

## DEPARTMENT OF SUSTAINABILITY SCIENCES

### ENSU 3033: Aquatic Resource Planning and Management GEOG 4411: Water Resource Management Fall Semester, 2016

#### CONTACT INFORMATION

Instructor:	Dr. Chris Murray, Department of Sustainability Sciences
Email:	cmurray1@lakeheadu.ca
Office Location:	OA 3023
Office Hours:	2:00-4:30 pm, Monday and Wednesday or by appointment
Phone Number:	705-330-4008 x2651
Supplementary Course Website:	Available on Desire2Learn

#### DELIVERY MODE/LOCATION

Lecture Location:	OA2017
Campus:	Orillia, University Avenue Campus
Times:	<b>Monday and Wednesday, 11:30am-12:50pm</b>

#### COURSE DESCRIPTION

Students will investigate biological, chemical and physical aspects of aquatic resources and human control systems. Emphasis will be placed on complex management challenges, derived from the interaction between the water cycle and human control agencies. Major themes include water supply, water quality, wastewater management, hydropower, flood control, and Aboriginal issues with respect to water resources. Each theme will be examined across a range of scales, technologies, and communities.

#### COURSE OBJECTIVES

Upon successful completion of this course, students will be able to demonstrate knowledge of the fundamental concepts in the following topics, and will be capable of applying this knowledge to solve problems pertaining to these topics:

- The water cycle and human impact on surface and groundwater
- Stormwater, wastewater and drinking water management
- The basic physical, chemical and bacteriological properties of water that determine its suitability for use by humans

Hydraulics and its application in conveyance systems for water  
The biological significance of water, treatment of water and waterborne pathogens  
The use of water for power generation, flood control and other industrial applications  
Aboriginal issues associated with water management

## REQUIRED MATERIALS

Text: None.

Calculator: A calculator with trigonometric functions ( $\sin$ ,  $\cos$ ,  $\tan$ ,  $\sin^{-1}$ ,  $\cos^{-1}$ ,  $\tan^{-1}$ , etc.) is required. Calculators with graphing capability are not permitted, nor is the use of smartphones or other handheld devices capable of graphing.

## ADDITIONAL MATERIALS

Several different texts will be available throughout the semester as additional resources.

## TENTATIVE EVALUATION SCHEME:

Assignment/quiz	Description	Weight	Due Date
Quiz #1	Material from weeks 1 to 3	10	September 26
Toilet report	Up to 10 minutes, video file submitted online	20	October 17
Quiz #2	Material from weeks 4 to 9	20	November 9
Design Project	Individual submission	20	November 23
Exam	Cumulative	30	TBA

## Assignments and Exam:

A grade for this course will be assigned based on the completion of quizzes, a final exam, a presentation focused on an entry in the Gates Foundation's "Reinvent the Toilet Challenge", and a design project focused on water reuse. Some self-assessment of questions posed in class will occur throughout the semester, but these will not be handed in for marks. It is up to the student to adequately prepare for the quizzes and exam by practicing using problems from class, and both the quizzes and the exam will be based on material described in lecture.

The final exam will be closed-book, but students may bring one 8.5" x 11" equation sheet (to be reviewed by the instructor immediately before the exam). The exam is cumulative, and will be in concept similar to the quizzes administered throughout the semester.

**Students are advised to refer to the University Calendar to ensure that they have adequate grades and/or average to proceed in their program.**

## TENTATIVE COURSE SCHEDULE

Class	Week of...	Topic	Evaluation
1	September 5	Introduction, Review	
2	September 12	Chemical properties and characteristics of water	
3	September 19	Physical properties and characteristics of water: pressure and flow	
4	September 26	Sedimentation	Quiz #1
5	October 3	Bacteriological properties of water and treatment of water and waterborne pathogens	
	October 10	Fall Reading Week- no classes	
6	October 17	Wastewater management	Videos due
7	October 24	Stormwater management	
8	October 31	Erosion control	
9	November 7	Drinking water management	Quiz #2
10	November 14	Hydro power	
11	November 21	Flood Control	Design project
12	November 28	Regulations to protect water resources; Review	

### IMPORTANT DATES:

**Last day to Register:**

**September 19, 2016**

**Last day to Drop without academic penalty:**

**November 7, 2016**

**Exams begin:**

**Week of December 8<sup>th</sup>**

**Contingency Date:**

**December 19, 2015**

**NOTE: Any important announcements, including changes in due dates will be announced in-class and posted on Desire2Learn.**



## **COURSE POLICIES**

### **Attendance, missed quizzes**

Lecture attendance is not mandatory, but it is highly recommended. Missed exams and quizzes without justification will be assigned a mark of zero.

