



# **ENVS\*3310 Soil Biodiversity and Ecosystem**

## **Function**

Winter 2021

Section(s): C01

School of Environmental Sciences

Credit Weight: 0.50

Version 1.00 – Jan 11, 2021

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## **1 Course Details**

### **1.1 Calendar Description**

Soils are the site of complex interactions between minerals, water, air, organic matter and living organisms. This course will focus on the organisms that live in the soil and their activities in soil ecosystems, soil as a habitat for organisms, the key role of microorganisms in nutrient cycles and plant-microbe relationships and will review basic soil microbial and ecological principles.

**Pre-Requisite(s):** 10.00 credits including (1 of AGR\*2320, ENVS\*2060, SOIL\*2010)

**Equate(s):** ENVS\*3200, SOIL\*3200

### **1.2 Course Description**

Same as calendar description

### **1.3 Timetable**

Lectures: Tuesday and Thursday 11:30-12:50; **Remote Learning, Zoom schedule through Courselink**

Tutorial: Thursday 2:30-3:20; **Remote Learning, Zoom schedule through Courselink**

### **1.4 Final Exam**

This course does not have a final exam.

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## 2 Instructional Support

**Instructor:** Dr. Adam Gillespie

**Email:** agilles@uoguelph.ca

**Telephone:** +1-519-824-4120 x52075

**Office:** ALEX 225

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## 3 Learning Resources

### 3.1 Required Resource(s)

Soil microbiology, ecology and biochemistry, 4<sup>th</sup> Edition. (2015) Edited by E.A. Paul, Elsevier. \* text available online from the library (Textbook)

Principles of Terrestrial Ecosystem Ecology, 2<sup>nd</sup> Edition (2011) Edited by F.S. Chapin III, P.A. Matson, P.M. Vitousek, Springer. \* text available online from the library (Textbook)

Global Soil Biodiversity Atlas (Other) <https://www.globalsoilbiodiversity.org/atlas-introduction>

### 3.2 Recommended Resource(s)

Soil ecology and management. 1st Edition. (2009). Joann Whalen and Luis Sampedro, CABI. (Textbook)

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

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

**On completion of this course students will be able to:**

1. Understand terms associated with the soil microbial environment.
  2. Identify types and interactions of organisms in the soil food web.
  3. Interpret and integrate modern concepts about soil microorganisms and nutrient cycles.
  4. Understand the importance of soil microbial communities to environmental sustainability and function.
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## 5 Teaching and Learning Activities

### 5.1 Lecture content

		Paul Textbook Chapters	Chapin, Matson, Vitousek Chapters
<b>Module 1</b>	<b>Microbial Environment</b>		
Weeks 1-3	Soil Habitat Water Aggregation	2,8	3,4
<b>Module 2</b>	<b>Energy</b>	9	3
Weeks 4, 5	Redox Metabolism Respiration		
<b>Module 3</b>	<b>Soil organic matter</b>	12-16	5,6,7,9
Weeks 6-8	What is it Development Stability Nitrogen, Phosphorous		
<b>Module 4</b>	<b>Ecology</b>	3-6,10,11	8,10
Weeks 9,10	Ecology PGPR Mycorrhizae Rhizosphere		
<b>Module 5</b>	<b>Applications</b>	17,18	
Weeks 11, 12	Models Soil Health Composting		

## 6 Assessments

### 6.1 Marking Schemes & Distributions

Assessment Details :

### **Meet the soil microbe presentation**

Learning Outcome(s): 2, 3, 4

### **Soil microbe in the news**

Learning Outcome(s): 2, 3, 4

### **Quiz 1**

Learning Outcome(s): 1, 2

### **Quiz 2**

Learning Outcome(s): 1, 2, 3

### **Quiz 3**

Learning Outcome(s): 1, 2, 3

### **Quiz 4**

Learning Outcome(s): 1, 2, 3, 4

## **6.2 Assessment Details**

### **Quiz 1 (12.5%)**

**Date:** Thu, Jan 28, Courselink during Class time

### **Quiz 2 (12.5%)**

**Date:** Thu, Feb 25, Courselink during Class time

### **Quiz 3 (12.5%)**

**Date:** Thu, March 18, Courselink during Class time

### **Quiz 4 (12.5%)**

**Date:** Thu, April 8, Courselink during Class time

### **Meet the soil microbe presentation (15%)**

### **Microbe in the news presentation (15%)**

### **Soil organism major paper (20%)**

**Date:** Tues, April 6, Courselink  
Dropbox

## 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>

### 7.3 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 course registration are available in the Undergraduate and Graduate 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>

### 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.

More information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

## 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/c08amisconduct.shtm>  
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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>