ENGG*2550 Water Management

01

Winter 2020
Section(s): C01

School of Engineering
Credit Weight: 0.50
Version 1.00 - January 05, 2020

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1 Course Details

1.1 Calendar Description

The influence of fundamental engineering and hydrologic principles on the choices available for management of water on a watershed basis is demonstrated for representative techniques used in management for water supply, irrigation, flood control, drainage and water pollution control. Selected problems are studies to reveal the technical, environmental, legal, jurisdiction, political, economic and social aspects of water management decisions.

Pre-Requisites: 5.00 credits including CHEM*1040

1.2 Course Description

The main goals of this course are to (1) provide an introduction to water resources, impacts associated with human activities, and water resources engineering and management tools and techniques that can be used to mitigate impacts; (2) develop critical thinking through the examination of technical, environmental, socio-political and economic dimensions of water resources challenges; (3) foster creativity; and (3) develop oral and written communication skills.

1.3 Timetable

TUESDAY/THURSDAY	10:00 - 11:20	MCKN 312

1.4 Final Exam

Saturday, April 18, 2020
11:30 to 13:30
Location: TBA on WebAdvisor

2 Instructional Support

2.1 Instructional Support Team

Instructor: Jana Levison
Email: jlevison@uoguelph.ca
Telephone: +1-519-824-4120 x58327
Office: RICH 3505
Office Hours: Tuesdays from 2 pm to 3 pm or by appointment

2.2 Teaching Assistants

Teaching Assistant: Elisha Persaud
Email: epersaud@uoguelph.ca
Telephone: +1-519-824-4120 x52438
Office: THRN 2116

3 Learning Resources

3.1 Required Resources

Course Website (Website)
Course material, assignments and announcements will be regularly posted to the ENGG*2550 Courselink site. You are responsible for checking the site regularly.

Readings (Website)
There is no course textbook. Required readings will be assigned throughout the term. Additional resources will be provided as needed.

4 Learning Outcomes

4.1 Course Learning Outcomes

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

1. Analyze the multiple dimensions of global water management issues
2. Explain the physical, chemical and biological attributes of water resources – groundwater, lakes, rivers and wetlands
3. Perform quantitative analyses of water resources and the effects of human activities on

these water resources
4. Apply knowledge of tools and techniques to develop solutions to water management challenges
5. Give examples of effective water policies
6. Communicate the results of critical evaluations of water resources issues and proposed solutions
7. Work and learn effectively with others.

4.2 Engineers Canada - Graduate Attributes (2018)

Successfully completing this course will contribute to the following:

#	Outcome	Learning Outcome
1	Knowledge Base	1, 2, 3, 4
1.2	Recall, describe and apply fundamental principles and concepts in natural science	2
1.3	Recall, describe and apply fundamental engineering principles and concepts	1, 3
1.4	Recall, describe and apply program-specific engineering principles and concepts	1, 3, 4
2	Problem Analysis	1, 3
2.1	Formulate a problem statement in engineering and non-engineering terminology	1
2.2	Identify, organize and justify appropriate information, including assumptions	1
2.3	Construct a conceptual framework and select an appropriate solution approach	3
2.4	Execute an engineering solution	3
2.5	Critique and appraise solution approach and results	3
4	Design	4
4.2	Construct design-specific problem statements including the definition of criteria and constraints	4
4.3	Create a variety of engineering design solutions	4
6	Individual & Teamwork	7

#	Outcome	Learning Outcome
6.3	Execute and adapt individual role to promote team success through, for example, timeliness, respect, positive attitude	7
6.4	Apply strategies to mitigate and/or resolve conflicts	7
6.5	Demonstrate leadership through, for example, influencing team vision and process, promoting a positive team culture, and inspiring team members to excel	7
7	Communication Skills	6
7.1	Identify key message(s) and intended audience in verbal or written communication as both sender and receiver	6
7.3	Construct the finished elements using accepted norms in English, graphical standards, and engineering conventions, as appropriate for the message and audience	6
7.4	Substantiate claims by building evidence-based arguments and integrating effective figures, tables, equations, and/or references	6
7.5	Demonstrate ability to process oral and written communication by following instructions, actively listening, incorporating feedback, and formulating meaningful questions	6
8	Professionalism	7
8.3	Demonstrate professional behaviour	7
9	Impact of Engineering on Society and the Environment	1, 5
9.1	Analyze the safety, social, environmental, and legal aspects of engineering activity	1, 5
9.2	Evaluate the uncertainties and risks associated with engineering activities	1
10	Ethics & Equity	1, 7
10.2	Determine an ethical course of action by applying ethical theories and the PEO Code of Ethics	1
10.3	Demonstrate values consistent with good ethical practice, including equity, diversity, and inclusivity	7
12	Life Long Learning	1, 3, 4, 5, 7

#	Outcome	Learning Outcome
12.1	Identify personal career goals and opportunities for professional development	7
12.2	Self-assess skills relative to career goals and SOE defined learning outcomes	7
12.3	Demonstrate capability for continuous knowledge and skill development in a changing world	1, 3, 4, 5

5 Teaching and Learning Activities

The following schedule is subject to adjustment at the discretion of the instructor.

