Biol 345 COURSE SYLLABUS

COURSE TITLE: INTRODUCTORY PLANT PATHOLOGY
COURSE CODE: Biol 345
COURSE CREDITS: 3.0
CLASS SECTION: 01
CLASS LOCATION: Archaeology Building RM 132
LECTURE TIME: M,W,F 8:30 am - 9:20 am
WEBSITE: via Canvas

TERM: 02
DELIVERY: Lecture & Practicum
START DATE: Jan 10th, 2022
LAB LOCATION: Thorvaldson Building RM G11
LAB TIME: Wednesday 1:30pm - 5:00pm

Treaty Acknowledgement

As we gather on the University campus during this course, we acknowledge we are on Treaty Six Territory and the Homeland of the Métis. We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another.

Important Guidelines for this term

During this term, it is important that we undertake all in-person elements of this class safely. In order to do so, the University has developed a set of expectations and safety protocols that all students must adhere to if they are to engage in in-person activity.

Throughout the term:

- **Protect the pack:** Right now, the impact of student choices and activities when not on campus cannot be separated from time spent on campus. In order to "protect the pack", the University is asking all students who are doing in-person work to be mindful and do whatever possible to lower the risk that you will contract COVID-19 and bring it onto campus.
- **Know what is required and expected of you:** One of the critical lessons learned in dealing with COVID-19 is knowing that situations can change and we must be flexible and ready to adjust our safety protocols. Instead of listing all of the relevant information in each course outline, the University has created a webpage where all up-to-date information around returning to campus is listed. **You are responsible** for **regularly** checking the health and safety guidelines at https://covid19.usask.ca/about/safety.php#Expectations and knowing what is expected of you throughout this winter term.
- **Follow all guidance:** Students are expected to follow all guidance provided by the University's Pandemic Recovery/Response Team (PRT), College/Department, professors, lab instructors, TAs, and any other staff member involved in the in-person academic program activities (e.g., Protective Services, Safety Resources).
- **Key channels of communication**: If there is a need for the class to pause meeting in-person for a period of time, you will be notified by an announcement using Canvas, the University's learning platform utilized in BIOL 120. If this event occurs, you will be provided with detailed information on what you will need to do in place of the in-person class sessions (e.g., read content posted in Canvas; complete learning activities in Canvas).

Course Description

This course will deal primarily with broad concepts and principles of plant pathology, pathogen biology and diversity, contemporary topics related to plant-pathogen interactions, and plant disease management.

Prerequisites

Students are expected to be familiar with the principles and terminology of biology and with the morphology, anatomy, and physiology of plants. Prerequisite includes BIOL121.3, BIOL 222.3.

Learning Outcomes

Students who earn Introductory Plant Pathology will have a basic understanding of plant diseases, their causes, effects, and controls.

By the end of this course, students will be able to:

- understand the importance of plant diseases.
- define and understand the concepts of plant disease.
- carry out plant disease diagnosis.
- understand the mechanisms underlying plant disease resistance and pathogen virulence.
- understand the interactions between plant diseases and the environment.
- understand the interactions between plant pathogens and environmental antagonists.
- apply integrative approaches in disease management.
- solve problems relating to the fundamental principles of plant pathology.

LEARNING CONTEXT

We will plan to offer both lectures and labs remotely for the first two weeks of the semester, and prepare for in-person activities beginning the week of the 24th. While the lectures are delivered remotely, the course material will be prepared and posted to the course management system Canvas in advance of each scheduled lecture and lab. Live lectures will be given on **Monday, Wednesday, and Friday (8:30-9:20 am) via Zoom exercise**. Some lab activities will also be delivered synchronously (see the Lab & Assignment Schedule) via Zoom before the transition to in-person offering.

Evaluation

Lecture Midterm Exam (20 %)
Lecture Final Exam (40 %)
Lab Reports/Presentation/Exam (40 %)

Midterm and final examinations must be written on the date scheduled.

