

MOUNT ROYAL UNIVERSITY
ENVS 4431 Management of Residuals
COURSE OUTLINE FALL 2019

INSTRUCTOR: Dr. Israel Dunmade

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TEXT: 1. Alberta Environment. Alberta User Guide for Waste Managers (Required) (downloadable from google)
2. Directive 58 - Oilfield Waste Management Requirements for the Upstream Petroleum Industry (Required) (downloadable from google)
(A copy of each of them is available in the Reference Library)

Extra materials will be made available in the library and/or on the blackboard if/when necessary.

PREREQUISITES: *Environmental Science 3333 or consent of the department*

CREDITS: (3 Credits) 3 hrs Lecture

CALENDAR DESCRIPTION:

This course is designed to provide the students an understanding of the principles and concepts of waste management. Topics include: environmental chemistry of hazardous wastes, principles of industrial metabolism, waste disposal, health risks, regulatory aspects of residuals management, principles of industrial metabolism, optimization of materials.

Course Rationale:

Society creates waste streams and their proper management represents a genuine challenge. Canadian Environmental Certification Approvals Board requires practitioners to have competencies in the management of hazardous and non-hazardous waste, including classification, tracking, reduction, reuse, recycling, collection, disposal, and end use of waste streams, and the treatment/ beneficial reuse of non-hazardous/hazardous wastes. These are the essential components of waste management that addresses public concerns and minimizes liabilities in a cost-effective way.

Course Learning Outcomes: *After satisfactorily completing this course, students will be able to have:*

- An understanding of Canadian waste classification
- An understanding of waste minimization
- An understanding of materials flow
- An understanding of waste management systems and potential pathways
- An appreciation of the legal requirements
- An understanding of the basic scientific and social principles governing residuals management

University Wide Outcomes: Mount Royal University has identified six University wide learning outcomes that the institution believes are critical to workplace success and a life of continuous learning: *Thinking Skills; Communication; Information Access and Retrieval; Ethical Reasoning; Group Effectiveness and Computer Literacy*. This course focuses on the following aspects of the University wide outcomes:

- 1) *Thinking Skills:*
 - Design appropriate integrated waste management
 - Follow critically appropriate waste management guidelines
 - Evaluate waste management options
 - 2) *Group Effectiveness:* Work in a team in carrying out class assignments
 - 3) *Communication Skills:* Write case study reports in a scientific format
 - 4) *Information Retrieval:* Retrieve information to expand functional knowledge on the topic being investigated
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CONDUCT OF THE COURSE

The course consists of three hours of lectures per week. The lectures cover principles of waste management. The assignments/class exercises provide students with opportunities to enhance their understanding of the lecture material.

The instructor will use a variety of instructional methods. In the class, there will be a mixture of lectures, illustrations, exercises and group discussions. There will also be assignments. Educational videos, field trip(s) and other resources may also be used to enhance students' learning. Class participation is important to your learning in this course. A variety of assessment techniques that fit this approach will be used. These may include any or all of the following: short research questions, computational exercises, in-class discussions, debates, discussion board participation, and other forms of assessment. Students who do not attend class regularly may lose the opportunity to earn marks for in-class assessments.

YOUR RESPONSIBILITIES

For evaluation purposes, you are responsible for all materials presented in the course (both in class and on field trips). Students are encouraged to contact the instructor regarding problems related to any part/aspect of the course. The final grade will depend on assignment(s)/class exercise(s)/field trips/class discussion, group presentation, midterm exam, and a final examination (as shown below).

EXAMINATION SCHEDULE (TENTATIVE) AND GRADING SCHEME

Your work will be evaluated on the following basis:

Assignments/ Participation in Class Exercises, Field Trip(s) and Class discussion	30%
Group presentation	10%
Midterm exam (Oct. 23, 2019)	20%
Final (cumulative)	<u>40%</u>
	100%

STANDARD GRADING SYSTEM:

A+ 95 - 100%	B- 70 – 72%	D 50-54%
A 85 – 94%	C+ 67 – 69%	F 0 - 49%
A- 80 – 84%	C 63 – 66%	
B+ 77 – 79%	C- 60 – 62%	
B 73 – 76%	D+ 55 – 59%	

For a complete outline of the Mount Royal University grading policy see the current Mount Royal University calendar.

Integrity of Student Work and Attendance:

Your attention is specifically drawn to the section dealing with Integrity of student work of the Mount Royal University calendar. This section will be applied if necessary in ENVS 4431. It applies to class work as well as examinations. You are expected to attend all classes and to be on time. You are also expected to have all the assignments in on time. If you miss handing in an assignment by the date and time they are due you will receive 10% off the mark for every day late. Late assignment will not be accepted a week after the deadline except due to medically confirmed illness. I will mark assignments as soon as I can, however this may be longer than you expect depending on workload.

Classroom Rules:

You are responsible for your own learning. This means if you need help with the course material (such as the terms and concepts that are presented) you will ask. The best way to contact me is through email. My email address is at the top of the first page.

