Oregon State University
Ecampus

Course Name: Introductory Plant Pathology
Course Number: BOT 350
Credits: 4 Credits

COURSE CREDIT:

(4) This course combines approximately 120 hours of instruction, online activities, and assignments for 4 credits.

PREREQUISITES, CO-REQUISITES AND ENFORCED PREREQUISITES:

PREREQS: BI 213 or BI 213H.

COURSE DESCRIPTION:

An overview of plant diseases including concepts and principles of plant pathology, biology of the organisms that cause plant disease, disease diagnosis, disease management, economic and ecological importance of plant diseases, and dynamics of disease in time and space (epidemiology). Students will learn about microbial interactions with plants, plant diseases caused by fungi, oomycetes, bacteria, viruses and nematodes, major diseases of economically important crops, the principles and methods of disease diagnosis and management, and the importance of plant diseases in agriculture and forestry. The course material consists of textbook readings, powerpoint lecture notes, virtual laboratories, self-guided field trips, online plant disease lessons, virtual laboratory exercises, and online discussion forums through the Blackboard discussion board. Student evaluation is based on weekly online quizzes, virtual lab review questions, participation in online discussion, two mid-term exams and a final exam.

CONTACT INFORMATION:

Instructor: Jeff Stone email: stonej@onid.orst.edu phone: 541-737-5260

Sample syllabi may not have the most up-to-date information. For accuracy, please check the ECampus Schedule of Classes to see the most current instructor information. You can search for contact information by name from the OSU Home Page.

LEARNING RESOURCES:

Required textbook: *Essential Plant Pathology* , Schumann & D'Arcy, 2nd edition.
Supplementary online material: APSnet disease lessons as listed in Canvas weekly assignment

NOTE: For textbook accuracy, please always check the textbook list at the OSU Bookstore website. Sample syllabi may not have the most up-to-date information.

Students can also click the *'OSU Beaver Store'* link associated with the course information in the Ecampus schedule of classes for course textbook information and ordering.

COURSE SPECIFIC MEASURABLE STUDENT LEARNING OUTCOMES:

After completing this course, students will be able to:

Identify major groups of plant pathogens and the types of plant diseases that they cause
Discuss the importance of microbes as agents of plant disease
Identify and evaluate factors contributing to disease severity
Differentiate types of plant diseases
Explain the process of disease development in time and space
Describe the genetic and physiological mechanisms of plant disease resistance
Differentiate biotic and abiotic factors in plant disease
Describe the process and tools involved in plant disease diagnosis
Discuss the principles and tools involved in plant disease management
Discuss the historical and and contemporary importance of plant diseases

COURSE CONTENT AND POLICIES:

Course schedule and topics covered:

Week	Lecture Topic	Reading & Supplemental material	Specifics to know and understand
1 A	LECTURE 1 Introduction to plant diseases: economic and historical importance	EPP chapter 1	Definition of disease Historical and contemporary importance of plant diseases disease triangle types of pathogens disease cycles
1B	LECTURE 2 Disease diagnosis, terms and methods, distinguishing biotic and abiotic causes	EPP Chapter 8; APSNET articles: Disease diagnosis	Types of plant diseases and pathogens Symptoms and signs Biotic vs abiotic agents Koch's postulates

WEEK 1 ASSIGNMENTS
Review Quiz 1
Field trip 1 looking for plant diseases

2A	LECTURE 3 Major groups of pathogens, the disease triangle disease cycles	EPP Chapter 2	Organisms that cause plant disease Disease cycle diagrams Monocyclic vs. polycyclic diseases
2B	LECTURE 4 How pathogens infect plants and cause disease	EPP Chapter 9A;	Infection, colonization, incubation, survival Parasites, saprotrophs, necrotrophs, biotrophs Obligate biotrophs, facultative saprotrophs etc Necrotrophs, toxins in disease

WEEK 2 ASSIGNMENTS
Review Quiz 2 available
Oomycetes virtual lab, question set

3A	LECTURE 5 Fungi, Fungi vs. oomycetes, terms for fungal life cycles and structures	APSNET articles: Introduction to Oomycetes; Oomycetes and true fungi	How do Oomycetes and Fungi differ, how are they similar? Oomycete life cycle, structures, reproduction, dispersal Spores, sporangia, zoospores, conidia Infection structures, appressoria, haustoria Mating types; heterothallic, homothallic reproduction
3B	LECTURE 6 Diseases caused by Oomycetes	APSNET articles: late blight; Sudden oak death; grape downy mildew	Important Oomycete pathogens, hosts affected, types of diseases Phytophthora, Peronospora, Pythium

