



# ENGG\*2130 Introduction to Environmental Engineering

01

Fall 2020

Section(s): C01

School of Engineering

Credit Weight: 0.50

Version 1.00 - September 09, 2020

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## 1 Course Details

### 1.1 Calendar Description

This course introduces the field of environmental engineering, including minimizing the negative effects of human activities, responsible resource use and recovery, and remediation of soil, water and air pollution. Students will explore relevant ethical issues as well as regulations and policies in diverse areas of environmental engineering. Skills development integrated throughout the course elements will emphasize writing, teamwork, the collaborative nature of the field, engineering tools used in environmental engineering, and data management and analysis.

**Pre-Requisites:** 4.00 credits

**Restrictions:** Registration in BENG.ENVE or BENG.ENVE:C.

### 1.2 Timetable

<b>Lecture</b>	Tuesday	10:00 - 11:20 am
<b>Lab</b>	Wednesday OR Thursday	9:30 - 10:50 am
<b>Seminar</b>	Wednesday OR Friday	1:30 - 2:50 pm 2:30 - 3:50 pm

### 1.3 Final Exam

There is no final exam.

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## 2 Instructional Support

### 2.1 Instructional Support Team

<b>Instructor:</b>	Andrea Bradford
<b>Email:</b>	abradfor@uoguelph.ca
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<b>Office:</b>	THRN 1342

### 2.2 Teaching Assistants

<b>Teaching Assistant:</b>	Samantha Mehlretter
<b>Email:</b>	mehltres@uoguelph.ca
<b>Teaching Assistant:</b>	Brayden McNeill
<b>Email:</b>	bmcnei04@uoguelph.ca

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## 3 Learning Resources

### 3.1 Required Resources

**The Death and Life of The Great Lakes (Other)**  
Dan Egan. W.W. Norton and Company, Inc. 2017.

### 3.2 Recommended Resources

**Introduction to Environmental Engineering (Textbook)**  
Richard Mines, Jr. and Laura Lackey. Prentice Hall. 2009.

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## 4 Learning Outcomes

The main goals for this course are to: (1) expose students to the breadth of the environmental engineering field; (2) provide initial experience with a range of engineering instrumentation and tools in common usage; and (3) motivate students to excel in their chosen field

### 4.1 Course Learning Outcomes

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

1. Summarize the breadth of environmental engineering challenges that prevail from a local to global perspective
2. Recognize ethical issues that frequently arise within the field
3. Summarize regulatory frameworks relevant to the field
4. Execute and adapt individual role to promote team success through, for example,

- timeliness, respect, positive attitude
5. Follow instructions accurately on the use of a range of engineering tools and instruments
  6. Practice standard procedures for sampling, measurement and QA/QC appropriate for the environmental engineering field
  7. Construct focused written communications in an articulate and concise manner for professional and lay audiences
  8. Summarize the technology development history for a number of innovations within the field
  9. Explain the roles of environmental engineers and other practitioners in the pursuit of environmental progress
  10. Identify skill development expectations through their core curriculum and opportunities through elective options and co-curricular activities.
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## 5 Teaching and Learning Activities

This is the first offering of this course and some of the content is still being developed. Please expect some adjustments to the content and timing of lectures, seminars and labs.

### 5.1 Lecture

#### Weeks 1

**Topics:** The Challenge Before Us - Sustainability and Sustainable Engineering

#### Week 2

**Topics:** An Ounce of Prevention - Including Minimizing Water Footprint

#### Week 3

**Topics:** Understanding Risk

#### Week 4

**Topics:** Air Quality, Noise - Indoor and Outdoor Environments

#### Week 5

**Topics:** No Lecture

**Week 6**

**Topics:** Climate Change - Minimizing C Footprint and Adaptation

**Week 7**

**Topics:** Lake Eutrophication - Minimizing Nutrient Footprint

**Week 8**

**Topics:** Resource Recovery (Water, Energy, Nutrients and Other Materials)

**Week 9**

**Topics:** Treatment. Centralized and De-centralized. Different Media.

**Week 10**

**Topics:** Infrastructure Challenges. Environmental Management Systems.

**Week 11**

**Topics:** Remediation. Restoration.

**Week 12**

**Topics:** Putting It All Together

**5.2 Seminar**

**Week 1**

**Topics:** Navigating the Course.

**Week 2**

**Topics:** Giant Mine - Arsenic - Guardians of Eternity

**Week 3**

**Topics:** Environmental Disasters - Learn and Share

**Week 4**

**Topics:** Great Lakes - Unintended Consequences - Invasive Species

**Week 5**

**Topics:** Environmental Impact Assessment

**Week 6**

**Topics:** Oils Sands Controversy

**Week 7**

**Topics:** Great Lakes - Eutrophication and Diversion

**Week 8**

**Topics:** Environmental Regulation and Policy - Learn and Share

**Week 9**

**Topics:** Life Cycle Assessment

**Week 10**

**Topics:** Water - Energy - Food

**Week 11**

**Topics:** Environmental Engineering - Careers

**Week 12**

**Topics:** No Seminar

**5.3 Lab**

**Weeks 1 to 3**

**Topics:** Environmental Data - Mapping, Excel

**Week 4**

**Topics:** Atmospheric Particulates Lab

**Week 5**

**Topics:** Noise Lab.

**Week 6**

**Topics:** NASA, Landsat Data, Maps, Tools

**Week 7**

**Topics:** Soils Lab

**Week 8**

**Topics:** Solids Lab.

**Weeks 9 to 11**

**Topics:** Virtual Field Trips

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## 6 Assessments

### 6.1 Assessment Details

**Weekly Quizzes (30%)**

Weeks 2 - 4, 6 - 12

**Lab Activities (25%)****Seminar Activities (25%)****Term Paper (20%)**

Due in exam period.

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## 7 School of Engineering Statements

### 7.1 Instructor's Role and Responsibility to Students

The instructor's role is to develop and deliver course material in ways that facilitate learning for a variety of students. Selected lecture notes will be made available to students on Courselink but these are not intended to be stand-alone course notes. Some written lecture notes will be presented only in class. During lectures, the instructor will expand and explain the content of notes and provide example problems that supplement posted notes. Scheduled classes will be the principal venue to provide information and feedback for tests

and labs.

## 7.2 Students' Learning Responsibilities

Students are expected to take advantage of the learning opportunities provided during lectures and lab sessions. Students, especially those having difficulty with the course content, should also make use of other resources recommended by the instructor. Students who do (or may) fall behind due to illness, work, or extra-curricular activities are advised to keep the instructor informed. This will allow the instructor to recommend extra resources in a timely manner and/or provide consideration if appropriate.

## 7.3 Lab Safety

Safety is critically important to the School and is the responsibility of all members of the School: faculty, staff and students. As a student in a lab course you are responsible for taking all reasonable safety precautions and following the lab safety rules specific to the lab you are working in. In addition, you are responsible for reporting all safety issues to the laboratory supervisor, GTA or faculty responsible.

# 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>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

## 8.3 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-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.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.

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>

## 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>

## 8.9 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.

## 8.10 Illness

The University will not normally require verification of illness (doctor's notes) for fall 2020 or winter 2021 semester courses. However, requests for Academic Consideration may still require medical documentation as appropriate.

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