1 Course Details

1.1 Calendar Description

The impact of beneficial and pathogenic microorganisms on forest health, and the biology and management of tree diseases in natural and urban ecosystems is covered in this course. Emphasis will be placed on ecological processes, host-pathogen interactions, mutualistic associations, wood decay, and human impacts on tree health.

Pre-Requisites: 1 of BOT*2100, ENVB*2030, ENVS*2040, ENVS*2330
Equates: ENVB*3250

1.2 Course Description

ENVS*3250 Forest Health and Disease F(2-2) [0.50]. The impact of beneficial and pathogenic microorganisms on forest health, and the biology and management of tree diseases in natural and urban ecosystems is covered in this course. Emphasis will be placed on ecological processes, host-pathogen interactions, mutualistic associations, wood decay, and human impacts on tree health.

1.3 Timetable

Timetable is subject to change. Please see WebAdvisor for the latest information.

Lectures on Tuesday and Thursday from 12:30-1:20

Labs on Tuesdays at 10-11:50 (in the place of outside walks, virtual walks through different forests will be presented by WebEx with comments on items observed. Links to virtual walk from youtube.com will be posted).

1.4 Final Exam

Exam time and location is subject to change. Please see WebAdvisor for the latest information.
2 Instructional Support

2.1 Instructional Support Team

Instructor: Tom Hsiang PhD  
Email: thsiang@uoguelph.ca  
Office: Bovey 3227  
Office Hours: by appointment (make by email: thsiang@uoguelph.ca)

2.2 Teaching Assistants

Teaching Assistant: Vivian Forte-Perri BSc  
Email: vfortepe@uoguelph.ca  
Office Hours: To be arranged

2.3 Additional Instructional Support Information

Lectures given synchronously via WebEx (not recorded)

Lecture notes and Lab notes posted on course website in CourseLink generally after Lecture and before Lab

Expect responses to email from the Instructor within one or two working days.

2.4 Netiquette (net etiquette)

- Personal Information (make sure your full name is on your emails)
- Use proper headings and subject lines (always use a subject line which includes course number)
- Provide enough detail in your messages. ...
- Be professional, clear and respectful. ...
- Read and formulate communications carefully. ...
- Be tolerant and cooperative.
- Titles and Salutations (use titles where appropriate: Dr., Prof., Mr., Ms. - "Hey You" is too informal)

___________________________________________________________________________________________________________________

3 Learning Resources

Lectures and Labs will be given via WebEx, and invitation will be sent to your UoG email address

Course Notes will be presented on Course Website in CourseLink
3.1 Recommended Resources

    When attempting to download this 170 Mb file, it will say that the site is unsafe or not configured properly. Just go ahead.

Diseases of Canada's Forests (Natural Resources Canada website) (Website)
    https://tidcf.nrcan.gc.ca/en/diseases/all

4 Learning Outcomes

This course examines the concept of forest health, especially the impact of tree diseases. The interactions of trees with micro-organisms such as fungi which cause diseases or decay wood, as well as beneficial interactions involving mycorrhizae and endophytes are discussed. While there is an emphasis on forest trees, urban and shade trees are also discussed. In addition to specifically addressing the University Learning Objectives of literacy, numeracy, depth and breadth of understanding, and love of learning, students will be expected to achieve the following learning objectives:

4.1 Course Learning Outcomes

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

1. describe and recognize the major biotic factors associated with tree health and diseases, especially of Ontario trees, some of which will be encountered during the six walks and during laboratory periods (both simulated for fall 2020)

2. identify the impact of forest fungi and tree diseases on forest health by describing the extent of damage associated with major tree diseases and the role of symbiotic organisms in promoting forest health

3. demonstrate the ability to find and critically evaluate recent primary research articles on a forest health issue, and to write a literature review integrating the information using appropriate scientific language

4. effectively communicate ideas and information by giving a short presentation on the Literature Review by highlighting and explaining interesting and significant research findings

5. demonstrate personal and professional integrity by respecting diverse points of view, in class and in the field of forest health by realizing and appreciating the utilitarian and ecological points of view for forest health management

5 Teaching and Learning Activities
5.1 Lecture

Topics:

- The natural role of diseases in forest renewal cycles & wood decay fungi
- Historical impacts of tree diseases
- Basic Plant Pathology (disease triangle, disease cycles)
- Organisms which cause Plant Diseases
- Parasitic plants: Dwarf Mistletoes
- Bacteria: Phytoplasmas and Wetwood
- Rusts (white pine blister rust & other rusts)
- Conifer foliar diseases: needle casts, Diplodia
- Hardwood foliar diseases: Anthracnoses, tar spot
- Vascular wilts & stains: Dutch elm disease, Oak Wilt
- Cankers: Butternut canker, Hypoxylon, blackknot
- Trunk rots, heart rots, butt rots
- Root rots: Armillaria root rot, Annosus root rot,
- Greenhouse & nursery diseases
- Abiotic diseases: physiological, air pollution, acid rain, soil conditions, forest decline
- Management of Forest Diseases: fungicides, cultural
- Guest lectures on Ontario Forest Health
- Endophytes, mutualistic fungi
- The role of fungi in Forest Health

5.2 Lab

Topics:

- Gordon Street West walk around outside (simulated)
- Arboretum walk around (simulated)
- QUIZ in lab, then groups of pathogens & diagnosing plant diseases
- QUIZ in lab, then Dairy Bush walk around (simulated)
- QUIZ in lab, then rust diseases, diplodia, tarspot
- MIDTERM in lab
- Preservation Park walk around (simulated)
- Arboretum Nature Reserve walk around (simulated)
- QUIZ in lab then cankers, wilts, wood rots
- QUIZ in lab, then Student Presentations and Student Presentations for last 2 weeks

6 Assessments

6.1 Marking Schemes & Distributions
### Course Assignments and Tests:

<table>
<thead>
<tr>
<th>Assignment or Test</th>
<th>Due Date</th>
<th>Contribution to Final Mark (%)</th>
<th>Learning Outcomes Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Quizzes</td>
<td>Weekly at start of lab</td>
<td>20%</td>
<td>1,2</td>
</tr>
<tr>
<td>Midterm</td>
<td>Week 7, in lab</td>
<td>25%</td>
<td>1,2</td>
</tr>
<tr>
<td>Term Paper</td>
<td>Oct 2, 5pm topic due</td>
<td>10%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Oct 30, 5pm paper due</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Presentation</td>
<td>Weeks 10, 11, 12 in lab</td>
<td>10%</td>
<td>4,5</td>
</tr>
<tr>
<td>Final Exam</td>
<td>To be announced</td>
<td>35%</td>
<td>1,2,5</td>
</tr>
</tbody>
</table>

**Lab Quizzes (20%)**  
Lab quizzes at the start of most labs (10 min) using CourseLink Quizzes. Student will only be able to go forward one question at a time. With a chance to go through the entire quiz a second time.

**Term Paper Topic Description (0%)**  
Due: End of Week 5, Friday, 5pm by email.  
Involves Review of Research Article (more details will be given in class and on course website)

- Select a primary research article from the prescribed list of journals dealing with Forest or Tree Disease

- Submit a topic summary paragraph with at least five recent journal reference articles by this due date

- Penalty of 5% per day of the term paper mark for late submissions

**Midterm Exam (25%)**  
Week 7, In Lab time slot, perhaps using Respondus Lockdown Browser (student needs webcam) and Respondus Monitor

**Term Paper (10%)**  
End of Week 9, Friday, 5pm by email  
Review of Research Article - 10% penalty on term paper mark per day late - This is a required assignment

**Student Presentations (10%)**  
Weeks 10, 11, 12, In Lab  
- presentation given to class based on term paper; sign-up schedule will be circulated for presentation slot selection
**Final Exam (35%)**  [cumulative, but based more on material since midterm], perhaps using Respondus Lockdown Browser (student needs webcam) and Respondus Monitor

**Additional Notes**

- There are no make-up quizzes or alternate times for midterm, but academic consideration may be given with acceptable documentation such as by shifting missed quiz or midterm weight to final exam

- The term paper topic description incurs a 5% per day penalty if not submitted by due date

- The term paper incurs a 10% per day penalty if not submitted by due date

- SAS Memory Aids need instructor approval by 5 working days before the exam

- As a courtesy to the instructor, if you are making use of SAS test writing services, please let the instructor know at least a week ahead of the test

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**7 University Statements**

**7.1 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.

**7.2 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

**7.3 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

7.4 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.

7.5 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

7.6 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

7.7 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.

7.8 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

7.9 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.

7.10 Illness

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