WEEK 3 ASSIGNMENTS
Review Quiz 3 available
Ascomycetes virtual lab part 1 question set

4A	LECTURE 7 Ascomycete fungi structures and life cycles		Ascomycete life cycles, vegetative and reproductive structures Sexual vs asexual reproduction Groups of ascomycete pathogens
4B	LECTURE 8 Diseases caused by ascomycete fungi	APSNET articles: Apple scab; Black sigatoka; White mold; Verticillium wilt; Rice blast; Tan spot; Dutch elm disease; Chestnut blight; Early blight; Eastern filbert blight	Important diseases caused by ascomycete fungi Importance of sexual vs asexual stage in disease Other factors in disease, e.g. host genotypes, insect vectors, nonnative species

WEEK 4 ASSIGNMENTS
Review Quiz 4 available Ascomycetes virtual lab part 2 question set

5A	LECTURE 9 Mycotoxins and disease	APSNET articles: mycotoxins; Ergot; Fusarium head blight;	Major mycotoxin groups, which fungi produce mycotoxins Food crops subject to mycotoxin contamination Physiological effects of major mycotoxins on humans and livestock/pets
5B	LECTURE 10 Plant defenses and resistance	EPP Chapter 9B, C; APSNET articles: plant defense	Gene-for-gene concept Hypersensitive response, programmed cell death Structural defenses Preformed chemical defenses Constitutive vs induced defenses Elicitors and phytoalexins Systemic aquired resistance Pathogen races

WEEK 5 ASSIGNMENTS
Basidiomycetes virtual lab 1, question set
Review quiz 5
Mid-Term I, covers weeks 1-5

6A	LECTURE 11 Basidiomycete fungi structures and life cycles		Basidiomycete life cycles, reproduction, structures Groups of basidiomycete pathogens
6B	LECTURE 12 Diseases caused by basidiomycete fungi	APSNET disease lessons: Soybean rust; White pine blister rust; wheat stem rust; Coffee rust; Rhizoctonia; Armillaria root disease; Southern blight (S. rolfsii)	Important diseases caused by basidiomycete fungi Obligate biotrophs; rusts and smuts Stem decay and root pathogens of woody hosts Rhizoctonia

WEEK 6 ASSIGNMENTS
Review Quiz 6
Basidiomycetes virtual lab 2 question set

7A	LECTURE 13 Bacteria and bacterial and phytoplasma diseases	EPP Chapter 3; APSNET articles: Bacterial pathogens; Fire blight; Crown gall; Palm lethal yellows; Citrus canker	Bacterial biology and bacterial pathogens Vectors in bacterial diseases Important bacterial diseases
7B	LECTURE 14 Epidemiology, disease dynamics, plant disease epidemics	EPP Chapter 10 Southern corn blight	Disease progress curves Factors affecting rates of disease development and spread Infection rate Area under disease progress curve Incidence and severity

WEEK 7 ASSIGNMENTS
Review Quiz 7
Epidemiology virtual lab report

8A	LECTURE 15 Diseases caused by viruses and viroids, Virus biology	EPP Chapter 5; APSNET articles: Plant viruses; Tobacco mosaic; Tomato spotted wilt; Barley yellow dwarf;	Major plant virus groups Structure of viruses Virus reproduction How viruses cause disease Virus vectors and dispersal Important virus and viroid diseases Management of virus diseases
8B	LECTURE 16 Disease management: chemical control	APSNET articles: Disease managment; fungicides; antibiotics	Millardet, origin of chemical fungicides Protectant, systemic fungicides Fumigants

WEEK 8 ASSIGNMENTS
Disease management simulations virtual lab report
Review quiz 8, available
Mid-Term 2, covers weeks 6-8

9A	LECTURE 17 Nematode biology, Diseases caused by nematodes	EPP Chapter 4; APSNET articles: Plant parasitic nematodes; APSNET articles: Root knot nematode; Pine wilt disease; Soybean cyst;	Biology of pathogenic nematodes Structures, reproduction How do nematodes cause disease Important nematode diseases Managing nematode diseases

9B	LECTURE 18 Diseases caused by parasitic plants	EPP Chapter 6; Parasitic plants; Dwarf mistletoes;	Biology of parasitic plants How parasitic plants cause disease

