PLNT7480 Epidemiology in Plant Disease   Winter Term 2024

Course Outline (see on page 2).

Course Objectives: The course intends to give graduate students the most important epidemiological principles in host-pathogen interactions using the most current literature and changes in knowledge of host-pathogen interactions. The course is designed to present this through areas of importance at present especially in the prairies of Canada, including novel methods in identifying and monitoring diversity between and within pathogens including the interactions of pathogens with their hosts and environment.. The hope is that at the end of the course, the student will be able to derive principles of plant disease management from knowledge of different aspects studied and learned in class. The course will familiarize students with important topics and literature (mostly through recent publications) concerning plant disease epidemiology. It will also encourage the development of skills necessary for critical evaluation of research articles. Although not restricted, the emphasis will be on the epidemiology of cereal (wheat, barley, and corn), oilseed, and special crop diseases (i.e. potatoes, legumes such as soybeans) of current importance in western Canada.

Instructor:	**Dr. Dilantha Fernando, Plant Science, Rm. 205 Agriculture, Phone 474-6072**
	Dean's Office, St. Paul's College, Rm 211-70 Dysart Road Phone: 474-8577
Timetable:	Meeting for lectures, and class presentations - Wednesdays from 10.00 to 12.00 pm.
Time to Meet:	**By appointment**. Monday to Friday – 9.00 am to 3.00 pm during the week lectures are held.

Required to read: All research articles that are distributed in class or requested to download and read. Also, students are highly encouraged to read related articles on their own. All citations should be in the style format provided in the first class (through a peer-reviewed paper).

Student Evaluation:

Assignments	30%
Term paper	20%
Molecular Methods in Epidemiology/Detection	20%
Presentation	30%

The grading system is as follows: A+ = 90 to 100; A = 80 to 89; B+ = 70 – 79; B = 65 to 69; C+ = 60-64; C = 55 - 59; D = 50 – 54; F = < 50

Feedback will be given on each of the categories listed above.

ROASS

Following the calendar regulations concerning 'Responsibilities of Academic Staff to Students' students are reminded that 'academic dishonesty' includes 'plagiarism and cheating'. Note also the date for voluntary withdrawal from the first term. Using AI or Chat GPT to generate any form of publication or assignment is strictly prohibited.

Please also read Schedule A: https://umanitoba.ca/statistics/files/pages/2016/09/Schedule-A-ROASS-

Statistics.pdf

Note 1: Remember, there are **no mid-term exams or a final exam** in this course. Thus, assignments, presentations, and term papers should be taken **very seriously** if you are to master the subject of plant disease epidemiology, achieve high standards, and get a good grade.

Mar. 18, 2020 Voluntary Withdrawal (VW) deadline, Winter Term classes

PLNT7480 Epidemiology in Plant Disease   Winter 2024

GENERAL COURSE OUTLINE

Influence of Host
(1) Fernando Dispersal Units and Methods utilized in Trapping Dispersal Units

Influence of Pathogen
(2) Fernando Macro and Micro Climatic Data Analysis

Influence of Pathogen
(3) Fernando Susceptible and Resistant Cultivars and Gene for Gene Hypothesis

(4) Fernando **Host Resistance**

Disease in Space
(5) Fernando Disease Gradients in relation to Disease Development from a inoculum source

(6) Student 1 Genetic Diversity & population structure
Geographic Population differentiation, genetic and genotypic diversity, genetic distance (**Feb 19**)

(7) Student 2 Chemotypic diversity, pathogenicity / aggressiveness in disease (Feb 26)

Disease forecasting
(8) Student 3 Disease in Time - disease forecasting - Methods to predict disease (**Mar 4**)

(9) Student 4 Pathogen / Disease Spread Molecular Analysis – (March 11)
           Gene flow**,** heterozygosity, Shannon Index.

Crop Loss Assessment and Reduction Methodology
(10) Student 5 Disease Incidence, Severity and Disease Progress Curves (DPS) (**March 18**)

Note 2: Instructions and discussion will take place on expectations of presentation, assignments, term paper and molecular methods in epidemiology/detection during the first three classes. Class attendance is regarded as required, as most of the material presented by the instructor or the students are through

discussion.