1 Course Details

1.1 Calendar Description
This course examines molecular and cellular aspects of the interaction between plants and microorganisms such as mycorrhizae, pathogenic fungi, Agrobacterium, pathogenic bacteria, and plant viruses. Topics include microbial virulence, signaling, gene expression, and disease resistance in plants.

Pre-Requisites: 1 of BOT*2100, MICR*2030, (BIOL*1070, BIOL*1090, MBG*2040)

1.2 Course Description
This course examines molecular and cellular aspects of the interaction between plants and microorganisms, such as mycorrhizae, pathogenic fungi, Agrobacterium, pathogenic bacteria, and plant viruses. Topics include microbial virulence, signaling, gene expression, and disease resistance in plants.

1.3 Timetable
TTh 4:00-5:20, MacNaughton 113

1.4 Final Exam
Date and Time: Sat, Dec. 7, 11:30-1:30
Weight: 35%

2 Instructional Support

2.1 Instructional Support Team
3 Learning Resources

3.1 Required Resources

Required Texts (Textbook)
The Powerpoint lecture presentations of images and text are only available during lectures and are not available electronically or any other format. The research papers listed below are available electronically at the library (http://sfx.scholarsportal.info/guelph/az) and/or by searching the web (http://www.google.ca/) using the title of the article. These papers are the basis of the oral quizzes and in-class discussions:


**Topic of bacterial pathogenicity:** Wei Guo, Lu-Lu Cai, Hua-Song Zou, Wen-Xiu Ma, Xi-Ling Liu, Li-Fang Zou, Yu-Rong Li, Xiao-Bin Chen and Gong-You Chen. 2012. Ketoglutarate transport protein KgtP is secreted through the type III secretion system and contributes to virulence in *Xanthomonas oryzae pv. oryzae*. Applied and Environmental Microbiology 78: 5672-5681.


**Recommended Texts (Textbook)**


Walters, D. 2017. Fortress plant : how to survive when everything wants to eat you. 1st Ed.

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**4 Learning Outcomes**

**4.1 Course Learning Outcomes**

By the end of this course, you should be able to:

2. Apply the concepts of plant-microbe interactions to the study of particular microbial virulence and plant defense response mechanisms.
3. Orally present results and conclusions in class for selected research papers in molecular plant-microbe interactions.
4. Evaluate and analyze results and conclusions in class for selected research papers in molecular plant-microbe interactions.
5. Demonstrate the ability to observe similarities and differences in the techniques and approaches used to generate new knowledge in molecular plant-microbe interactions.

5 Teaching and Learning Activities

5.1 Lecture

Topics: This course will use F2F and synchronous Webex for lectures and oral quizzes. Webex is a web conferencing tool that allows participants to connect with others anywhere in the world through the use of video and/or audio as well as content sharing. For support using Webex Support visit the CCS website: https://www.uoguelph.ca/ccs/webex

Synchronous lectures and oral quizzes by Webex login will be accessed by recurring invitations sent by email at the time of F2F lectures.

Lecture Content

Introduction
Plant disease defenses
Host-pathogen recognition and PAMPs
Host-pathogen recognition and Effectors
Induced disease resistance
Fungal pathogenicity
Bacterial pathogenicity
Endophytes
Viral pathogenicity
Colloquium of graduate student presentations of research articles

Thu, Sep 5
Topics: First Class

Mon, Oct 12 - Tue, Oct 13
Topics: Fall Study Break

Near end of semester
Topics: Graduate Student Colloquium Presentations

Tue, Dec 1
Topics: Last Regularly Scheduled Class

Thu, Dec 3
Topics: Reschedule of Fall Study Break (Tuesday Schedule)
6 Assessments

6.1 Marking Schemes & Distributions

<table>
<thead>
<tr>
<th>Name</th>
<th>Scheme A (%)</th>
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</thead>
<tbody>
<tr>
<td>Midterm</td>
<td>35</td>
</tr>
<tr>
<td>Oral Quizzes</td>
<td>30</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

6.2 Assessment Details

Midterm (35%)
- **Date:** Thu, Oct 22
- **Learning Outcome:** 1, 2

Oral Quizzes (30%)
- **Learning Outcome:** 3, 4, 5

Final exam (35%)
- **Date:** Sat, Dec 7
- **Learning Outcome:** 1, 2, 3, 4, 5

6.3 Additional Notes

Mid-term exam is taken during class periods in person or within the view of camera using Respondus.

Exam essay questions to be completed using full sentences and paragraphs.

Examination essay questions include information from class discussions of research papers, graduate student colloquium presentations and lecture material.

Oral quizzes are part of in-class discussions of each research paper linked to a specific lecture topic (topics listed above in the lecture content). They will be held F2F and synchronous like the lectures. The date of the oral quiz of each research paper (papers listed below in the required text) will be announced in class following completion of the lecture material for the corresponding topic. It is important to thoroughly read, analyze and prepare to answer questions for the oral quiz of each research paper.

7 Course Statements
7.1 Grading Policies

Exams are graded for knowledge of specific lecture and class discussion material.

Oral quiz marks are based on responses to specific questions for each research paper (papers listed above in the required text section). The instructor will choose questions for students to answer orally in class.

Grading of responses to oral quiz questions are based on the ability to show depth of understanding and the ability to evaluate and analyze the background, techniques, results and conclusions of each research paper.

If the oral quiz of a research paper is missed, then the student must contact the instructor within 7 days to arrange a make-up time for discussion of that paper.

7.2 Group Work

Group work is allowed to prepare for class discussions only.

8 University Statements

8.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

8.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Graduate Calendar - Grounds for Academic Consideration
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions
https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml

8.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and
alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses  
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes  
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-regregchg.shtml

Associate Diploma Calendar - Dropping Courses  
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

8.4 Copies of Out-of-class Assignments  
Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

8.5 Accessibility  
The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to book their exams at least 7 days in advance and not later than the 40th Class Day.

For Guelph students, information can be found on the SAS website  
https://www.uoguelph.ca/sas

For Ridgetown students, information can be found on the Ridgetown SAS website  
https://www.ridgetownc.com/services/accessibilityservices.cfm

8.6 Academic Integrity  
The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that
instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

Graduate Calendar - Academic Misconduct
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml

8.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

8.8 Resources

The Academic Calendars are the source of information about the University of Guelph’s procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
https://www.uoguelph.ca/academics/calendars

8.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings and academic schedules. Any such changes will be announced via CourseLink and/or class email. All University-wide decisions will be posted on the COVID-19 website (https://news.uoguelph.ca/2019-novel-coronavirus-information/) and circulated by email.

8.10 Illness

The University will not require verification of illness (doctor’s notes) for the fall 2020 or winter 2021 semesters.