Lecture midterm exam:

This course will have a midterm examination delivered and completed online through Canvas. The midterm is taken individually via Canvas and is designed to assess students' knowledge and understanding of the core concepts of the lecture. The midterm exam is worth 20% of your total grades. The exam will cover the material from the first half part of the course and include 50 multiple-choice questions covering the lecture content. The total time of the exam is 60 minutes. **The exam will be available via Canvas for the duration of the exam time, which will be held within the class time on Friday, February 28th (Monday) at 8:30 am**, and students will write the exam at home via Canvas.

Lecture final exam:

This is a cumulative examination taken individually designed to assess student's knowledge and understanding of the core concepts covered throughout the entire course. The final exam comprises of three parts: multiple-choice questions, short answer questions, and long essay questions. The total time of the exam is 180 minutes. The final exam is worth 40% of your final grade, and the completion of the final lecture exam is required in order to pass this course.

Final examinations may be scheduled at any time during the examination period (April 9-30, 2022); students should therefore avoid making prior travel, employment, or other commitments for this period. If a student is unable to write an exam through no fault of his or her own for medical or other valid reasons, documentation must be provided and an opportunity to write the missed exam may be given. Students are encouraged to review all examination policies and procedures: https://cgps.usask.ca/policy-and-procedure/Academics/examinations.php.

Lab portion:

The lab portion of Biology 345 is worth 40% of your final grade.

The 40% mark portion of the lab is divided into two categories, the lab final exam, and lab assignments. These will account for 12% and 28% of your final grade, respectively.

The lab final exam (12% of the final grade) will be out of 100 marks.

The assignments (28% of the final grade) will be out of 100 marks, here is the breakdown:

Sclerotinia Report: 20 marks.
Sclerotinia Life Cycle Drawing: 10 marks.
Group Poster: 20 marks.
Molecular Diagnostic Report: 25 marks.
Ergot Life Cycle Drawing: 10 marks.
Participation: 15 marks. (10 marks for weekly Zoom attendance; 3 marks for group participation on poster – awarded by group members; 2 marks for active participation in the Zoom exercises - asking questions and promoting discussion).

Course Overview

This course consists of 50 minutes of lecture, three mornings (M,W,F) per week, beginning on January 10th, 2022. There will be a weekly, 3.5-hour lab session, beginning during the week of January 17-21, 2022.

Class Schedule

Lecture Modules
Chapter 1 Introduction
Chapter 2 Agents causing plant diseases
Chapter 3 Parasitism and disease development
Chapter 4 Pathogenesis
Lecture Midterm Exam (Feb. 28 2022)
Chapter 5 Host defence responses
Chapter 6 Genetics of plant disease
Chapter 7 Environmental effects and disease epidemics
Chapter 8 Control of plant diseases
Lecture Final Exam (TBA)

Lab & Assignment Schedule		
Date	**Topics**	**Assignment(s)**
Jan. 19	**Lab 1**: **What is Disease? Lab Techniques 1 & Pathogen Identification 1** Introduction to common plant diseases seen in and around Saskatchewan and those we study in the lab. Safety, plate pouring, cell culture, pathogen isolation techniques, aspects of fungal morphology used in pathogen identification. ****Online****	Worksheet (ungraded) Forensic Plant Pathology: The Co-op fuel theft.
Jan. 26	**Lab 2**: **Root/Seedling Diseases, Lab Techniques 2 & Experiment 1** Study seedling blights and root diseases, isolation plates and isolate transfers, creating a spore suspension, inoculation procedures, disease incidence scoring, and *Sclerotinia sclerotiorum* disease incidence on three hosts. Isolate microbes from diseased plant material. **Try to have some diseased fruit or vegetable and a clear plastic container (or ziplock bag) on hand for this lab (bonus if you can throw the container away after use)**	*Sclerotinia* inoculation report (Due Feb. 9th 1:30 pm) Bring a diseased plant specimen with you!
Feb. 2	**Lab 3**: **Stem Diseases**, **Pathogenesis & Experiment 2** Study stem diseases, study development of biotrophic, hemibiotrophic, and necrotrophic plant pathogens, inoculation of three cereal hosts with two species of host-specific biotrophic powdery mildew.	*Sclerotinia* life cycle drawing (Due Feb. 16th 1:30 pm) Group Poster (Poster Due Mar 23rd 1:30 pm)
Feb. 9	**Lab 4**: **Leaf Diseases 1, Koch's Postulates, Experiment 3** Examination of a sub-set of leaf diseases, Koch's postulates: review of theory, investigation of Koch's postulates using *Didymella pinodes* infection of *Pisum sativum.*	
Feb. 16	**Lab 5**: **Leaf Diseases 2, Lab Techniques 3, Experiment 4** Study remaining leaf diseases, molecular techniques including DNA extraction and PCR sample amplification.	Molecular Diagnostic Assignment (Due Mar. 30th 1:30 pm)
Feb. 23	**Midterm Break: Feb. 21st – 25th**	Poster topic approval by e-mail to: James.Bush@usask.ca (Due Feb 23rd, 5:00 pm)
Mar. 2	**Lab 6: Head Diseases & Pathogen Identification 2** Study cereal crop head diseases, their socio-economic impacts, using genetic data to identify pathogen species.	Ergot life cycle drawing and figure legend (Due Mar. 16th 1:30 pm)
Mar. 9	**Lab 7**: **Vegetable Diseases & Experiment 5** Study vegetable diseases, study *C. lentis* (a)sexual reproduction experiment: spore suspension preparation, lentil stem inoculation, examine results (fruiting structures).	
Mar. 16	**Lab 8**: **Fruit & Tree Diseases** Examination of fruit & tree diseases	