5.1 Lecture

Weeks 1-2

Topics: Fundamental Water Management Concepts and Themes for the Course. Learning Approaches.

Weeks 2-3

Topics: Inquiry 1: Lake Eutrophication and Watershed Management.

Week 4

Topics: Effects of Resource Development and Approaches to Mitigate Impacts.

Weeks 5-6

Topics: Water Efficiency and Creative Solutions

Weeks 6-9

Topics: Inquiry 2: Streams, Wetlands and Groundwater - Surface Water Interactions / Watershed Management

Week 10

Topics: Preparation for World Water Day

Week 11

Topics: Floods, Droughts, Climate Change Adaptation

Week 12

Topics: Integrated Management, Paradigm Shifts in Water Management

5.2 Other Important Dates

Monday, January 6: Classes commence
Monday, February 17 – Friday, February 21: WINTER BREAK
Friday, April 3: Last day of classes.

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6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Scavenger Hunt	0
Aral Sea	0
Global Water Issues	3
Oil Sands	12
Inquiry 1: Lake Eutrophication	12
Water Efficiency / Creativity	8
World Water Day	15
Inquiry 2: Streams	20
Water in the News	15
Final Exam	15
Total	100

6.2 Assessment Details

Scavenger Hunt (0%)
Date: Jan. 9 - 14
Learning Outcome: 4, 7
Group Assessment
No grade

Aral Sea (0%)
Date: Jan. 9 - 14
Learning Outcome: 1, 4, 4, 6, 7
Group Assessment
No grade, instructor feedback to class as a whole

Oil Sands Assignment (12%)
Date: Jan. 9 - Feb. 14
Learning Outcome: 1, 4, 6
Individual Assessment
Part 1 (3%): Jan. 13
Part 2 (4%): Jan. 30, in class
Part 3 (5%): Flexible deadline, no later than Feb. 14

Global Water Management Issues (3%)
Date: Jan. 14 - 16
Learning Outcome: 1, 4, 6, 7
Group Assessment

Inquiry 1: Lake Eutrophication / Watershed Management (12%)
Date: Jan. 16 - 28
Learning Outcome: 2, 3, 4, 4, 6, 7
Group Assessment (10%)
Individual Assessment (2%)

Water Efficiency / Creativity (8%)
Date: Feb. 4 - 13
Learning Outcome: 4, 4
Individual Assessment

World Water Day (March 22) Creative Presentation (15%)
Date: Feb. 4 - Mar. 22
Learning Outcome: 1, 4, 4, 6
Individual Assessment
Draft/Outline (3%) – Feb. 13
Final (12%) – Mar. 19

Inquiry 2: Streams, Wetlands and Groundwater - Surface Water Interactions / Watershed Management (20%)
Date: Feb. 13 – Mar. 13
Learning Outcome: 2, 3, 4, 4, 6, 7
Group Assessment (15%)
Individual Assessment (5%)

Water In The News (15%)
Date: Flexible deadline, no later than April 3
Learning Outcome: 1, 4, 6
Individual Assessment

7 Course Statements

7.1 Communication & Email Policy

Please use class times as your main opportunity to ask questions about the course. Major announcements will be posted to the course website. **It is your responsibility to check the course website regularly.** As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its student.

7.2 Engagement and Inclusivity

The course will be delivered using a "flipped classroom" approach. You will be provided resources (e.g. readings, videos) so that you can review typical lecture material outside of class. Scheduled class time will be used for activities to promote deeper learning and higher-order thinking. You will be expected to come prepared for in class activities and to actively participate in these activities. Our classes will be opportunities for collaborative learning (or active learning with others). Students are expected to contribute to a supportive classroom environment where everyone is welcome to participate. Unprofessional or disrespectful behaviour will not be tolerated.

7.3 Course Grading Policies

Missed Assessments: If you are unable to meet an in-course requirement due to medical, psychological, or compassionate reasons, please email the course instructor. See the undergraduate calendar for information on regulations and procedures for Academic Consideration:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

Accommodation of Religious Obligations: If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements. See the undergraduate calendar for information on regulations and procedures for Academic Accommodation of Religious Obligations:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

Passing grade: In order to pass the course, students must obtain a grade of 50% or higher.

Late Assignments: Late submissions of assignments will not be accepted.

7.4 Relationships with other Courses & Labs

Follow-on Courses:

ENGG*3650: Hydrology
ENGG*3590: Water Quality
ENGG*3220: Groundwater Engineering

8 School of Engineering Statements

8.1 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.

8.2 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.

8.3 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.

9 University Statements

9.1 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.

9.2 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

9.3 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

9.4 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.

9.5 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

9.6 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

9.7 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.

9.8 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
