# Course Outline Form: Winter 2018

## General Information

**Course Code:** ENVS\*3310

**Course Title:** Soil Biodiversity and Ecosystem Function

**Course 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.

**Credit Weight:** 0.5

**Academic Department (or campus):** School of Environmental Sciences

**Campus:** Guelph

**Semester Offering:** Winter

**Class Schedule and Location:**

Lecture: Tuesday and Thursday 11:30-12:50, MINS 106;

Seminar: Thursday 2:30-3:20. AH 020

## Instructor Information

Instructor Name: Dr. Paul Voroney

Instructor Email: pvoroney@uoguelph.ca

Instructor Phone and Extension: 519-824-4120 Extension: 53057

Office location and office hours: AH 217; TBA

## GTA Information

N/A

## Course Content

### Specific Learning Outcomes:

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.

### Lecture Content:

Module 1: Soil as a microbial environment Chapters 2, 8, 11

Soil habitat

Microbial distribution in soil

Rhizosphere

Module 2: Soil Biota Chapters 3, 4, 5

Introduction of main groups of microorganisms

RNA-based classification- three domains of life

Module 3: Soil Microbial Ecology Chapter 10

Soil community structure

Module 4: Soil Biochemistry Chapters 9, 12, 14, 15, 16

Microbial metabolism

Carbon cycling

Nitrogen cycling

Phosphorus transformations

### Labs: N/A

### Seminars:

Meet the Microbe: selected examples of organisms in each of the following five groups of soil organisms, Bacteria, Fungi, Archea and Microarthropods, will be presented and discussed during the semester

Microbes in the News: students will research latest scientific findings of soil microbes

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### Course Assignments and Tests:

| **Assignment or Test** | **Due Date** | **Contribution to Final Mark (%)** | **Learning Outcomes Assessed** |
| --- | --- | --- | --- |
| Oral presentation  Meet the Soil Microbe | Jan 25 | 15 | 2, 3, 4 |
| Oral presentation 2  Soil Microbes in the News | Mar 8 | 15 | 2, 3, 4 |
| Quiz 1 | Jan 18 | 10 | 1, 2 |
| Quiz 2 | Feb 1 | 10 | 1, 2, 3 |
| Quiz 3 | Feb 15 | 10 | 1, 2, 3 |
| Quiz 4 | Mar 8 | 10 | 1, 2, 3, 4 |
| Quiz 5 | Mar 22 | 10 | 1, 2, 3, 4 |
| Major paper | April 3 | 20 | 3, 4 |

Additional Notes (if required):N/A

### Final examination date and time: N/A

### Final exam weighting: N/A

## Course Resources

### Required Texts:

### Soil microbiology, ecology and biochemistry, 4th Edition. (2014) Edited by E.A. Paul, Elsevier. Available on line from the library

### Recommended Texts:

Microbiological methods for assessing soil quality. (2006). Edited by J. Bloem, D.W. Hopkins and A. Benedetti

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

### Lab Manual: N/A

### Other Resources: N/A

### Field Trips: N/A

### Additional Costs: N/A

## Course Policies

### Grading Policies:

### Students will receive grades for their oral presentations within 1 week of delivery. Grades for quizzes will be given within 1 week.

### Written articles should be submitted either during class time or delivered to instructor offices. Late submission of assignments will be docked 5% per day for each day past the due date.

### Course Policy on Group Work: Students will work in groups of 2 students in preparation of oral presentations and in setting up laboratory demonstrations. Individual students will be responsible for their own presentation and for preparation of their written articles.

### Course Policy regarding use of electronic devices and recording of lectures: Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

## University Policies

### Academic Consideration:

The University of Guelph is committed to supporting students in their learning experiences and responding to their individual needs and is aware that a variety of situations or events beyond the student's control may affect academic performance. Support is provided to accommodate academic needs in the face of personal difficulties or unforeseen events in the form of Academic Consideration.

Information on regulations and procedures for Academic Consideration, Appeals and Petitions, including categories, grounds, timelines and appeals can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml).

### 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.

Detailed information regarding the Academic Misconduct policy is available in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml).

### Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibility Services (SAS), formerly Centre for Students with Disabilities (CSD), as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email sas@uoguelph.ca or visit the [Student Accessibility Services website (http://www.uoguelph.ca/csd/)](http://www.uoguelph.ca/csd/).

### Course Evaluation Information:

End of semester course and instructor evaluations provide students the opportunity to have their comments and opinions used as an important component in the Faculty Tenure and Promotion process, and as valuable feedback to help instructors enhance the quality of their teaching effectiveness and course delivery.

While many course evaluations are conducted in class others are now conducted online. Please refer to the [Course and Instructor Evaluation Website](https://courseeval.uoguelph.ca/) **for more information.**

### Drop period:

The drop period for single semester courses starts at the beginning of the add period and extends to the Fortieth (40th) class day of the current semester (the last date to drop a single semester courses without academic penalty) which is listed in [Section III (Schedule of Dates) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/).

The drop period for two semester courses starts at the beginning of the add period in the first semester and extends to the last day of the add period in the second semester.

Information about Dropping Courses can be found in [Section VIII (Undergraduate Degree Regulations and Procedures) of the Undergraduate Calendar](https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml).

## Additional Course Information