Mar. 23	**Lab 9**: **Review and Poster Presentations** Review lab, student poster presentations	
Mar. 30	**Lab Final Exam**	

Instructor Information

Lecturer:

Dr. Yangdou Wei (CSRB, RM 220.4)
Tel: 306-966-4447
E-mail: yangdou.wei@usask.ca

Lab Coordinator:

Mr. James Bush (RM G11 Thorvaldson Building)
Tel: 306-966-4423
E-mail: james.bush@usask.ca

Office Hours:

After each lecture or by appointment. In addition, a discussion platform, which can be found on the Homepage of the lecture Canvas course, will be available to ask questions of your instructor. To arrange an individual meeting, consult the MEETS tool on Canvas for availability. Please note that these meetings will be conducted using Zoom or Webex.

Required Resources

Readings/Textbooks

Diseases of Field Crops in Canada (Bailey *et al.*, 2003)
Plant Pathology, 5th edition (Agrios, 2005)
Detailed lecture presentations and notes will be posted on Canvas

STUDENTS WRITING EXAMINATIONS WITH ACCESS AND EQUITY SERVICES (AES)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Access and Equity Services (AES) if they have not already done so. Students who suspect they may have disabilities should contact AES for advice and referrals at any time. Those students who are registered with AES with mental health disabilities and who anticipate that they may have responses to certain course materials or topics, should discuss course content with their instructors prior to course add/drop dates. In order to access AES programs and supports, students must follow AES policy and procedures. For more information or advice, visit https://students.usask.ca/health/centres/access-equity-services.php, or contact AES at 306-966-7273 or aes@usask.ca.

Students registered with AES may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through AES by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by AES.

For information on AES services and Covid-19 protocols, please visit https://words.usask.ca/dss/2020/03/25/final-exam-accommodations-covid-19-protocols/

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Course materials are provided to you based on your registration in a class, and anything created by your professors and instructors is their intellectual property, unless materials are designated as open education resources. This includes exams, PowerPoint/PDF slides and any other course notes. Additionally, other copyright-protected materials created by textbook publishers and authors may be provided to you based on license terms and educational exceptions in the Canadian Copyright Act (see http://laws-lois.justice.gc.ca/eng/acts/C-42/index.html).

Before you copy or distribute others' copyright-protected materials, please ensure that your use of the materials is covered under the University's Fair Dealing Copyright Guidelines available at https://library.usask.ca/copyright/general-information/fair-dealing-guidelines.php. For example, posting others' copyright-protected materials on the open web is not covered under the University's Fair Dealing Copyright Guidelines, and is therefore prohibited. Doing so would require permission from the copyright holder.

For more information about copyright, please visit https://library.usask.ca/copyright/index.php, where there is information for students available at https://library.usask.ca/copyright/students/rights.php, or contact the University's Copyright Coordinator at copyright.coordinator@usask.ca or 306-966-8817.

