

AGRN 374
Diseases of Economic Plants
Spring 2017

I. General Information

AGRN 374 (Diseases of Economic Plants) is a 3 credit hour course focusing on “Identification of agricultural plant diseases; biology of common plant pathogens; pathogen-plant interactions; fungicide classification and use; management of plant diseases through chemical cultural, biological and mechanical control methods.”

Prerequisite: AGRN 373 – *Integrated Pest Management*

Lecture: MW 9:00-9:50 a.m., Knoblauch 226

Lab: Th 8:00-9:50 a.m., Knoblauch 226

Instructor: Dr. Mark Bernards
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Office Hours: M 12:00-12:50 p.m.; T 10:00-10:50 a.m., W 10:00-10:50 a.m., Th 1:00-1:50 p.m. or by appointment.

Required Text:

Schumann, G.L. and C.J. D’Arcy. 2010. *Essential Plant Pathology*, 2nd edition. The American Phytopathological Society, Saint Paul, Minnesota.

Mueller, D.S. and C.A. Bradley. 2008. *Field Crop Fungicides for the North Central United States*. Available for download from: <http://www.ncipmc.org/resources/Fungicide%20Manual4.pdf>

Recommended Text:

Bissonnette et al. 2010. *Field Crop Scouting Manual*. University of Illinois Extension, Champaign, IL.

References:

Agrios, G.N. 2005. *Plant Pathology*, Fifth edition. Elsevier Academic Press, Burlington, MA.

Bockus, W.W. et al. 2010. *Compendium of Wheat Diseases and Pests*, 3rd Edition. The American Phytopathological Society, Saint Paul, Minnesota.

Hartman, G.L., J.B. Sinclair and J.C. Rupe (eds.). 1999. *Compendium of Soybean Diseases*, 4th Edition. The American Phytopathological Society, Saint Paul, Minnesota.

Schumann, G.L. and C.J. D’Arcy. 2012. *Hungry Planet: Stories of Plant Diseases*. The American Phytopathological Society, Saint Paul, Minnesota.

Sinclair, W.A. and H.H. Lyon. 2005. *Diseases of Trees and Shrubs*, 2nd Edition. Cornell University Press, Ithaca, NY.

White, D.G. (ed.). 1999. *Compendium of Corn Diseases*, 3rd Edition. The American Phytopathological Society, Saint Paul, Minnesota.

II. University Policies and Expectations

Student rights and responsibilities: A complete description is available at www.wiu.edu/provost/students.

Disruptive Student Policy: Students who interfere with normal class function or the ability of other students to learn may be asked to leave the class for the day. For repeated offenses, a student may be removed from the course. Details may be found at: <http://www.wiu.edu/vpas/policies/disrupst.php>

Two dismissals due to disruptive or unprofessional behavior will result in a permanent disbarment from the course and a final grade of "F" will be assigned.

Academic Integrity: <http://www.wiu.edu/policies/acintegrity.php> Western Illinois University, like all communities, functions best when its members treat one another with honesty, fairness, respect, and trust. . . It is the student's responsibility to be informed and to abide by all University regulations and policies on Academic Integrity. Plagiarism, cheating, and other forms of academic dishonesty constitute a serious violation of University conduct regulations. Students who engage in dishonesty in any form shall be charged with academic dishonesty. . . Any student, faculty member, or staff person who has witnessed an apparent act of student academic dishonesty, or has information that reasonably leads to the conclusion that such an act has occurred or has been attempted, has an ethical responsibility for reporting said act(s).

The policy for AGRN 374: Any confirmed act of academic dishonesty (especially plagiarism or cheating) will result in the loss of all points associated with that assignment, and may result in an "F" for the course.

Equal Opportunity: <http://www.wiu.edu/policies/affirmact.php> Western Illinois University complies fully with all applicable federal and state nondiscrimination laws, orders, and regulations. The University is committed to providing equal opportunity and an educational and work environment for its students, faculty, and staff that is free from discrimination based on sex, race, color, sexual orientation, gender identity and gender expression, religion, age, marital status, national origin, disability, or veteran status.

Sex-Discrimination and Misconduct: University values, Title IX, and other federal and state laws prohibit sex discrimination, including sexual assault/misconduct, dating/domestic violence, and stalking. If you, or someone you know, has been the victim of any of these offenses, we encourage you to report this to the Title IX Coordinator at 309-298-1977 or anonymously online at: http://www.wiu.edu/equal_opportunity_and_access/request_form/index.php. If you disclose an incident to a faculty member, the faculty member must notify the Title IX Coordinator. The complete Title IX policy is available at: <http://www.wiu.edu/vpas/policies/titleIX.php>

Disabilities: Students with disabilities: In accordance with University values and disability law, students with disabilities may request academic accommodations where there are aspects of a course that result in barriers to inclusion or accurate assessment of achievement. To file an official request for disability-related accommodations, please contact the Disability Resource Center at 309-298-2512, disability@wiu.edu or in 143 Memorial Hall. Please notify the instructor as soon as possible to ensure that this course is accessible to you in a timely manner.

Education Majors: The state teaching license requires all education majors to receive a grade of a "C" or better in this course in order to meet its requirements. With the university +/- grading system, receiving a "C-" or below will require you to retake this course or find a substitute course to meet School of Agriculture graduation requirements.

