant Disease (3 units)

Course Description: Case-studies approach to analysis of plant diseases, including emerging diseases, caused by bacteria, fungi, nematodes, and oomycetes: impacts, etiology, pathogen taxonomy, epidemiology, biochemical and genetic aspects of pathogen-host interactions, virulence, resistance, disease control and statistical analysis.

Prerequisite(s): PLP 120; PLP 201A; graduate student status in the Plant Pathology Graduate Program or consent of instructor.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Grade Mode: Letter.

PLP 202A – Applied Plant Pathology - Field Biology, Diagnosis, Management, & Outreach (5 units)

Course Description: Field biology, economic impacts, diagnosis, epidemiology, and management of disease in agricultural crops. Plant disease in agricultural settings at different production stages (nursery, field, processing, post-harvest).

Prerequisite(s): PLP 201A or PLP 201B; or consent of instructor.

Learning Activities: Lecture 2 hour(s); Laboratory 3 hour(s); Fieldwork 6 hour(s).

Grade Mode: Letter.

PLP 202B – Applied Plant Pathology - Field Trip (1 unit)

Course Description: Continuation of PLP 202A. Four-day field trip investigating diseases of agricultural crops and forest trees.

Prerequisite(s): PLP 202A; or consent of instructor.

Learning Activities: Fieldwork.

Grade Mode: S/U only.

PLP 210 – Biochemistry & Molecular Biology of Plant-Microbe Interaction (4 units)

Course Description: Discussion of plant-microbe interactions, focused on the underlying cellular, biochemical, and molecular events that determine the diseased state.

Prerequisite(s): (BIS 101 or BIS 101V); BIS 102; BIS 103; BIS 104; or the equivalent.

Learning Activities: Lecture/Discussion 4 hour(s).

Grade Mode: Letter.

PLP 217 – Molecular Genetics of Fungi (3 units)

Course Description: Advanced treatment of molecular biology and genetics of filamentous fungi and yeasts, including gene structure, organization and regulation; plant pathogenesis; secretion; control of reproduction; reproduction; molecular evolution; transformation; and gene manipulation.

Prerequisite(s): (BIS 101 or BIS 101V); BIS 103; MCB 161; PLB 119; PLP 130; PLP 215X; graduate standing in a Biological Science; MIC 215 recommended.

Learning Activities: Lecture 3 hour(s).

Cross Listing: BCM 217.

Grade Mode: Letter.

PLP 224 – Advanced Mycology (3 units)

Course Description: Physiology, cell biology and biochemistry of fungi. Topics include mycotoxins, epidemiology and nature of emerging and re-emerging fungal diseases, fungicides, and fungicide resistance.

Prerequisite(s): (PLP 148 or PLB 148); PLP 120; or consent of instructor.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

PLP 228 – Plant Bacteriology (3 units)

Course Description: Study of plant pathogenic microorganisms including taxonomy, biology, molecular mechanisms of disease, and plant disease management. Topics include quorum sensing, rhizosphere biology, genomics, virulence factors, and host plant resistance genes.

Prerequisite(s): PLP 120; or equivalent or consent of instructor.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Grade Mode: Letter.

PLP 230 – Plant Virology (3 units)

Course Description: Viruses as causal agents of plant disease and as tools for manipulating plants; structures of virus particles; mechanisms of transmission, replication, and spread in the plant; cytology and molecular biology in susceptible and resistant reactions to virus infection; virus disease control.

Prerequisite(s): Upper division or graduate course in Molecular Biology or graduate student in Plant Pathology.

Learning Activities: Lecture 3 hour(s).

Credit Limitation(s): Only 2 units of credit to students who complete MIC 262; not open for credit to students who have completed PLP 226.

Grade Mode: Letter.

PLP 290 – Seminar (1 unit)

Course Description: Review and evaluation of current research in plant pathology.

Learning Activities: Seminar 1 hour(s).

Grade Mode: Satisfactory/Unsatisfactory only.

PLP 290C – Advanced Research Conference (1 unit)

Course Description: Presentation, evaluation, and critical discussions of research activities in the area of advanced plant pathology; primarily designed for graduate students.

Prerequisite(s): PLP 120; or consent of instructor.

Learning Activities: Seminar 1 hour(s).

Grade Mode: Satisfactory/Unsatisfactory only.

PLP 291 – Seminar in Molecular Plant Pathology (1 unit)

Course Description: Review and evaluation of current literature and research in biochemistry and molecular biology of plant-microbe interactions.

Prerequisite(s): PLP 120; or consent of instructor.

Learning Activities: Seminar 1 hour(s).

Repeat Credit: May be repeated.

Grade Mode: Satisfactory/Unsatisfactory only.

PLP 295 – Seminar in Mycology (1 unit)

Course Description: Review and evaluation of current literature and research in mycology.

Learning Activities: Seminar 1 hour(s).

Repeat Credit: May be repeated.

Grade Mode: Satisfactory/Unsatisfactory only.

PLP 298 – Special Group Study (1-5 units)

Course Description: Special group study.

Learning Activities: Variable.

Grade Mode: Letter.

PLP 299 – Research (1-12 units)

Course Description: Research.

Learning Activities: Variable.

Grade Mode: Satisfactory/Unsatisfactory only.