

ENGG*2550 Water Management

Winter 2017



(Revision 0: January 4, 2017)

1 INSTRUCTIONAL SUPPORT

1.1 Instructor

Instructor: Andrea Bradford, Ph.D., P.Eng.
Office: THRN 1342, ext. 52485
Email: abradfor@uoguelph.ca
Office hours: By appointment

1.2 Lab Technician

Not applicable

1.3 Teaching Assistant

No TA allocated to this course.

2 LEARNING RESOURCES

2.1 Course Website

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

2.2 Required Resources

There is no course textbook. Required readings will be assigned throughout the term.

2.3 Additional Resources

Will be provided as needed.

2.4 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 <mail.uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its student.

3 ASSESSMENT

3.1 Dates and Distribution

Individual Assessments (42%)

Oil Sands Assignment -12%

Part 1 (3%): Jan.16

Part 2 (4%): Feb. 1, in class

Part 3 (5%): Flexible deadline, before start of reading week

Water Efficiency / Creativity (5%): Feb 3-10

Water In The News (15%): Flexible deadline, before last day of classes

On-line quizzes / contributions to discussion (10%): Throughout term

Group Assessments (43%)

Aral Sea (no grade, instructor feedback to class as a whole) – Jan. 11-13

Scavenger Hunt (no grade) – Jan 13-15

Global Water Management Issues (3%) – Jan 16-18

Inquiry 1: Lake Eutrophication / Watershed Management (10%) – Jan. 20 -28

Inquiry 2: Stream / Environmental Flows (15%) – Feb. 10 – 17 and Feb. 27 – Mar. 6

Inquiry 3: GW/Wetlands Mock OMB Hearing (15%) – March 17-31

Optional Individual or With Partner (15%)

World Water Day (March 22) Creative Presentation (15%)

Draft/Outline (3%) – Feb. 6

Final (12%) – Mar. 17

Final Exam (must be written to earn grade for group assessments, but no weight)

April 19, 7:00 – 9:00 pm, Room TBA on Webadvisor

3.2 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.

4 AIMS, OBJECTIVES & GRADUATE ATTRIBUTES

4.1 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 studied to reveal the technical, environmental, legal, jurisdiction, political, economic and social aspects of water management decisions. Prerequisite(s): CHEM*1040 or CHEM*1310

4.2 Course Aims

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.

4.3 Learning Objectives

At the successful completion of this course, the student will have demonstrated the ability 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

4.4 Graduate Attributes

Successfully completing this course will contribute to the following CEAB Graduate Attributes:

Graduate Attribute	Learning Objectives	Assessment
1. Knowledge Base for Engineering	2,3,4,6	Assignments
2. Problem Analysis	1-	Assignments-
3. Investigation	-	-
4. Design	-	-
5. Use of Engineering Tools	-	-
6. Communication	7	Assignments
7. Individual and Teamwork	5	Group Assignments-
8. Professionalism	-	-
9. Impact of Engineering on Society and the Environment	1-7	Assignments
10. Ethics and Equity	-	-
11. Economics & Project Management	-	-
12. Life-Long Learning	1,3,5	Assignments-

4.5 Instructor's Role and Responsibility to Students

The instructor's role is to develop and deliver course material in ways that engage and facilitate learning for a variety of students. The pedagogical approach of this course will be different than that of most other engineering courses. Readings and audiovisual resources will be provided for students to independently learn about course topics. After gaining exposure to topics through these learning materials, in-class activities will help students to achieve deeper learning of the course material. The instructor will support student learning and provide feedback continuously throughout the term.

4.6 Students' Learning Responsibilities

Students are expected to take responsibility for their own learning and support the learning of their classmates. Students are expected to set aside time each week to prepare for in-class activities and complete assigned tasks. They are expected to actively participate in class exercises and constructively contribute to collaborative learning activities. 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. Students are also expected to inform members of their collaborative learning group if these challenges do (or may) arise.

4.7 Relationships with other Courses & Labs

Previous Courses:

CHEM*1040 or CHEM*1310

Follow-on Courses:

ENGG*3650: Hydrology

ENGG*3590: Water Quality

ENVS*3060: Groundwater

5 TEACHING AND LEARNING ACTIVITIES

5.1 Timetable

Lectures:

Monday	1:30 – 2:20	MCKN 306
Wednesday	1:30 – 2:20	MCKN 306
Friday	1:30 – 2:20	MCKN 306

5.2 Lecture Schedule

Week	Lecture Topics	Learning Objectives
1-2	Fundamental water management concepts and themes for the course	1, 2
3-4	Inquiry 1: Lake Eutrophication and Watershed Management.	1, 2
4-5	Water Efficiency and Creative Solutions	1, 5
6-8	Inquiry 2: Rivers –Negotiating Environmental Flow Regime	3, 4
9	Floods, Droughts, Climate Change Adaptation	4, 6, 7
10-11	Inquiry 3: Wetlands and Groundwater – Surface Water Interactions – Mock Ontario Municipal Board Hearing	4, 6, 7
12	Integrated Management, Paradigm Shifts in Water Management	1, 2, 3, 5, 6

5.3 Other Important Dates

Monday, January 9, 2017: First class

February 20 – 24, 2017: Reading week, no classes

Friday, March 10, 2017: Last day to drop classes – 40th class day

Friday, April 7, 2017: Classes conclude

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.

6.1 Resources

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

A tutorial on Academic Misconduct produced by the Learning Commons can be found at:

<http://www.academicintegrity.uoguelph.ca/>

Please also review the section on Academic Misconduct in your [Engineering Program Guide](#).

The School of Engineering has adopted a Code of Ethics that can be found at:

<http://www.uoguelph.ca/engineering/undergrad-counselling-ethics>

7 ACCESSIBILITY

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability for a short-term disability should contact the Centre for Students with Disabilities as soon as possible

For more information, contact CSD at [519-824-4120](tel:519-824-4120) ext. 56208 or email csd@uoguelph.ca or see the website:

<http://www.uoguelph.ca/csd/>

8 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, classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9 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:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2016-2017/index.shtml>