

Fall 2016, BIOL 5680

Plant Pathology (4 credit hours)

Instructor: Dr. Emily G. Cantonwine, Office: BC 2031, Email: egcantonwine@valdosta.edu, Phone: 333-5337

Lecture: BC1202, M, W, F - 10:00-10:50am

Lab: BC2040, F - 12:00-2:50pm

Office hours: MTWR - 2-3:30

Course Description: Study of plant diseases with emphasis on disease etiology, pathogenesis, ecology of host/pathogen interaction, epidemiology, and strategies for disease control.

Course Objectives (Educational Outcomes): By the end of the semester, students will be able to

- describe the process used to establish disease of a plant. (GEO 5; BEO 2,5)
- identify pathogen type by cellular/organismal structure. (GEO 5; BEO 2,3)
- predict pathogen type and/or pathogenic strategy based on symptoms and/or signs of disease. (GEO 5; BEO 5)
- identify and describe disease cycles of plant diseases important to Georgia and/or the US. (GEO 5; BEO 5)
- relate plant/pathogen interactions to disease development. (GEO 5; BEO 3, 5)
- explain biotic and abiotic factors that influence plant disease epidemics. (GEO 3, 5; BEO 5)
- prescribe effective disease management strategies based on disease cycle information. (GEO 5, 7; BEO 5)
- collect and interpret data. (GEO 5, BEO 1)
- compile and summarize information from various sources, including primary research articles, into an informative poster format. (GEO 3,4,5, BEO 5)

Required Text: Schumann G.L. & D'Arcy, C.J. 2009. Essential Plant Pathology, Second Edition. APS Press, St. Paul, MN

Students are required to bring the syllabus & lecture notes to lecture periods; the textbook is recommended. Students are required to bring the syllabus, textbook, & lecture notes to each laboratory.

Important information:

- A grade of C or higher is required in this course to count towards a biology degree.
- October 9 is the last day to withdraw from the course.
- If you have need for special arrangements to meet the requirements of this course, please contact the Access Office for Students with Disabilities in Nevins Hall, 245-2498. Please discuss this need with me as soon as possible.

<u>Assessment</u>	<u>#</u>	<u>points each</u>	<u>points total</u>	<u>SCALE</u>
Exams	3	100	300	A 90-100%
Final Exam	1	125	125	B 80-89.99%
Disease Lessons	?	?	50	C 70-79.99%
Lab assignments	5	15	75	D 60-69.99%
Lab Practical	1	100	100	F < 60%
<u>Disease Experiment</u>	<u>1</u>	<u>50</u>	<u>50</u>	
<u>5680 Assignment</u>			<u>50</u>	
Total			750	

ASSESSMENTS

- Lecture Exams: There will be 3 lecture exams, each worth 100 points. The format of these exams may include multiple choice, matching, fill-in-the-blank, true/false, and short answer questions. Make-up exams are an option for those with legitimate reasons, but will be more challenging than the original exam and may include essay questions. FYI, having 3 exams on the same day is not a legitimate reason. *Students wishing to take a makeup exam must contact me the day of the missed exam and must complete the make-up within 24 hr of the missed exam.* Students may not take exams early, with the exception of students with a university related excuse.
- Final Exam: The final is worth 125 points with 50 points from new material & the disease experiment, and 75 points from previous exam materials.
- Disease Lessons: A selection of APSnet.org disease lessons will be assigned throughout the course, in which each student should read and answer a set of questions. We will discuss these assignments in class and the material will be tested on the exams. Undergraduate student preparations will be evaluated via pop quizzes, but graduate students must submit a copy of their Disease Lesson Answer sheet to BV at least one hour before the class in which they will be discussed.
- Lab Assignments: See the tentative schedule for a list of these assignments.
- Lab Practical: One lab practical will be conducted to evaluate identification skills of symptoms and signs of plant pathogens.
- Disease Experiment: A plant disease experiment will be conducted in lab. 10pt will be based on the experimental notebook (group), which should include all notes related to experimental design, set-up, maintenance, data, etc, and 40pt will be the formal research report (individual). More information will be provided in lab.
- 5680 Assignment: This will be an assignment designed by the student and instructor. Please see me the first week of classes to discuss options.

GENERAL RULES

- Attendance: I do not record attendance, but highly recommend that you attend all lectures & labs unless you are sick. If you are absent (excused or unexcused), it is your responsibility to obtain missed lecture notes from another student. If you miss a lab, you may or may not be able to make it up. See me to discuss options. Missed lecture and lab handouts, if applicable, are your responsibility to pick-up during office hours.
- Access to the laboratory: There are two other upper-division courses taught in BC2040 this semester, Dr. Goddard's Plant Physiology on Monday, and Dr. Carter's Dendrology on Thursday. Please avoid using the lab during these times.
- Food and Drink in the Laboratory and Lecture Rooms: No food or drink is allowed in the laboratory. These will be disposed of if I see them. My policy in the lecture room is more lenient. You may consume food or drink as long as their use does not cause a disturbance. Each student is responsible for cleaning up after him or herself.
- Expectations of student conduct in the classroom and lab: I expect your *full attention* to be focused on the material during instruction. If you cannot do this (for whatever reason), then I expect you to be *respectful* of other students and myself by not being disruptive. Cell phone use is discouraged in lecture and not allowed in lab.
- Academic Integrity: I follow the Academic Honesty Policies and Procedures of the University and the Policy on Plagiarism composed by the Department of Biology. For more information, refer to www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml and
- www.valdosta.edu/biology/documents/biologyplagiarism.doc, respectively. "Academic Integrity/Honesty" means performing all academic work without plagiarism, cheating, lying, tampering, stealing, receiving unauthorized or illegitimate assistance from any other person, or using any source of information that is not common knowledge.

