MOUNT ROYAL UNIVERSITY
DEPARTMENT OF EARTH & ENVIRONMENTAL SCIENCES
COURSE OUTLINE –WINTER 2020

ENVS 3323
Watershed Management
(3 credits) 3 hours lecture, 3 hours lab

INSTRUCTOR: Brian Sevick
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Office Hours: By appointment (Naomi Jamieson at 403.440.6615)

CALENDAR DESCRIPTION:

Ensuring a safe and adequate supply of water is a global concern. This course is designed to provide an understanding of watershed practice and an approach to managing watershed systems in a sustainable fashion.

RATIONALE:

Everyone uses and affects our water resources. As a consequence, we all share responsibility for the sustainable management of our water. All stakeholders must work together to identify watershed issues and provide solutions to improve watershed management. Watershed management provides a framework for integrated decision-making and for identifying and implementing actions in a process of continuous improvement. The goal of watershed management is to plan and work toward an environmentally and economically healthy watershed that benefits all stakeholders. Environmental scientists can play a key role in key role in protecting our watersheds and must seek to improve their knowledge of watershed issues and management practices. This course will introduce students to key watershed issues and explore best watershed management practices.

PREREQUISITES: Environmental Science 3321 or Environmental Science 3333 or consent of department.

CO-REQUISITES: None.

TRANSFER CREDIT: To be negotiated.

ENVS 3323 Watershed Management

COURSES LEARNING OUTCOME INTEGRATION WITH MOUNT ROYAL UNIVERSITY AIMS

Less ✓ ✓ More

	COURSE LEARNING OUTCOMES	Knowledge of Human Cultures and the Physical, Natural and Technological World	Intellectual and Practical Skills	Personal and Social Responsibility	Integrative and Applied Learning	ASSESSMENT
1.	Challenge common misconceptions about the nature and importance of watersheds.	✓	✓	✓		• Exam questions
2.	Identify and delineate watershed boundaries and components.	✓	✓		✓	• Exam questions
3.	Understand and assess past, present and future watershed management issues at local, regional, national and global levels.	✓	✓		✓	• Exam questions
4.	Critically evaluate the major uses and users of water in Alberta watersheds.	✓	✓		✓	• Lab assignments
5.	Identify, develop and propose best management practices for water uses and users in Alberta watersheds.	✓	✓		✓	• Exam questions
6.	Distinguish the most important watershed management issues in Alberta and challenge current practices.	✓	✓		✓	• Exam questions
7.	Understand the regulatory framework surrounding Alberta watersheds including allocation and apportionment issues.	✓	✓		✓	• Exam questions • Lab assignments
8.	Identify and evaluate climate change impacts on watersheds. Propose solutions to mitigate these impacts.	✓	✓		✓	• Exam questions • Lab assignments
9.	Critically examine personal use of water and impacts on watersheds.	✓	✓		✓	• Exam questions
10.	Identify, understand and respond to emerging watershed issues related to the management of flooding, riparian areas and wetlands.	✓	✓	✓	✓	• Exam questions
11.	Develop appropriate water body crossing and spill response plans.	✓		✓		• Exam questions
12.	Assist in the development of watershed management plans.	✓		✓		• Exam questions • Lab assignments
13.	Retrieve, evaluate and utilize information resources related to watershed management.		✓		✓	• Lecture & Lab assignments
14.	Write reports about watershed management issues using a variety of approaches and formats.		✓		✓	• Lab assignments

RESOURCE MATERIALS:

1. Text: None required.
2. Courseware/Blackboard website: http://courseware.mymru.ca
3. Various materials available online and potentially in the Reserve Collection.

CONDUCT OF COURSE:

The course consists of three hours of lecture and a three-hour lab per week. Lectures will be utilized to introduce core concepts, regulations, water uses, anthropogenic impacts on watersheds and best management practices. Lectures will also include guest speakers, review of ongoing and past watershed management work. A term project will focus on a best practice watershed management solution to a current watershed problem. Labs will include field trips, guest speakers, field work and group project work.

Relevant Calendar Information

Students are responsible for familiarizing themselves with general information and college policies regarding their conduct in courses provided in the Introduction, Academic Regulations & Academic Status sections of the 2019-2020 Mount Royal University Calendar.

Please take note of the following sections and pages:

Academic Regulations	37-44
Attendance Policy	37
Examination and Grades Policies	23-26
Student Conduct	26
Academic Standing	45-46
Academic Status & Grading System	47-50

Students should also familiarize themselves with the role of Mount Royal University's Office of Student Conduct and the Student Conduct Guide.
http://www.mtroyal.ca/CampusServices/CampusResources/StudentConduct/index.htm
http://www.mtroyal.ca/cs/groups/public/documents/pdf/student_conduct_guide.pdf

Please take note the following dates:

Last day to adjust registration (Drop/Add/Cancel)	January 15
Family Day Holiday	February 17
MRU Winter 2019 Semester Reading Break	February 18-21
Last day to WITHDRAW from a course/program	March 20
Last Day of Fall 2019 Semester Classes	April 6
Final Examination Period	April 8-22
Good Friday Holiday	April 10
Easter Monday Holiday	April 13

EVALUATION PROCEDURES:

Guidelines for assignments will be published on the Courseware/Blackboard website. For exams, you are responsible for all material presented in lectures, labs, assigned supplemental readings and information delivered by guest speakers. The midterm and final exam format will include essay, short answer and multiple-choice questions. Anyone who fails the midterm exam should meet with the instructor to review their

performance. Deadlines will be established for all assignments at least two weeks in advance. Late assignments may not be accepted, or will have penalties applied depending on the circumstances. Group project work will be evaluated by the instructor in combination with peer and self-evaluations. Students are encouraged to contact the instructor regarding problems related to any part of the course. Student Learning Services and the Office of Student Success offer services that may be useful in developing study skills, test-writing strategies and other learning strategies that lead to student success. The final lecture exam will be comprehensive. The 2019-2020 Mount Royal Calendar advises students that they must be available for final examinations up to the last day of the examination period (April 22nd, 2020).