WEEK 9 ASSIGNMENTS
Nematode diseases virtual lab
Review quiz 9

10A	LECTURE 19 Diseases caused by microbial oddities (Plasmodiophora, Labyrinthula)	APSNET articles: Rapid blight	Other pathogens, protists, Plasmodiophora and Labyrinthula
10B	LECTURE 20 Disease management, breeding and transgenic approaches	EPP Chapter 11; APSNET articles: Biological control of plant pathogens	Traditional breeding for resistance Transgenic techniques Multigenic resistance Principles of biological control and integrated pest managment Types of biocontrol agents, bacteria, fungi Examples of effective biocontrol

WEEK 10 ASSIGNMENTS
Field trip 2, looking for plant diseases, review your knowledge

Final Exam, online, open book, covers weeks 1-10

EVALUATION OF STUDENT PERFORMANCE:

Student performance will be based on the following tasks and assignments:

1. Weekly quizzes -27% of final grade
2. Weekly laboratory/field trip/report - 20% of final grade
3. Class participation, online discussion - 3% of final grade
4. Two mid-term exams - 30% of final grade
5. Final exam - 20% of final grade

Incompletes — A grad of "I" (incomplete) will be given only when there is a strong and compelling case for doing so. An incomplete can not be given unless the student has completed more than 50% of the course requirements, e.g. quizzes 1-4, midterm exam, and assignment 1. If an incomplete is requested, the student must make arrangements to remove the incomplete by the end of the next regular term following the term in which the incomplete was given.

COURSE SITE LOGIN INFORMATION

Information on how to login to your course site can be found **HERE**.

STATEMENT REGARDING STUDENTS WITH DISABILITIES

Oregon State University is committed to student success; however, we do not require students to use accommodations nor will we provide them unless they are requested by the student. The student, as a legal adult, is responsible to request appropriate accommodations. The student must take the lead in applying to Disability Access Services (DAS) and submit requests for accommodations each term through DAS Online. OSU students apply to DAS and request accommodations at our Getting Started with DAS page.

Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 541-737-4098.

Additionally, Canvas, the learning management system through which this course is offered, provides a vendor statement certifying how the platform is accessible to students with disabilities.

ACADEMIC INTEGRITY AND STUDENT CONDUCT (OSU POLICY)

Students are expected to be honest and ethical in their academic work. Intentional acts of academic dishonesty such as cheating or plagiarism may be penalized by imposing an "F" grade in the course.

Student conduct is governed by the universities policies, as explained in the Office of the Dean of Student Life: Student Conduct and Community Standards. In an academic community, students and faculty, and staff each have responsibility for maintaining an appropriate learning environment, whether online or in the classroom. Students, faculty, and staff have the responsibility to treat each other with understanding, dignity, and respect.

Students are expected to conduct themselves in the course (e.g. on discussion boards, email postings, etc.) in compliance with the university's regulations regarding civility. Students will be expected to treat all others with the same respect as they would want afforded to themselves. Disrespectful behavior (such as harassing behavior, personal insults, inappropriate language) or disruptive behaviors are unacceptable and can result in sanctions as defined by Student Conduct and Community Standards.

For more info on these topics please see:

- Statement of Expectations for Student Conduct
- Student Conduct and Community Standards - Offenses
- Policy On Disruptive Behavior

PLAGIARISM

You are expected to submit your own work in all your assignments, postings to the discussion board, and other communications, and to clearly give credit to the work of others when you use it. Academic dishonesty will result in a grade of "F."

- Statement of Expectations for Student Conduct
- Avoiding Academic Dishonesty

TECHNICAL ASSISTANCE

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call (541) 737-3474, email osuhelpdesk@oregonstate.edu or visit the OSU Computer Helpdesk online.

- **COURSE DEMO**
- **GETTING STARTED**

TUTORING

For information about possible tutoring for this course, please visit our Ecampus NetTutor page. Other resources include:

- Writing Center
- Online Writing Lab

STUDENT EVALUATION OF TEACHING

The online Student Evaluation of Teaching form will be available in week 9 and close at the end of finals week. Students will be sent instructions via ONID by the Office of Academic Programs, Assessment, and Accreditation. Students will log in to "Student Online Services" to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted. Course evaluation results are very important and are used to help improve courses and the learning experience of future students. Results from questions are tabulated anonymously and go directly to instructors and unit heads/supervisors. Unless a comment is "signed," which will associate a name with a comment, student comments on the open-ended questions are anonymous and forwarded to each instructor. "Signed" comments are forwarded to the unit head/supervisor.

REFUND POLICY INFORMATION

Please see the Ecampus website for policy information on refunds and late fees.