ENGG*2130 Introduction to Environmental Engineering

01

Fall 2021
Section(s): C01

School of Engineering
Credit Weight: 0.50
Version 1.00 - September 08, 2021

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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

Lecture	Tuesday	11:30 - 12:50	MCKN 029
Lab	Monday OR	11:30 - 12:50	THRN 1107
	Friday	10:30 - 11:50	
Seminar	Wednesday	11:30 - 12:50 OR	THRN 1002
		2:30 - 3:50	

1.3 Final Exam

There is no final exam.

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2 Instructional Support

2.1 Instructional Support Team

Instructor: Andrea Bradford
Email: abradfor@uoguelph.ca
Telephone: +1-519-824-4120 x52485
Office: THRN 1342

2.2 Teaching Assistants

Teaching Assistant (GTA): Samantha Mehltretter
Email: mehltres@uoguelph.ca

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3 Learning Resources

Course Website (Website)
http://courselink.uoguelph.ca

Course material and announcements will be posted to the ENGG*2130 CourseLink site. You are responsible for checking the site regularly. Selected lecture notes will be provided on CourseLink but students are expected to provide further annotation and may need to take full notes on some topics.

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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.

4.2 Engineers Canada - Graduate Attributes (2018)

Successfully completing this course will contribute to the following:

#	Outcome	Learning Outcome
1	Knowledge Base	1
1.4	Recall, describe and apply program-specific engineering principles and concepts	1
5	Use of Engineering Tools	6
5.2	Demonstrate proficiency in the application of selected engineering tools	6
6	Individual & Teamwork	4
6.3	Execute and adapt individual role to promote team success through, for example, timeliness, respect, positive attitude	4
7	Communication Skills	5, 7
7.3	Construct the finished elements using accepted norms in English, graphical standards, and engineering conventions, as appropriate for the message and audience	7
7.5	Demonstrate ability to process oral and written communication by following instructions, actively listening, incorporating feedback, and formulating meaningful questions	5, 7
9	Impact of Engineering on Society and the Environment	2
9.1	Analyze the safety, social, environmental, and legal aspects of engineering activity	2
9.3	Anticipate the positive and negative impacts of introducing innovative	2

#	Outcome	Learning Outcome
	technologies to solve engineering problems	
10	Ethics & Equity	2
10.1	Summarize ethical theories and equity, diversity, and inclusivity principles	2
10.2	Determine an ethical course of action by applying ethical theories and the PEO Code of Ethics	2
10.3	Demonstrate values consistent with good ethical practice, including equity, diversity, and inclusivity	2
12	Life Long Learning	10
12.1	Identify personal career goals and opportunities for professional development	10
12.2	Self-assess skills relative to career goals and SOE defined learning outcomes	10

5 Teaching and Learning Activities

Adjustments to the content and timing of lectures, seminars and labs may be made at the instructor's discretion.

5.1 Lecture

Week 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 - Indoor and Outdoor Environments

Week 5

Topics: No Lecture, Noise - Independent Learning

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: Introduction to Environmental Impact Assessment

Week 5

Topics: Oil Sands Controversy

Week 6

Topics: Environmental Legislation and Policy - Learn and Share

Week 7

Topics: Great Lakes - Invasive Species, Pollution and Unintended Consequences

Week 8

Topics: Term Project

Week 9

Topics: Environment and Environmental Engineering in the News

Week 10

Topics: Term Project

Week 11

Topics: Environmental Engineering - Careers

Week 12

Topics: Post-course reflection

5.3 Lab

Weeks 1 to 3

Topics: Environmental Data - Mapping, Excel

Delivery - Virtual Computer Lab

Week 4

Topics: **Atmospheric Particulates Lab.** Individual students will watch a video of the lab experiment and complete an independent analysis of the data for submission.

Weeks 5 to 12

Topics: Students will rotate through labs and other learning activities. Due to uncertainty regarding constraints for face to face activities, the lab schedule for Weeks 5 to 12, group sizes and delivery methods have not yet been finalized. Please see CourseLink for updates.

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6 Assessments

6.1 Assessment Details

Quizzes (20%)
Learning Outcome: 1, 8, 9
5 Quizzes - 5% Each (Best 4 out of 5)

September 27, October 18, November 1, 15, 29

Seminar Activities (27.5%)
Learning Outcome: 2, 3, 4, 7, 10

Lab Activities (27.5%)
Learning Outcome: 5, 6

Term Project (20%)
Learning Outcome: 4
Due in exam period.

Reflections (5%)
Learning Outcome: 1, 2, 9
Weeks 1 and 12

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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, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. 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

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

8.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- https://news.uoguelph.ca/return-to-campuses/how-u-of-g-is-preparing-for-your-safe-return/
- https://news.uoguelph.ca/return-to-campuses/spaces/#ClassroomSpaces

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
