Courses primarily for undergraduates:

PL P 391. Practical Plant Health.
(0-4) Cr. 2. F. Prereq: 6 credits in biological sciences
Diagnosis of all types of plant health problems caused by diseases, insects, weeds, nutrient deficiencies and toxicities, herbicide injury, and environmental stress. Emphasis is on acquiring practical skills. Students will gain experience in written and oral communication.

PL P 408. Principles of Plant Pathology.
(Dual-listed with PL P 508), (2-3) Cr. 3. F.S. Prereq: 8 credits in life sciences, including BIOL 211
Braun. Principles underlying the nature, diagnosis, and management of plant diseases. Laboratory complements lecture topics and provides experience in plant disease diagnosis.

(Cross-listed with FOR), (3-3) Cr. 4. F. Prereq: 8 credits in biological sciences, including BIOL 211
T. Harrington, M. Harris. Nature of insects and pathogens of forest and shade trees; their role in the dynamics of natural and managed forest ecosystems; and the management of indigenous and exotic pests. Nonmajor graduate credit.

PL P 452. Integrated Management of Diseases and Insect Pests of Turfgrasses.
(Dual-listed with PL P 552). (Cross-listed with ENT, HORT). (3-0) Cr. 3. Alt. S., offered 2014
Gleason, D. Lewis. Identification and biology of important diseases and insect pests of turfgrasses. Development of integrated pest management programs in various turfgrass environments.

PL P 477. Bacterial-Plant Interactions.
(Dual-listed with PL P 577). (Cross-listed with MICRO). (3-3) Cr. 3. Alt. S., offered 2014
Gleason, D. Lewis. Focuses on plant-associated bacteria in terms of their ecology, diversity, and the physiological and molecular mechanisms involved in their interaction with plants; covers symbiotic nitrogen fixation, plant pathogenesis, plant growth promotion, and biological control.

(Cross-listed with FOR), (2-3) Cr. 3. Alt. F., offered 2011. Prereq: FOR 280
Deterioration of wood in use by physical and biological agents. Wood preservation and fire retardant treatments. Environmental impact of wood treating. Nonmajor graduate credit.

PL P 490. Independent Study.
Cr. 1-3. Repeatable, maximum of 6 credits. F.S.S.S. Prereq: Junior or senior classification, 7 credits in biological sciences, permission of instructor
A maximum of 6 credits of PL P 490 may be used toward the total of 128 credits required for graduation.

Cr. 1-3. Repeatable, maximum of 6 credits. F.S.S.S. Prereq: Junior or senior classification, 7 credits in biological sciences, permission of instructor
A maximum of 6 credits of PL P 490 may be used toward the total of 128 credits required for graduation.

PL P 490H. Independent Study: Honors.
Cr. 1-3. Repeatable, maximum of 6 credits. F.S.S.S. Prereq: Junior or senior classification, 7 credits in biological sciences, permission of instructor
A maximum of 6 credits of PL P 490 may be used toward the total of 128 credits required for graduation.

PL P 494. Seed Pathology.
Munkvold. Significance of diseases on the major phases of seed production; growing, harvesting, conditioning, storing, and planting. Emphasis on epidemiology, disease management in the field, seed treatment, effects of conditioning on seed health, and seed health testing. Credit may not be obtained for both PL P 494 and STB/PI P 592.

Courses primarily for graduate students, open to qualified undergraduates:

PL P 506. Plant-Pathogen Interactions.
(2-0) Cr. 2. S. Prereq: PL P 408 or PL P 416, BIOL 313
Baum, Whitham. Introduction to mechanisms of plant-parasite interaction. Genetics and molecular genetics of plant disease resistance and pathogenicity.
Courses for graduate students:

**PL P 608. Molecular Virology.**
(Cross-listed with MICRO, V MPM). (3-0) Cr. 3. Alt. F., offered 2014. **Prereq:** BBMB 405 or GDCB 511
Advanced study of virus host-cell interactions. Molecular mechanisms of viral replication and pathogenesis.

**PL P 691. Field Plant Pathology.**
(0-6) Cr. 2. Repeatable. Alt. SS., offered 2013. **Prereq:** PL P 408 or PL P 416
Diagnosis of plant diseases, plant disease assessment methods, and the integration of disease management into commercial crop production practices. Objectives are to familiarize students with common diseases of Midwest crops and landscape plants, and to provide experience in disease diagnosis. Field trips include commercial operations, agricultural research facilities, and ornamental plantings.

**PL P 692. Molecular Biology of Plant-Pathogen Interactions.**
(Cross-listed with MICRO). (3-0) Cr. 3. Alt. F., offered 2012. **Prereq:** PL P 506 or BBMB 405 or GEN 411 or MICRO 402 or strong background in molecular biology
Bogdanove, Whitham. Seminal and current research in molecular and physiological aspects of plant interactions with pathogens, including mechanisms of pathogenesis, host-pathogen recognition and host defense, with an emphasis on critical evaluation of primary literature. Students also complete an interinstitutional research proposal writing and peer review exercise.

**PL P 694. Colloquium in Plant Pathology.**
(2-0) Cr. 2. Repeatable. F.S. **Prereq:** PL P 408 or PL P 416, permission of instructor
Advanced topics in plant pathology, including biological control, cultural control, resistance gene deployment, genetic engineering for disease resistance, chemical control, integrated pest management, emerging diseases, fungal genetics, insect vector biology, professional communications, etc.

**PL P 696. Seminar.**
Cr. 1. Repeatable. F.S.

**PL P 699. Thesis and Dissertation Research.**
Cr. arr. Repeatable.
F.S.SS.