

**ENVS\*3250 Forest Health and Disease**

### Fall 2018

Section(s): C01

School of Environmental Sciences Credit Weight: 0.50

Version 1.00 - September 04, 2018

# Course Details

## 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-Requisite(s): Equate(s):

* 1. **Course Description**

1 of BOT\*2100, ENVB\*2030, ENVS\*2040, ENVS\*2330 ENVB\*3250

#### 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. **Timetable**

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

## Final Exam

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

# Instructional Support

## Instructor(s)

#### T Hsiang (BSc, MSc, PhD) Email:

**Telephone: Office:**

**Office Hours:**

[thsiang@uoguelph.ca](mailto:thsiang@uoguelph.ca)

+1-519-824-4120 x52753

BOVEY 3227

By appointment

## Teaching Assistant(s)

#### Teaching Assistant: Email:

**Office:**

**Office Hours:**

Matthew Rudland (BSc) [mrudland@uoguelph.ca](mailto:mrudland@uoguelph.ca) Bovey 2231

By appointment

# Learning Resources

## Required Resource(s)

#### Field Guide to Tree Diseases of Ontario. 1997. C. Davis & T. Meyer. (Textbook)

<http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/9531.pdf>

(Free PDF - 170Mb!)

#### Diseases of Canada's Forests (Readings)

<https://tidcf.nrcan.gc.ca/en/diseases/all>

(Free access to Natural Resources Canada website of tree diseases)

## Recommended Resource(s)

#### Field Guide to the Common Diseases and Insect Pests of Oregon & Washington Conifers (Other)

<https://archive.org/details/fieldguidetocomm0106gohe>

(Free PDF - 35 Mb)

# 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:

1. to 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 during the laboratory periods
2. to 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. to 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. to effectively communicate ideas and information by giving a short presentation on the Literature Review by highlighting and explaining interesting and significant research findings
5. to 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

# Teaching and Learning Activities

## Lecture Content

* + - The concept of Forest Health &Tree Health: a "healthy amount of disease" in the forest
    - 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

## Labs

* + - Gordon Street West walk around outside
    - Arboretum walk around
    - QUIZ in lab, then groups of pathogens & diagnosing plant diseases
    - QUIZ in lab, then Dairy Bush walk around
    - QUIZ in lab, then rust diseases, diplodia, tarspot
    - MIDTERM in lab
    - Preservation Park walk around
    - Arboretum Nature Reserve walk around
    - QUIZ in lab then cankers, wilts, wood rots
    - QUIZ in lab, then Student Presentations

## Seminars

None

# Assessments

## Marking Schemes & Distributions

|  |  |
| --- | --- |
| Name | Scheme A (%) |
| Lab Quizzes | 20 |
| Midterm Exam | 25 |
| Term Paper | 15 |
| Student Presentation | 10 |
| Final Exam | 30 |
| Total | 100 |

* 1. **Assessment Details**

#### Lab Quizzes (20%)

**Due:** Weeks 3, 4, 5, 6, 9 and 10, In Lab

* lab quizzes at the start of most labs based on the lab or labs from previous weeks

#### Term Paper Topic Description (15%)

**Due:** End of Week 5, Friday, 5pm by email

* Select a topic from the list or propose one for approval (list will be passed around in class to ensure no overlap)
* Each topic should involve a forest health & disease issue
* 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%) Due:** Week 6, In Lab

#### Term Paper (15%)

**Date:** End of Week 9, Friday, 5pm by email AND hardcopy to Bovey 3227 (10% penalty per day late)

#### Student Presentations (10%)

**Due:** Weeks 10, 11, 12, In Lab

* presentation based on term paper
* sign-up schedule will be circulated for presentation slot selection

#### Final Exam (30%) Due: TBD

* 1. 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

Final examination date and time: TBA Final exam weighting: 30%

# Course Statements

## Grading Policies:

Please advise the instructor of examination conflicts as soon as possible. If you have an illness or other problem, please see your program counselor and ask them to issue a notice to instructors. There are no make-up opportunities for missed lab quizzes or the midterm, but academic consideration (such as transfer of marks to the final exam) may be given with appropriate supporting documentation. Penalties on late submission of term paper assignments are stated above.

## Course Policy on Group Work:

Group work for marked assignments is not permitted

## Course Policy regarding use of electronic devices and recording of lectures:

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

# University Statements

## 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.

## 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 regulations and procedures for [Academic Consideration](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml) are detailed in the Undergraduate Calendar.

## Drop Date

Courses that are one semester long must be dropped by the end of the fortieth class day; two- semester courses must be dropped by the last day of the add period in the second semester. The regulations and procedures for [Dropping Courses](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml) are available in the Undergraduate Calendar.

## 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.

## 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.

More information: [www.uoguelph.ca/sas](http://www.uoguelph.ca/sas)

## Academic Misconduct

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 discourages misconduct. 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.

The [Academic Misconduct Policy](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml) is detailed in the Undergraduate Calendar.

## Recording of Materials

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

## Resources

The [Academic Calendars](https://www.uoguelph.ca/registrar/calendars/) are the source of information about the University of Guelph’s procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.