Tentative Schedule:

Week	Lecture Topics	Reading Assignments (Chapters)	Lab
August 15-19	Diagnosing Plant Diseases	1	Signs & Symptoms
August 22-27	Fungal Pathogens	2	Fungi I
August 29 - Sept 3	Bacterial Pathogens; Bacterial Pathogens	2	Fungi II
September 5-9	LABOR DAY, W - Oomycete & Bacteria lab;	3	Mandatory Field Trip to Tifton (10-3 ⁺ or 12-5 ⁺) (Lab Assignment I)
September 12-16	EXAM 1 (Monday, Sept 12 chapters 1-3) Nematode Pathogens	4	Koch's Postulates Lab
September 19-23	Viral Pathogens	4, 5	Nematodes
September 26-30	Viral Pathogens; Parasitic Plants	5, 6	Viruses & Parasitic Plants
October 3-7	Abiotic Factors; EXAM 2 (October 7 chapters 4-7)	7	Koch's Postulates Evaluation (Lab Assignment II)
October 10-14	<i>Fall Break;</i> Experimental design		Disease Experimental Design (Lab Assignment III)
October 17-21	Types of Plant Diseases	8	Set-up experiment
October 24-28	Types of Plant Diseases; Plant Pathogen Interactions	8, 9	LAB PRACTICAL
October 31 – Nov 4	Plant Pathogen Interactions	9	Types of Plant Disease (Lab Assignment IV)
November 7-11	Plant Pathogen Interactions, Epidemiology	9, 10	Late Blight of Potato Simulation (Lab Assignment V); Data collection; Introduction and methods due (first draft); Set-up group meeting for data analysis next week!
November 14-18	Epidemiology	10	Data analysis Discussion of intro & methods; first draft of results due; data analysis & results questions answered
November 21-25	EXAM 3 (Nov 21 chapters 8-10); THANKSGIVING	--	No Lab
Nov 28 – Dec 2	Disease management	11	Disease experiment notebook and report due
December 5-9	Review, FINAL EXAM Dec 6 10:15-12:15; chapters 1-11 & lab experiment-related questions		

Valdosta State University General Educational Outcomes (GEO)

1. Students will demonstrate understanding of the society of the United States and its ideals. They will possess the requisite knowledge of the society of the United States, its ideals, and its functions to enable them to become informed and responsible citizens. They will understand the connections between the individual and society and the roles of social institutions. They will understand the structure and operational principles of the United States government and economic system. They will understand United States history and both the historical and present role of the United States in the world.
2. Students will demonstrate cross-cultural perspectives and knowledge of other societies. They will possess sufficient knowledge of various aspects of another culture, including the language, social and religious customs, aesthetic expression, geography, and intellectual and political history, to enable them to interact with individuals within that society from an informed perspective. They will possess an international viewpoint that will allow them to examine critically the culture of their own nation and to participate in global society.
3. Students will use computer and information technology when appropriate. They will demonstrate knowledge of computer concepts and terminology. They will possess basic working knowledge of a computer operating system. They will be able to use at least two software tools, such as word processors, spreadsheets, database management systems, or statistical packages. They will be able to find information using computer searching tools.
4. Students will express themselves clearly, logically and precisely in writing and in speaking, and they will demonstrate competence in reading and listening. They will display the ability to write coherently in standard English; to speak well; to read, to understand, and to interpret the content of written materials in various disciplines; and to listen effectively and to understand different modes of communication.
5. Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices. They will understand the basic concepts and principles underlying scientific methodology and be able to collect, analyze, and interpret data. They will learn a body of scientific knowledge and be able to judge the merits of arguments about scientific issues. They will be able to perform basic algebraic manipulations and to use fundamental algebraic concepts to solve word problems and equations. They will be able to use basic knowledge of statistics to interpret and to analyze data. They will be able to evaluate arguments based on quantitative data.
6. Students will demonstrate knowledge of diverse cultural heritages in the arts, the humanities, and the social sciences. They will develop understanding of the relationships among the visual and performing arts, literature and languages, and history and the social sciences. Students will be versed in approaches appropriate to the study of those disciplines; they will identify and respond to a variety of aesthetic experiences and engage in critical thinking about diverse issues. They will be able to identify the components of and respond to aesthetic experiences in the visual and performing arts. They will develop knowledge of world literature within its historical and cultural frameworks. They will understand modern issues within a historical context and the role of the individual in various forms of societies and governments.
7. Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written and visual materials. They will be skilled in inquiry, logical reasoning, and critical analysis. They will be able to acquire and evaluate relevant information, analyze arguments, synthesize facts and information, and offer logical arguments leading to creative solutions to problems.
8. Students will demonstrate knowledge of principles of ethics and their employment in the analysis and resolution of moral problems. They will recognize and understand issues in applied ethics. They will understand their own value systems in relation to other value systems. They will judge values and practices in a variety of disciplines.

Department of Biology Educational Outcomes (BEO)

1. Develop and test hypotheses, collect and analyze data, and present the results and conclusions in both written and oral format used in peer-reviewed journals and at scientific meetings.
2. Describe the evolutionary process responsible for biological diversity, explain the phylogenetic relationships among the other taxa of life, and provide illustrative examples.
3. Demonstrate an understanding of the cellular basis of life.
4. Relate the structure and function of DNA/RNA to the development of form and function of the organism and to heredity
5. Interpret ecological data pertaining to the behavior of the individual organism in its natural environment; to the structure and function of populations, communities, and ecosystems; and to human impacts on these systems and the environment.