University of Manitoba
Faculty of Agricultural and Food Sciences
Department of Plant Science

2023-2024

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COURSE DETAILS

Course Title & Number:	PLNT4570 - Research Methods in Plant Pathology
Number of Credit Hours:	3
Class Times & Days of Week:	**TR: 8:30am – 9:45am** **Lab: Monday 2:30pm – 5:15pm**
Location for classes/labs/tutorials:	Class: TBA; Lab: Dr. Daayf's lab
Pre-Requisites:	One course in plant pathology or consent of instructor.

Instructor Contact Information

Instructor(s) Name & Preferred Form of Address:	Dr. Mohamed El-Shetehy / Ms. Pawanpuneet Rehal
Office Location:	207 Agriculture Building
Office Hours or Availability:	Tuesday afternoon *Note:* The Responsibilities of Academic Staff in Regards to Students - ROASS requires that instructors must be available to students for consultation out of class or laboratory hours.
Office Phone No.	204-474-6096
Email:	Mohamed.Elshetehy@umanitoba.ca; Pawanpuneet.Rehal@umanitoba.ca Will return a phone call or email-within 48 hrs. *Note*: All email communication must conform to the Communicating with Students university policy.
Contact:	Students may contact instructors in person. If unable, use Email.
Instructor(s) Name & Preferred Form of Address:	Dr. Mohamed El-Shetehy / Ms. Pawanpuneet Rehal

Course Description

Course will provide practical training in plant pathology and will cover plant disease diagnosis, pathogen isolation, identification, inoculation, and storage. Selected molecular techniques used in the study of plant pathogens will be covered. The laboratory component aims at preparing students for a professional career in plant protection and research in plant pathology.
Prerequisite: PLNT 3570 (or 039.357) or consent of instructor.

General Course Information

This course will provide students with an overview of the methods used in plant pathology studies. This includes an array of techniques, from the most classical, such as the Koh's postulate to more advanced techniques such as those assessing changes in gene expression of either the host or the pathogen.
This course will be especially useful to students interested in further specialization in plant pathology, but will also prepare them if they need to apply their knowledge in a new position.

Course Goals

This course will provide students with practical training in plant pathology, including:

- Learning the steps to plant disease diagnosis,
- Learning how to isolate pathogens, identify them, and store them,
- Learning how to make artificial inoculations,
- Getting initiated to some of the current molecular techniques used in the study of plant pathogens and their interaction with their hosts,
- Having a practical demonstration of host-pathogen concepts

Intended Learning Outcomes

Students taking this course will be initiated to a diverse array of methods used in plant pathology including both classical and more advanced molecular methods. This will prepare them for a variety of professional careers, including in plant protection with the industry, and in plant pathology research if they take the option to do graduate studies in plant pathology.

Using Copyrighted Material

Please respect copyright. We will use copyrighted content in this course. I have ensured that the content I use is appropriately acknowledged and is copied in accordance with copyright laws and University guidelines. Copyrighted works, including those created by me, are made available for private study and research and must not be distributed in any format without permission. Do not upload copyrighted works to a learning management system (such as UM Learn), or any website, unless an exception to the *Copyright Act* applies or written permission has been confirmed. For more information, see the University's Copyright Office website at http://umanitoba.ca/copyright/ or contact um_copyright@umanitoba.ca.

Course Technology

All technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Disability Services.
Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time.
If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it.

Textbook, Readings, Materials

No textbook is required for this course. Suggested readings include:

1. Plant Pathology: concepts and laboratory exercises. R.N. Trigiano, M.T. Windham and A.S. Windham, CRC Press 2003
2. Plant Pathology, 5th Edition. G. Agrios. Academic Press, San Diego, CA. 2005.
3. Methods for evaluating plant fungicides, nematicides and bactericides. The American Phytopathological Society (1978)
4. Seed Treatment by K.A. Jeffs, British Crop Protection Council, 1986
5. Soilborne plant pathogens by G.W. Bruehl 1986, MacMillan Publishing Company (New York)
6. Laboratory guide for identification of plant pathogenic bacteria. N.W. Shaad. APS Press, St. Paul, MN, 1980

Expectations: I Expect You To

Students will attend lectures and laboratory sessions presented by the instructors. Throughout the term, students will be required to attend the lectures and laboratory sessions and provide project reports as directed. They will also have to prepare and present papers as specified by the instructor or chosen by the student.