Examination Schedule (tentative) and Grading Scheme

Agricultural BMP assignment (individual).	February 4th	5%
Pipeline crossing assignment (group).	February 14th	15%
Group project (tentative): • Wetlands Day (Sunday, Feb. 2nd – Wetlands and Biodiversity theme) event (group or individual) • World Water Day (Sunday, March 22nd – Climate Change theme) event (group or individual) • Alberta Watershed Profile • Water in Winter – ice or snow investigation (group) • Oil by Rail – watershed risks • Water Act Application (group) • Campus/Home/Work water conservation or stormwater solution • Video • Research Days Poster • Other (group or individual) - must be approved by Brian	March 20th	15%
Term project – best management solution.	Due April 6th (preferably earlier)	15%
Term project presentations - learning event.	April 2 nd (lecture), April 3rd (lab)	5%
Midterm exam.	February 27th	20%
Final exam.	April 8-22 (to be scheduled by Registrar)	25%

All group projects include a self & peer evaluation process.

Standard Grading System

A+	95-100%	Excellent. Superior performance, showing comprehensive understanding of subject matter.
A	85-94%	
A-	80-84%	
B+	77-79%	Good. Clearly above average performance with knowledge of subject matter generally complete.
B	73-76%	
B-	70-72%	
C+	67-69%	Satisfactory. Basic understanding of subject matter.
C	63-66%	
C-	60-62%	
D+	55-59%	Marginal performance. (Generally insufficient preparation for subsequent courses).
D	50-54%	
F	Below 50%	Fail. Unsatisfactory performance or failure to meet course requirements.

ATTENDANCE:
Classes and tests will begin promptly at scheduled times. Please be punctual for both. You are expected to review assigned materials prior to lectures and labs. You are expected to attend all lectures and labs. Attendance will not be recorded at lectures, but please see page 37 of the 2019-2020 Mount Royal University Calendar about your responsibilities. In the past, success in this course has been strongly related to attendance. Attendance will be taken at labs. Any lab activities that are missed without a valid excuse cannot be made up. Several course activities will take place in the field and outside of regularly scheduled hours.

ELECTRONIC DEVICE POLICY:
Students are expected to respect the classroom environment in their use of technology and electronic devices. The inappropriate use of technology and other electronic devices in class is prohibited. Any use of technology or electronic devices that is distracting and disruptive to students or the instructor is not permitted. Audio visual recording of lectures is not allowed without the expressed consent of the instructor.

YOUR MENTAL HEALTH:
Are you feeling overwhelmed, stressed and anxious? Finding it hard to be motivated, meet deadlines or attend class? Having a hard time sleeping, concentrating or retaining information no matter how much you study? Help is available! See the MRU Mental Health Website for all resources.
http://www.mtroyal.ca/CampusServices/WellnessServices/MentalHealthServices/index.htm

CAMPUS EQUITY & MEANINGFUL INCLUSION:
You are encouraged to find general information as well as information on how to address issues related to diversity, inclusion, discrimination, harassment, accommodation, healthy relationships and dating, domestic and sexual violence. See the MRU Campus Equity & Meaningful Inclusion Website for resources.
http://www.mtroyal.ca/CampusServices/CampusResources/CampusEquityMeaningfulInclusion/index.htm

COURSE UNITS:
(Tentative Schedule)

Classes:	**Topic(s):**
January 7	Introduction to course. Introduction (review?) to watersheds.
January 9	Introduction to water resources and watershed management.
January 14, 16, & 21	Municipal use, impacts, issues and best management practices.
January 23	Overview of jurisdictional responsibilities, laws and regulations related to watersheds in Alberta.
Jan. 28 & 30	Agricultural use, impacts, issues and best management practices.
February 4, 6 & 11	Oil & gas sector use, impacts, issues and best management practices.
February 13	Forestry use, impacts, issues and best management practices.
February 17, 18-21	**Family Day, Reading Break – No classes.**
Feb. 25	Hydro use, impacts, issues and best management practices.
Feb. 27	**Midterm Exam**
March 3	Hydro use, impacts, issues and best management practices (cont.).
March 5 & 10	"Other" industrial use, impacts, issues and best management practices.
March 12 & 17	Recreational use, impacts, issues and best management practices.
March 19 & 24	Water storage, flood, and stormwater issues.
March 26	Riparian zone issues and management.
March 31	Local watershed management issues and initiatives.

April 2	BMP presentations.
April 6	**Last Day of MRU Winter 2020 Semester Classes**
April 8-18	**Final Exam (scheduled by Registrar)**

LABS (Very Tentative)

January 10	Video: *How the Earth Changed History – Water* Group Project Options
January 17	Freshwater Spills
January 24	Pine Creek Wastewater Treatment Plant
January 31	Irrigation Lab
February 7	Pipeline Crossing Preparation
Feburary 14	Pipeline Crossing Public Consultation Event – Immersion Studio?
February 28	Lake Winnipeg Case Study
March 6	Recreational Use Case Study – Harvie Passage, Badland Motor Sports, Cottages
March 13	Bow River Water Management Options. Springbank Dam. Riparian Issues
March 20	Oil Sands Water Issues – guest speakers
March 27	Eastern Bow Basin Field Trip
April 3	BMP Presentations – Learning Event

A variety of activities, case studies, guest speakers, field trips and group project work are being planned. More details will be announced after our plans are confirmed.