### **Behaviour, non-academic misconduct**

Lakehead University's policy regarding disruptive behaviour is outlined in the course calendar. Briefly, interference, obstruction or disruption of teaching, disruptive behaviour including refusal to cooperate with any University staff member performing his or her duties constitutes non-academic misconduct, violates University standards and is subject to disciplinary procedures.

### **Handheld devices, food**

Handheld devices such as cell phones, MP3 players, etc. may not be used during a quiz or an exam. Disruptive use of such devices during lecture and labs constitutes non-academic misconduct and will be treated as such.

Food is not permitted in lectures.

### **Note:**

Due to unforeseen circumstances, it may be necessary to change the time for a scheduled quiz or lecture. If this is necessary, at least one week notice will be given to the class.

## **GENERAL REGULATIONS**

Student Accessibility Services (SAS) (Thunder Bay) and Student Affairs (Orillia) coordinate services and facilitates reasonable academic accommodations for students with disabilities. Academic accommodations are provided on the basis of documentation of a disability. Additional information is available at the following campus websites:

Thunder Bay:

<http://learningassistance.lakeheadu.ca/>.

Orillia:

<http://orillia.lakeheadu.ca/about-us--orillia-student-affairs/>

## **ACADEMIC DISHONESTY:**

The University takes a most serious view of offences against academic honesty such as plagiarism, cheating and impersonation. Penalties for dealing with such offences will be strictly enforced.

A copy of the "Code of Student Behaviour and Disciplinary Procedures" including sections on plagiarism and other forms of misconduct may be obtained from the Office of the Registrar.

The following rules shall govern the treatment of candidates who have been found guilty of attempting to obtain academic credit dishonestly.

(a) The minimum penalty for a candidate found guilty of plagiarism, or of cheating on any part of a course will be a zero for the work concerned.

(b) A candidate found guilty of cheating on a formal examination or a test, or of serious or repeated plagiarism, or of unofficially obtaining a copy of an examination paper before the examination is scheduled to be written, will receive zero for the course and may be expelled from the University.

Students disciplined under the Code of Student Behaviour and Disciplinary Procedures may appeal their case through the Judicial Panel.

Note: "Plagiarism" shall be deemed to include:

1. Plagiarism of ideas as where an idea of an author or speaker is incorporated into the body of an assignment as though it were the writer's idea, i.e. no credit is given the person through referencing or footnoting or endnoting.
2. Plagiarism of words occurs when phrases, sentences, tables or illustrations of an author or speaker are incorporated into the body of a writer's own, i.e. no quotations or indentations (depending on the format followed) are present but referencing or footnoting or endnoting is given.
3. Plagiarism of ideas and words as where words and an idea(s) of an author or speaker are incorporated into the body of a written assignment as though they were the writer's own words and ideas, i.e. no quotations or indentations (depending on format followed) are present and no referencing or footnoting or endnoting is given.

A listing of University Regulations can be found at:

<http://calendar.lakeheadu.ca/current/contents/regulations/univregsintro.html>

The code of student behaviour and disciplinary procedures can be found at:

<http://policies.lakeheadu.ca/policy.php?pid=60>

## **MISSED EXAMS**

Make-up examinations will only be given with written documentation from a healthcare practitioner using the official Student Health Certificate, available at

<http://registrar.lakeheadu.ca/uploads/docs/F.HealthCertificate.pdf>.

Final examinations begin Dec 8<sup>th</sup>. There will be no rescheduling of examinations to accommodate holiday travel or extracurricular activities. No one will be allowed to write examinations prior to the scheduled date.