III. Course Expectations and Policies

1. Live the Golden Rule. Treat others with respect and courtesy in your conversation and actions. Turn off and put away electronic devices (phones, tablet computers, laptop computers, etc.) during the class period unless directed to use them for class activities. Inappropriate use of an electronic device will result in loss of participation points for that day.
2. Show up. Attendance and punctuality is expected. Notify the instructor in advance if you have any reason to miss a class period through the O.A.R.S system (<http://wiu.edu/oars>). A minimum of 24 h notice (email or phone) is required if there is any cause to miss a quiz or exam. If you do miss a class, do not ask the instructor "Did I miss anything important?" It is your responsibility to make arrangements to get the information you missed and to make up any missed assignments.
3. Participate. Be prepared for class discussions by completing readings, answering questions, taking notes, asking questions, and working effectively with other students on lecture and laboratory

activities.

4. Study. You should plan to spend a minimum of 5 hours outside of class each week to master the material. Reading assignments relating to each lecture/lab will be particularly beneficial.
5. Complete assignments. Assignments not turned in on the assigned date may have 10% of the total potential points deducted for each day after the due date. The instructor will generally return exams and assignments within 1 week.
6. The use of tobacco is prohibited in Knoblauch Hall, nor is it allowed during sessions at the AFL.
7. Students must wear sturdy, close-toed to participate in lab sessions at the AFL. The wearing of long pants is highly recommended.

IV. Grading

<u>Grade components</u>	<u>Portion*</u>
Attendance	10%
Participation	10%
Assignments	30%
Quizzes and Final Exam	50%

**These percentages are subject to modification. However, changes will be discussed during a class lecture prior to being implemented.*

Grading Scale

<u>Percentage</u>	<u>Grade</u>	<u>Percentage</u>	<u>Grade</u>
93.0-100	A	73.0-76.9	C
90.0-92.9	A-	70.0-72.9	C-
87.0-89.9	B+	67.0-69.9	D+
83.0-86.9	B	63.0-66.9	D
80.0-82.9	B-	60.0-62.9	D-
77.0-79.9	C+	<59.9	F

V. Learning Assessment

Attendance: Attending class is required and will improve your ability to learn the material and to contribute to the classroom community. 10% of the final grade will be earned through attendance. Each student will be allowed 2 “vacation” days (for funerals, interviews, oversleeping, etc). More than 2 “vacation” absences will result in the loss of attendance percentage points (2 points per absence). Absence for WIU-sanctioned activities (i.e., team travel, presenting at conferences, etc.) will not count against “vacation” days. Absence due to illness will be evaluated on a case-by-case basis and will not count against the vacation days. Students who accumulate 9 or more “vacation days” will NOT receive a passing grade.

Participation: Each student will receive points based on their preparedness for class lectures and discussions. Readings/exercises will be assigned prior to many lectures. The expectation is that you will have completed those activities so you are prepared to participate in class discussion and application of the material. Preparedness may be evaluated through pop-quizzes, reading quizzes at Western Online, and contributions to discussions or in-class activities. You will be expected to make comments.

Assignments: There will be assignments associated with lecture topics and in labs that will be designed to help you better understand the material and benefit from resources you can use after you graduate from WIU.

Quizzes and Final Exam: A 20-30 question quiz will be given at least once every three weeks. Quizzes will include multiple choice, fill in the blank, true-false, matching and short essay questions and may cover material discussed in lecture or lab. The final exam will be comprehensive, and will include multiple choice, matching, fill in the blank, true-false and short essay questions.

VI. Course Objectives

At the conclusion of this course, it is expected that you will be able to:

1. Define plant disease and explain the various causes of plant disease.
2. Provide examples of how plant diseases negatively affect individuals and society.
3. Explain the disease triangle and the factors necessary for a disease to develop and spread.
4. Diagram disease cycles for bacteria, fungi, nematodes, viruses and parasitic plants.
5. Demonstrate how understanding a plant disease cycle enables one to better identify and manage the disease, including its survival and spread.
6. Diagnose the disease causing pathogen (fungi, bacteria, virus, nematode or parasitic plant) based on symptoms and signs evident on the diseased plant and the corresponding environmental factors.
7. Diagnose the disease-causing abiotic factors based on plant symptoms and environmental factors.
8. Identify at least 30 important diseases of crops and landscaping plants common in the United States (and particularly the Midwest) based on symptoms, signs and/or environmental factors.
9. Explain how plants defend themselves against pathogens and how pathogens overcome those defenses.
10. Explain how people influence the spread of plant disease epidemics.
11. Describe strategies available for preventing or minimizing the damage caused by plant pathogens or abiotic factors.
12. Differentiate among classes of fungicides and their strengths and weaknesses with regards to controlling various disease-causing organisms.
13. Calculate correct rates of fungicides for application, and describe the optimal way to apply those fungicides to maximize their efficacy in managing disease.
14. Formulate disease management strategies to prevent or minimize disease epidemics, especially of diseases common to crops or vegetation grown in the Midwestern U.S.
15. Identify, locate and review scientific literature pertaining to plant disease management. Organize this information in the preparation of a disease summary that will enable other students to learn how to identify and manage it

VII. Probable Course Calendar

Date	Lecture Topics	Reading Assign.
Jan 18	Syllabus, Disease defined, Brief history of plant disease, disease triangle,	pp. 1-8
Jan 19	Disease Cycle scenarios	pp. 10-16
Jan 23	Koch's postulates	pp. 8-10
Jan 25	Plant disease symptoms, signs and names 1	pp. 143-151
Jan 26	Disease field trip	
Jan 30	Plant disease symptoms, signs and names 2	pp. 152-161
Feb 1	Plant disease symptoms, signs and names 3	pp. 161-171
Feb 2	Using library databases	
Feb 6	Quiz 1.	
Feb 8	Parasitic plants (online lesson)	pp. 109-118
Feb 9	Reading scientific literature (online lesson)	