RECORDING OF THE COURSE

Lectures in BIOL 345.3 are intended to be delivered remotely or in-person throughout this term. Should changes become necessary, remember that any course recordings belong to your instructor and the University and *are protected by copyright*. Accordingly, you must not copy or share recordings without the explicit permission of the instructor.

For questions about recording and use of any recorded sessions in which you have participated, including any concerns related to your privacy, please contact your instructor. More information on class recordings can be found in the Academic Courses Policy https://policies.usask.ca/policies/academic-affairs/academic-courses.php#5ClassRecordings.

ACADEMIC INTEGRITY (from the Office of the University Secretary)

Although the face of teaching and learning has experienced change due to Covid-19, the rules and principles governing academic integrity remain the same. If you ever have questions about what may or may not be permitted, ask your instructor.

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts, and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (https://secretariat.usask.ca/student-conduct-appeals/academic-misconduct.php#IXXIIAPPEALS).

For more information on what academic integrity means for students, see the Academic Integrity section of the University Library Website at: https://library.usask.ca/academic-integrity#AboutAcademicIntegrity.

You are encouraged to complete the Academic Integrity Tutorial to understand the fundamental values of academic integrity and how to be a responsible scholar and member of the USask community - https://library.usask.ca/academic-integrity.php#AcademicIntegrityTutorial

Student Supports

Academic Help for Students

The University Library offers a range of learning and academic support to assist USask undergrad and graduate students. For information on specific services, please see the Learning page on the Library web site https://library.usask.ca/support/learning.php
Class and study tips https://students.usask.ca/study/get-prepared.php
Study skills materials https://libguides.usask.ca/studyskills
A guide on netiquette, principles to guide respectful online learning interactions https://teaching.usask.ca/remote-teaching/netiquette.php

Teaching, Learning and Student Experience

Teaching, Learning and Student Experience (TLSE) provides developmental and support services and programs to students and the U niversity community. For more information, see the students' web site http://students.usask.ca.

Financial Support
Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact Student Central (https://students.usask.ca/student-central.php).

Aboriginal Students' Centre
The Aboriginal Students' Centre (ASC) is dedicated to supporting Aboriginal student academic and personal success. The centre offers personal, social, cultural and some academic supports to Métis, First Nations, and Inuit students. The centre is also dedicated to intercultural education, bringing Aboriginal and non-Aboriginal students together to learn from, with and about one another in a respectful, inclusive and safe environment. Students are encouraged to visit the ASC's Facebook page (https://www.facebook.com/aboriginalstudentscentre/) to learn more.

International Student and Study Abroad Centre
The International Student and Study Abroad Centre (ISSAC) supports student success and facilitates international education experiences at USask and abroad. ISSAC is here to assist all international undergraduate, graduate, exchange and English as a Second Language students in their transition to the University of Saskatchewan and to life in Canada. ISSAC offers advising and support on matters that affect international students and their families and on matters related to studying abroad as University of Saskatchewan students. Please visit students.usask.ca or updates.usask.ca for more information.

Recommended Technology for Remote Learning, if Necessary
All aspects of this course during Term 2, ranging from lectures and labs to evaluative components such as exams and quizzes, are intended to be delivered and completed, in-person. In the event that delivery modes must change while this course is in progress, students are reminded of the importance of having the appropriate technology for remote learning. The list of recommendations can be found at https://students.usask.ca/study/tech-requirements.php.

Absence at Examinations

Students absent from the Midterm or Laboratory Examination must contact the Course Coordinator or Lab Coordinator, respectively, *within three (3) working days of the date of the scheduled exam*, in order to explain their absence and to initiate discussion concerning a possible deferred examination. Such students must also provide the Coordinator with the necessary documentation explaining the student's absence at the examination. Otherwise, a grade of zero will be assigned for the missed examination.

Students absent from the Final Examination in April 2021 must contact the College in which they are enrolled, to apply for permission to write a Deferred Final Exam arranged to be written in mid-June 2021.

Integrity Defined (from the Office of the University Secretary)

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For more information on what academic integrity means for students, see the Student Conduct & Appeals section of the University Secretary Website at:
http://www.usask.ca/university_secretary/pdf/dishonesty_info_sheet.pdf