I will treat you with respect and would appreciate the same courtesy in return as well as towards your classmates. See Respectful Work and Learning Environment Policy.

Class communication:

The University requires all students to activate an official University email account. For full details of the Electronic Communication with Students please visit: https://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html

Please note that all communication between me and you as a student must comply with the electronic communication with student policy

http://umanitoba.ca/admin/governance/governing_documents/community/electronic_communication_with_students_policy.html.
You are required to obtain and use your U of M email account for all communication between yourself and the university.

Academic Integrity:
Each student in this course is expected to abide by the University of Manitoba Academic Integrity principles(https://umanitoba.ca/student-supports/academic-supports/academic-integrity#academic-misconduct-and-how-to-avoid-it). Always remember to reference the work of others that you have used. Also be advised that you are required to complete your assignments independently unless otherwise specified. If you are encouraged to work in a team, ensure that your project complies with the academic integrity regulations. You must do your own work during exams. Inappropriate collaborative behavior and violation of other Academic Integrity principles will lead to the serious disciplinary action. Visit the Academic Calendar (https://umanitoba.ca/registrar/academic-calendar), Student Advocacy, and Academic Integrity web pages for more information and support.

Refer to specific course requirements for academic integrity for individual and group work such as:

I. Group projects are subject to the rules of academic dishonesty;
II. Group members must ensure that a group project adheres to the principles of academic integrity;
III. Students should also be made aware of any specific instructions concerning study groups and individual assignments;
IV. The limits of collaboration on assignments should be defined as explicitly as possible; and
V. All work should be completed independently unless otherwise specified.

Recording Class Lectures:
Dr. Mohamed Elshetehy holds copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission from Dr. Mohamed Elshetehy. Course materials (both paper and digital) are for the participant's private study and research only.

Student Accessibility Services
The University of Manitoba is committed to providing an accessible academic community. Students Accessibility Services (SAS) offers academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.
Student Accessibility Services
520 University Centre
Phone: (204) 474-7423

Email: Student_accessibility@umanitoba.ca

Expectations: You Can Expect Me To

In this course, the instructor and invited speakers will give lectures on specific topics. However, most of the course is run in a research laboratory setting. The course is made of several topics. Each topic will be explained by an instructor, and the corresponding laboratory component done by the students, with the help and advice of an instructor. Where physical presence is not necessary, information, including videos, will be shared with the students. Under normal circumstances, each student will have an opportunity to run experiments related to each of the covered topics using materials and equipment in a plant pathology research laboratory, such as PCR thermocyclers, HPLC, and gel documentation systems.

Class Schedule

Disclaimer: This schedule is subject to change at the discretion of the instructor and/or based on the learning needs of the students but such changes are subject to Section 2.8 of the – ROASS-Procedure.

The following topics will be covered through lectures, lab case studies, and discussions on:

- Basic concepts in plant pathology
- Pathogen isolation, culturing and storage
- Soil-borne pathogens
- Foliar pathogens
- Obligate parasites
- Seed-borne pathogens
- Molecular approaches in plant pathology
- Disease quantification
- Fungicide resistance

Missed Exams

Missed exams, if any, will be given a nil mark unless a valid justification is presented.

Important Dates (e.g., voluntary withdrawal date)

For voluntary withdrawal deadline, see the calendar. As required by the University, evaluative feedback will be provided by the voluntary withdrawal deadline.

Use of Third Party Detection and Submission Tools

Electronic detection tools may be used to screen assignments in cases of suspected plagiarism.

