



ENVS*6460 Environmental Remediation

Winter 2019

Section(s): C01

School of Environmental Sciences

Credit Weight: 0.50

Version 1.00 - January 03, 2019

1 Course Details

1.1 Calendar Description

This course will discuss environmental remediation topics including, but not limited to, using plants, microorganisms and substrates (e.g., soil and engineered materials) to improve air, water and soil quality. For example, this course will explore the current sciences and technologies of living walls to improve indoor air quality, green roofs to manage storm water and air pollutants, and constructed wetlands to treat wastewater. Environmental remediation is, by nature, multidisciplinary, involving chemistry, physics, biology, engineering, landscape design, etc.

1.2 Course Description

This course will discuss environmental remediation topics including, but not limited to, using plants, microorganisms and substrates (e.g., soil and engineered materials) to improve air, water and soil quality. For example, this course will explore the current sciences and technologies of living walls to improve indoor air quality, green roofs to manage storm water and air pollutants, and constructed wetlands to treat wastewater. Environmental remediation is, by nature, multidisciplinary, involving chemistry, physics, biology, engineering, landscape design, etc. Course content will be provided in a combined lecture and reading/seminar format, with specific topics and approach being class (e.g., students' background and interest) dependent. Students are encouraged to bring topics of their own interest and/or thesis-related topics to the class.

1.3 Timetable

LEC Tues & Thur: 04:30PM - 05:50PM; CRSC, Room 101

1.4 Final Exam

N/A

2 Instructional Support

2.1 Instructional Support Team

Instructor:	Youbin Zheng
Email:	yzheng@uoguelph.ca
Telephone:	+1-519-824-4120 x52741
Office:	Bovey Building 2220
Office Hours:	9:00-18:00 (Call or email to make an appointment before required meeting.).

3 Learning Resources

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Identify and characterize novel environmental pollutants in order to develop remediation strategies through participation in lectures, in-class discussions, and after-class reading on some common environmental pollutants (e.g., air, soil and water pollutants), including their sources, chemical and physical characteristics, current and historical concentrations, and regional and global distributions.
2. Design and apply green infrastructures (e.g., green roof, living wall, and constructed wetland) for environmental remediation based on the theories and principles (e.g., routes of plant uptake of environmental pollutants, air purification mechanisms in plants and plant-environmental interactions) learned from this course through attending lectures, in-class discussions, and independent reading.
3. Identify new research directions and design an experiment to study a chosen topic through attending lectures, group discussions and critiques of current scientific journal articles.
4. Demonstrate enhanced critical thinking skills through critiquing current scientific journal articles (both high- and low-quality articles) and critiquing other students' presentations.
5. Demonstrate enhanced communication skills (both oral and written) through written assignments, and an in-class presentation (on a student-selected topic).
6. Exhibit improved professional and ethical behavior towards diverse scientific ideas and academic opinions through presentations, group discussions and critiquing presentations

by fellow students.

5 Teaching and Learning Activities

5.1 Lecture

Jan 8, 10, 15

Topic(s): Introduction
Current, historical, global and regional environmental issues and the role of environmental remediation technologies
Introduce writing and presentation assignments
Discuss on how to read & write scientific papers

Jan 17

Topic(s): Visiting Bovey Research Facilities and research activities

Jan 22

Topic(s): Green roofs and environmental remediation

Jan 24

Topic(s): Read, and decide who will present and write on what topic

Jan 29

Topic(s): Green roofs and environmental remediation; Reading and writing

Jan 31

Topic(s): Reading, writing, and consultation

Feb 5

Topic(s): Living wall and environmental remediation

Feb 7

Topic(s): Writing, presentation preparation, and consultation

Feb 12

Topic(s): Constructed wetlands and environmental remediation
Other green infrastructures and environmental remediation.

Feb 14

Topic(s): Provide face-to-face feedback as needed.
Paper outline due at the end of Feb 17.

Feb 26

Topic(s): First two presentations (P1, 2). Each presentation is 20-25 min

Feb 28

Topic(s): P3, 4.

Mar 5

Topic(s): Guest lecture by Eric Rozema on constructed wetlands and environmental remediation

Week 8-11

Topic(s): More presentations and discussions. Two presentations each lecture

Week 12

Topic(s): Wrap up; final paper due middle night of April 12.

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Critiques	20
Selection of reading materials	5
Presentation/leading discussion	25
Paper on Chosen Topic	40
General participation	10
Total	100

6.2 Assessment Details

Critiques (20%)

Due: Noon of the day after the identified presentation

Learning Outcome(s): 1,2,3,4,5

Critique of reading materials selected by fellow students; evaluating fellow students' presentations

Selection of reading materials (5%)

Due: 1 week before your presentation

Learning Outcome(s): 1,2,3,4,5,6

Presentation/leading discussion (25%)

Learning Outcome(s): 1,2,3,4,5

Paper on Chosen Topic (40%)

Due: a. Due middle night Feb 17; b. Due middle night April 12.

Learning Outcome(s): 1,2,3,4,5

a. Outline 15

b. Final 25

General participation (10%)

Learning Outcome(s): 6

7 Course Statements

7.1 Grading Policies

- 1). Submit your chosen paper as Microsoft (MS) Word document 1 week before your presentation in the Courselink Dropbox
- 2). Submit your evaluations for other presenters in MS Word format in the Courselink Dropbox before 12pm on the next day of each presentation.

3). Submit your paper outline in MS Word format in the Courselink Dropbox before 24:00 of Feb 17; and your final paper as MS Word format before 24:00 of April 12. Late penalty for assignments is 20% per day. If you cannot hand in an assignment, etc. for a valid reason, please let me know.

7.2 Group Work

Group work is allowed for the group presentations, but the rest of the assignments (e.g. paper, evaluation of other students' presentations) and the final exam have to be completed independently.

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>

8.3 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-reg-regchg.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.

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

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>
