ENGG*2550 Water Management

Winter 2018
Section(s): C01

School of Engineering
Credit Weight: 0.50
Version 1.00 - January 05, 2018

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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-Requisite(s): 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
1:00-2:20 MCKN 305

1.4 Final Exam

Final Exam (must be written to earn grade for group assessments, but no weight)
April 10, 14:30 – 16:30, Room TBA on Webadvisor

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2 Instructional Support

2.1 Instructor(s)

Jana Levison Ph.D., EIT
Email: jlevison@uoguelph.ca
Telephone: +1-519-824-4120 x58327
Office: THRN 3505

Office Hours: Thursdays 15:00-16:00

2.2 Teaching Assistant(s)

Teaching Assistant: Ceilidh MacKie
Email: mackiec@uoguelph.ca
Office Hours: Will be posted on CourseLink

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3 Learning Resources

3.1 Required Resources(s)

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.

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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. Describe the tools and techniques used in water management
5. Apply knowledge of tools and techniques to develop solutions to water management challenges
6. Give examples of effective water policies
7. Communicate the results of critical evaluations of water resources issues and proposed solutions

4.2 Engineers Canada - Graduate Attributes

Successfully completing this course will contribute to the following:

#	Outcome Set Name	Course Learning Outcome
1	Knowledge base	2, 3, 4, 6
1.1	Recall, describe and apply fundamental mathematical principles and concepts	2, 3, 4, 6

#	Outcome Set Name	Course Learning Outcome
1.2	Recall, describe and apply fundamental concepts and principles in natural sciences	2, 3, 4, 6
1.3	Comprehend and apply fundamental engineering concepts	2, 3, 4, 6
1.4	Comprehend and apply program-specific engineering concepts	2, 3, 4, 6
2	Problem analysis	1
2.1	Formulate a problem statement in engineering and nonengineering terminology	1
2.2	Construct a conceptual framework	1
2.3	Identify, organize and justify appropriate information	1
2.4	Execute an engineering solution	1
2.5	Critique and appraise results	1
6	Individual and team work	5
6.1	Act as an individual team member to promote team success	5
6.2	Demonstrate leadership through team building, providing feedback and positive attitude	5
7	Communication skills	7
7.1	Develop and deliver clear, key concepts using methods appropriate for the intended audience	7
7.2	Critically evaluate received information	7
7.3	Demonstrate active listening and follow instructions	7
9	Impact of engineering on society and environment	1, 2, 3, 4, 5, 6, 7
9.1	Analyze the social, environmental and legal aspects of engineering activity	1, 2, 3, 4, 5, 6, 7
9.2	Summarize the common sources of uncertainty and risk in their engineering field	1, 2, 3, 4, 5, 6, 7
9.3	Identify the impact of introducing innovative technologies to solve engineering problems	1, 2, 3, 4, 5, 6, 7
12	Life-long learning	1, 3
12.1	Identify personal career goals and opportunities for professional development	1, 3
12.2	Analyze a self-assessment of skills relative to SOE defined learning outcomes	1, 3

#	Outcome Set Name	Course Learning Outcome
12.3	Identify and critique limits of their field	1, 3

5 Teaching and Learning Activities

5.1 Lecture

Week 1-2
Topic(s): Fundamental water management concepts and themes for the course

Week 3-4
Topic(s): Inquiry 1: Lake Eutrophication and Watershed Management.

Week 4-5
Topic(s): Water Efficiency and Creative Solutions

Week 6-8
Topic(s): Inquiry 2: Rivers –Negotiating Environmental Flow Regime

Week 9
Topic(s): Floods, Droughts, Climate Change Adaptation

Week 10-11
Topic(s): Inquiry 3: Groundwater Extraction and Permits to Take Water

Week 12
Topic(s): Integrated Management, Paradigm Shifts in Water Management

5.2 Other Important Dates

Monday, January 8, 2018: First day of classes
February 19 – 23, 2018: Winter break, no classes
Friday, March 9, 2018: Last day to drop classes – 40th class day
Friday, April 6, 2018: Classes conclude

6 Assessments

6.1 Marking Schemes & Distributions

Name	Scheme A (%)
Aral Sea	0.00
Scavenger Hunt	0.00
Oil Sands Assignment	12.00
Global Water Management Issues	3.00
Inquiry 1: Lake Eutrophication / Watershed Management	10.00

Name	Scheme A (%)
Water Efficiency / Creativity	5.00
World Water Day (March 22) Creative Presentation	15.00
Inquiry 2: Stream / Environmental Flows	15.00
Inquiry 3: Groundwater Extraction and Permits To Take Water	15.00
Water in the News	15.00
On-line Quizzes / Contributions to Discussion	10.00
Final Exam	0.00
Total	100.00

6.2 Assessment Details

Aral Sea (0.00%)
Date: Jan. 9 - 11
Group Assessment
No grade, instructor feedback to class as a whole

Scavenger Hunt (0.00%)
Date: Jan. 12 - 18
Group Assessment
No grade

Oil Sands Assignment (12.00%)
Date: Jan. 15 to winter break
Individual Assessment
Part 1 (3%): Jan. 15
Part 2 (4%): Feb. 1, in class
Part 3 (5%): Flexible deadline, before start of winter break

Global Water Management Issues (3.00%)
Date: Jan. 16 - 18
Group Assessment

Inquiry 1: Lake Eutrophication / Watershed Management (10.00%)
Date: Jan. 18 - 26
Group Assessment

Water Efficiency / Creativity (5.00%)
Date: Feb 2 - 9
Individual Assessment

World Water Day (March 22) Creative Presentation (15.00%)
Date: Feb. 6 - Mar. 22
Optional Individual or With Partner
Draft/Outline (3%) – Feb. 6
Final (12%) – Mar. 22

Inquiry 2: Stream / Environmental Flows (15.00%)
Date: Feb. 8 – 15 and Feb. 27 – Mar. 6
Group Assessment

Inquiry 3: Groundwater Extraction and Permits To Take Water (15.00%)
Date: March 15 - 29
Group Assessment

Water In The News (15.00%)
Date: Flexible deadline, before last day of classes
Individual Assessment

On-line quizzes / contributions to discussion (10.00%)
Date: Throughout term
Individual Assessment

Final Exam (0.00%)
Date: April 10, 14:30 – 16:30, Room TBA on Webadvisor
Individual Assessment
Must be written to earn grade for group assessments, but no weight

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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 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.

7.3 Relationships with other Courses & Labs

Previous Courses:

CHEM*1040 or CHEM*1310

Follow-on Courses:

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

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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.

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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 regulations and procedures for Academic Consideration are detailed in the Undergraduate Calendar.

9.3 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 Dropping Courses are available in the Undergraduate

Calendar.

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.

More information: www.uoguelph.ca/sas

9.6 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.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar.

9.7 Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate 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 which apply to undergraduate, graduate and diploma programs.

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