Laboratory Expectations

- Students are expected to attend all laboratory sessions, either in person or online, as requested by the instructors.

- The Teaching Assistant will treat you with respect and will appreciate the same courtesy in return.

Lab Schedule

Laboratory case studies may include:

- Aseptic techniques, media preparation, culturing of bacteria and fungi
- Soil-borne pathogens: Isolation, inoculum preparation, inoculation and disease evaluation
- Foliar pathogens: Isolation, identification, inoculum preparation, inoculation and disease assessment
- Infection process: observation of infection structures
- Detection of pathogens using PCR
- Disease assessment: training in visual and computer-assisted plant disease quantification (image analysis)
- pathogen's dose-response to fungicides
- Chromatography and/or molecular analysis of plant responses to diseases

Course Evaluation Methods

The students' learning will be assessed using a variety of methods, including exams, quizzes, a term paper, lab tests and assignments, and participation in class discussions.

Date:	**Assessment Tool**	**Value of Final Grade**
TBA	Project Report	20%
TBA	Project Presentation	20%
TBA	Paper Presentation	20%
TBA	Mid-term	10%
TBA	Final Exam	30%
	Total	100%

Grading

Letter Grade	Percentage out of 100	Grade Point Range	Final Grade Point
A+	90-100	4.25-4.5	4.5
A	80-89	3.75-4.24	4.0
B+	75-79	3.25-3.74	3.5
B	70-74	2.75-3.24	3.0
C+	65-69	2.25-2.74	2.5
C	60-64	2.0-2.24	2.0
D	50-59	Less than 2.0	1.0
F	Less than 50		0

Referencing Style

Please use one of the following referencing styles: Harvard, APA, or Vancouver.

Assignment Descriptions

The students will have two assignments, which will be described in detail in the lab.

Assignment Grading Times

Note that the grading of the project reports will not be done before the voluntary withdrawal date.

Assignment Extension and Late Submission Policy

Late Assignments
Assignments that are submitted after the stated deadline will be deducted 5% a day of the grade up to the end of the first week and 25% thereafter for each week the assignment is late.

Missed Assignments
Missed assignments will be given a nil mark unless a valid justification is presented. Assignments, reports, or exams which are illegible or poorly written may be subject to refusal or deduction of the final grade.

UNIVERSITY SUPPORT OFFICES & POLICIES

Instructors shall provide to every student the information on university support offices and policies in Schedule "A" within the first week of classes, either through a paper copy and/or via the university's student information system (i.e., Aurora, UM Learn, or such other university information system as may be approved by the university from time to time).

Schedule "A"

Section (a)

Writing and Learning Support

The Academic Learning Centre (ALC) offers services that may be helpful to you throughout your academic program. Through the ALC, you can meet with a learning specialist to discuss concerns such as time management, learning strategies, and test-taking strategies. The ALC also offers peer supported study groups called Supplemental Instruction (SI) for certain courses that students have typically found difficult. In these study groups, students have opportunities to ask questions, compare notes, discuss content, solve practice problems, and develop new study strategies in a group-learning format.

You can also meet one-to-one with a writing tutor who can give you feedback at any stage of the writing process, whether you are just beginning to work on a written assignment or already have a draft. If you are interested in meeting with a writing tutor, reserve your appointment two to three days in advance of the time you would like to meet. Also, plan to meet with a writing tutor a few days before your paper is due so that you have time to work with the tutor's feedback.

These Academic Learning Centre services are free for U of M students. For more information, please visit the Academic Learning Centre website at: http://umanitoba.ca/student/academiclearning/

You can also contact the Academic Learning Centre by calling 204-480-1481 or by visiting 201 Tier Building.