All assignments must be handed in on time – no exceptions. Hardcopy is to be submitted in my dropbox in front of B246. If you miss handing in an assignment by the date and time they are due you will receive 10% off the mark for every day late. I will mark assignments as soon as I can, however this may be longer than you expect depending on workload.

There are readings to be done outside of the classroom. You are expected to do the readings, understand the material and be prepared to discuss them in class. Some of the assignments will be based on the readings.

I do not grade on a curve. Your work is judged on its own merit and how you have presented your arguments. Your work will be evaluated based on the instructional objectives (which may differ for each assignment) and in relationship to how others in the class have presented their arguments.

A key part of this course is critical or analytical thinking. I define this as the process of gathering information, evaluating, interpreting and reflecting on the information and drawing conclusions that reflect a strong understanding of the material and how it might relate in a broader context. You are expected to show critical or analytical thinking in your assignments, discussions and during Q&A. You are also encouraged to show how you got to your conclusions.

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. Texting and side-talks while the lecture is going on in the class distracts my attention and attention of some students. Please go outside the classroom if you want to text or talk. However, I will only present the material one time. If you miss the material that is presented, it

is up to you to ensure that you figure out and understand what you have missed and to get the information. I will not be repeating lectures. Some lectures will be posted if they are in the form of power points, but not necessarily. Audiovisual recording of lectures is not allowed without the expressed consent of the instructor.

Group Presentation/Group led discussion Fall 2019

Each group of 2-3 students is required to pick a city or town in Alberta for their group presentation. The groups will research/collect information on how the city or town selected is managing its municipal wastes. The groups will also make PowerPoint presentation of the summary of their findings and submit a copy of the powerpoint on the blackboard dropbox provided after their presentation in the class.

The purpose of the group presentations is to widen students' horizon on how cities and towns are managing their wastes, the challenges they are facing and other issues regarding their waste management policy, planning, auditing and waste minimization. The name of the city/town and intended date of presentation will be registered by each group on or before 18th Sept 2019. Maximum of two groups will present during a lecture period. Group presentations will take place in October and November when there is no exam or field trip.

A group may choose from the following cities and towns or any other town in Alberta that is not listed here:

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|------------|---------------|------------------|--------------|
| 1. Calgary | 4. Cochrane | 7. Fort McMurray | 10. Banff |
| 2. Airdrie | 5. Lethbridge | 8. Fort MacKay | 11. Red Deer |
| 3. Okotoks | 6. Strathmore | 9. Edmonton | 12. Leduc |

The group should research the following:

- *Introduction*: this should include some information about the town such as the location, population, main economic activities, GDP and a little bit of its history.
- *Waste types and their management*: This includes information on some specific types of waste, their potential health risks, how the town manages the wastes (in terms of planning, source reduction, waste minimization, waste transportation, recycling and final disposal) and reasons why they chose that waste management path. Others include whether they are ISO (9000 and 14000) certified and how the certification affected their waste management. This should also include the problems and benefits of using specifically mentioned waste management method(s).
- *Conclusion and recommendations*: This includes summary of your findings, what you learned and what you think could be done to help solve their waste management problems and/or improve their environmental performance.

PowerPoint presentation

This should be a summary of the aforementioned items and should contain the following sections:

- Title page containing the course code, project topic, group member names, instructor, and date
- Introduction (__/2)
- Waste types and their management (__/8)
- Conclusion and recommendations (__/2)
- Questions and answers. (__/3)
- Overall quality of presentation (__/5)

Total: __/20

This will be compressed to 10% of the course grading.

The presentation will be for about 10 minutes while questions and answers will be for about 5 minutes. Every member of the group has to participate in the presentation. Any member of the group that fails to take part in the presentation will lose half of the total mark (i.e. 10/20). The same grouping may be used for class exercises/discussions, assignments, group presentations and all other activities in/for this course (ENVS 4431).

Note: There will be participation mark for taking part in the field trips and there will be marks for active participation during discussions on the field trips, reading assignments, calculations and other exercises in the class.

All course participants should maintain and monitor their Mount Royal University e-mail account. You should also regularly visit the blackboard because announcements and assignments may be put on it from time to time. The number and date of graded assignments and exercises may vary from the tentative plan (shown above) depending on factors such as how fast we are able to cover the course material and the workload.

Course Organization:

Below is a potential list of topics that will be covered in this course:

- Hazardous waste classification, transportation & chemistry using AUGWM
- Oilfield waste classification, transportation & chemistry using Directive 58
- Materials flow and waste generation
- Canadian application of material flow analysis
- Waste management options
- Waste collection & transport
- Waste minimization assessment
- Physical treatment
- Biological, chemical and thermal conversion technologies
- Code of Practice for Alberta landfills

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](http://www.mtroyal.ca/CampusServices/WellnessServices/MentalHealth/index.htm) for all resources.

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Diversity, Inclusion, Human Rights and Sexual Violence

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 Diversity and Human Rights Website](http://www.mtroyal.ca/CampusServices/CampusResources/DiversityHumanRights/index.htm).

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