

# 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 – Plant Pathogen Biology (3 units)

This version has ended; see updated course, below.

*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 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).

This course version is effective from, and including: Winter Quarter 2024.

### 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; 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 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 205A – Diseases of Vegetable & Field Crops (3 units)**

Starting Fall Quarter 2023, this course is no longer offered.

*Course Description:* Clinical study of diseases of vegetable and field crops with emphasis on etiology, epidemiology, diagnosis, and control. Field trips required.

*Prerequisite(s):* PLP 120.

*Learning Activities:* Lecture/Discussion 3 hour(s), Fieldwork 3 hour(s).

*Grade Mode:* Letter.

**PLP 205B – Diseases of Vegetable & Field Crops; Summer Field Trip (1 unit)**

Starting Fall Quarter 2023, this course is no longer offered.

*Course Description:* Continuation of PLP 205A. Four-day field trip investigating diseases of vegetable and field crops.

*Prerequisite(s):* PLP 120; PLP 205A.

*Learning Activities:* Fieldwork 3 hour(s).

*Grade Mode:* Satisfactory/Unsatisfactory 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; 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; 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.