University of Manitoba Libraries (UML)

As the primary contact for all research needs, your liaison librarian can play a vital role when completing academic papers and assignments. Liaisons can answer questions about managing citations, or locating appropriate resources, and will address any other concerns you may have, regarding the research process. Liaisons can be contacted by email or phone and are also available to meet with you in-person. A complete list of liaison librarians can be found by subject: http://bit.ly/WcEbA1. In addition, general library assistance is provided in person at 19 University Libraries, located on both the Fort Garry and Bannatyne campuses, as well as in many Winnipeg hospitals. For a listing of all libraries, please consult the following: https://www.umanitoba.ca/libraries/locations-and-facilities. When working remotely, students can also receive help online, via the Ask-a-Librarian chat found on the Libraries' homepage: www.umanitoba.ca/libraries.

Section (b)
For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre
Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. *Student Counselling Centre:* http://umanitoba.ca/student/counselling/index.html
474 University Centre or S207 Medical Services
(204) 474-8592

Student Support Case Management
Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team.
Student Support Intake Assistant http://umanitoba.ca/student/case-manager/index.html
520 University Centre
(204) 474-7423

University Health Service
Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation.
University Health Service http://umanitoba.ca/student/health/
104 University Centre, Fort Garry Campus
(204) 474-8411 (Business hours or after hours/urgent calls)

Health and Wellness
Contact our Health and Wellness Educator if you are interested in peer support from *Healthy U* or information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault.
Health and Wellness Educator https://umanitoba.ca/student/health-wellness/welcome-about.html
britt.harvey@umanitoba.ca

Live Well @ UofM
For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site:
http://umanitoba.ca/student/livewell/index.html

Section (c) sample: re: A notice with respect to copyright:

All students are required to respect copyright as per Canada's *Copyright Act*. Staff and students play a key role in the University's copyright compliance as we balance user rights for educational purposes with the rights of content creators from around the world. The Copyright Office provides

copyright resources and support for all members of the University of Manitoba community. Visit http://umanitoba.ca/copyright for more information.

Section (d) sample: re: A statement directing the student to University and Unit policies, procedures, and supplemental information available on-line:

Your rights and responsibilities

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

The Academic Calendar http://umanitoba.ca/student/records/academiccalendar.html is one important source of information. View the sections *University Policies and Procedures* and *General Academic Regulations*.

While all of the information contained in these two sections is important, the following information is highlighted.

- If you have questions about your grades, talk to your instructor. There is a process for term work and final **grade appeals**. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including appeal deadline dates and the appeal form http://umanitoba.ca/registrar/

- You are expected to view the General Academic Regulation section within the Academic Calendar and specifically read the **Academic Integrity** regulation. Consult the course syllabus or ask your instructor for additional information about demonstrating academic integrity in your academic work. Visit the Academic Integrity Site for tools and support http://umanitoba.ca/academicintegrity/ View the **Student Academic Misconduct** procedure for more information.

- The University is committed to a respectful work and learning environment. You have the right to be treated with respect and you are expected conduct yourself in an appropriate respectful manner. Policies governing behavior include the:

  Respectful Work and Learning Environment

  http://umanitoba.ca/admin/governance/governing_documents/community/230.html

  Student Discipline
  http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html and,

  Violent or Threatening Behaviour
  http://umanitoba.ca/admin/governance/governing_documents/community/669.html

- If you experience **Sexual Assault** or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The **Sexual Assault** policy may be found at: http://umanitoba.ca/admin/governance/governing_documents/community/230.html More information and resources can be found by reviewing the Sexual Assault site http://umanitoba.ca/student/sexual-assault/

- For information about rights and responsibilities regarding **Intellectual Property** view the policy https://umanitoba.ca/governance/sites/governance/files/2021-06/Intellectual Property Policy - 2013_10_01 RF.pdf

For information on regulations that are specific to your academic program, read the section in the Academic Calendar and on the respective faculty/college/school web site http://umanitoba.ca/faculties/

Contact an **Academic Advisor** within our faculty/college or school for questions about your academic program and regulations http://umanitoba.ca/academic-advisors/

Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns.
http://umanitoba.ca/student/advocacy/
520 University Centre
204 474 7423
student_advocacy@umanitoba.ca