INSTRUCTOR: Dr. Israel Dunmade

OFFICE: B246

OFFICE HOURS: W 11:00am - 12:00 noon

LECTURES: M, W 9:30 – 10:50 am

TEXT:
   ISBN: 0-13-960378-6
   (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: Successful completion of semesters 1, 2, 3, 4 Biogeochemical Process Stream or equivalent or Departmental approval.

CREDITS: (3 Credits) 3 hrs Lecture

CALENDAR DESCRIPTION:
This course will have as its basic theme from an environmental chemistry perspective within an overall framework of industrial ecology. Topics include: environmental chemistry of hazardous wastes, principles of industrial metabolism, waste disposal, health risks, regulatory aspects of residuals management, 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

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. Outside speakers may also be invited to explain or illustrate industrial applications of some of the concepts. Educational videos, field trip(s) and other resources may also be used to enhance students’ learning.

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

EXAMINATION SCHEDULE (TENTATIVE) AND GRADING SCHEME
Your work will be evaluated on the following basis:

<table>
<thead>
<tr>
<th>Assignments/Class Exercises/Class participation/Field Trip(s)</th>
<th>23%</th>
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<tbody>
<tr>
<td>Group presentation</td>
<td>10%</td>
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<tr>
<td>Reflection journal</td>
<td>7%</td>
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<tr>
<td>Midterm</td>
<td>20%</td>
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<tr>
<td>Final (cumulative)</td>
<td>40%</td>
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<td>100%</td>
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STANDARD GRADING SYSTEM:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>A+</td>
<td>95 - 100%</td>
</tr>
<tr>
<td>A</td>
<td>85 – 94%</td>
</tr>
<tr>
<td>A-</td>
<td>80 – 84%</td>
</tr>
<tr>
<td>B+</td>
<td>77 – 79%</td>
</tr>
<tr>
<td>B</td>
<td>73 – 76%</td>
</tr>
<tr>
<td>B-</td>
<td>70 – 72%</td>
</tr>
<tr>
<td>C+</td>
<td>67 – 69%</td>
</tr>
<tr>
<td>C</td>
<td>63 – 66%</td>
</tr>
<tr>
<td>C-</td>
<td>60 – 62%</td>
</tr>
<tr>
<td>D+</td>
<td>55 – 59%</td>
</tr>
<tr>
<td>D</td>
<td>50-54%</td>
</tr>
<tr>
<td>F</td>
<td>0 - 49%</td>
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</tbody>
</table>

NOTE: Students are responsible for familiarising themselves with general information and University policy provided in the MRU Calendar, 2013 – 2014.

Course Policies
In keeping with the principles of Mount Royal University’s Code of Student Conduct, which promotes student educational development, is committed to the highest level of academic integrity, and values the rights and freedoms of the individual, the following course policies are the minimum expectation of all course participants:

1) All participants will support efforts within and outside of the classroom to follow and develop an appropriate level of academic effort.
   o Because of the nature of the course’s material, students will be expected to arrive in a timely fashion for all scheduled classes. The Instructor do record class sessions for personal purpose.
   o Students are expected to have completed assigned readings by the assigned date.
   o The course policy is that late assignments will not be accepted.
     • In the event of technological failure of Mount Royal University computer systems or extraordinary weather events, the instructor will normally reschedule assessments with appropriate efforts to communicate these changes. All course participants should maintain and monitor their Mount Royal University e-mail account.
     • All assignments/reports/exercises should be turned in typewritten, Times New Roman size 12, 1.5 spacing and sent as e-mail attachment(s) to the instructor on or before the due date. Students are responsible to ensuring that the attachments could be opened. Reports should highlight the Title, Name(s),Course Code; Abstract; Introduction; Method; Results and Discussion; and Conclusion. Assignments involving solving problems should highlight the Assignment #; Course code; Name(s); Problem #; Given Data; Information to be sought for; Assumptions, and Analysis. Information provided for each assignment/exercise should only serve as guidelines.
Assessments may be rescheduled for students with major cause (illness, death etc.) or for other documented reasons if notification is provided in advance of the assessment’s deadline.

The final exam is scheduled by the Registrar and its scheduling cannot be modified by the instructor. A final exam can only be rescheduled by following the University’s deferred final examination policy.

- The instructor commits to a policy of timely grading of assessments (as can be reasonably accommodated). Please note that the instructor may electronically record class sessions for self improvement purpose.

2) All participants will commit to supporting and maintaining a fair and respectful learning environment.

- Students with documented learning or physical difficulties will be afforded the appropriate accommodations as determined by Mount Royal University’s Accessibility Services.

- All participants will commit to keeping the learning environment free from instances of academic dishonesty.

- It is expected that all work handed in by a student will be original work that has been done by that individual. You will certainly use the work and ideas of others as the basis for your own work but you must acknowledge and/or credit those sources. Failure to credit your sources will be considered an act of intellectual dishonesty - or plagiarism - and can result in an automatic "F" grade for the course and a permanent notation on your transcript. You are responsible for familiarizing yourselves with the Code of Student Conduct at http://mtroyal.ca/codeofstudentconduct/ and you are also responsible for clearing up any confusion you might feel by discussing plagiarism with your instructor.

3) All participants are responsible for familiarizing themselves with the University’s academic policies at http://www.mtroyal.ca/studentlife/academic_policies.shtml

ENVS 4431 Class Group presentation Description and Expectations

Group Presentation/Group led discussion Fall 2013

Each group would be required to pick an economic sector, a town or an organization for this group presentation. The group will research/collect information on how the town, organization or companies in each selected sector are managing their wastes from the organization, companies, journals, websites and other sources. Make PowerPoint presentation of the summary of their findings.

The purpose of the group presentations is to widen students’ horizon on how organizations, municipalities or companies in various sectors of the economy are managing their wastes, the challenges and other current issues on their waste management policy, planning, auditing and waste minimization. A town, a sector or an organization will be selected and registered by each group on the first day of class.

A group can choose any of the following suggested organizations, towns and economic sectors

1. Manufacturing companies
2. City of Calgary
3. Building construction
4. Airdrie, Cochrane, Okotoks, Blackfads, High River, etc.
5. Medical facilities
6. Other sector agreed with the instructor

The group should research the following:

- **Introduction**: this should include the importance/economic worth of the town/company in Alberta (dollar value, number of employments, etc.)

- **Environmental profile of the town or company**: this should include types, sources and amount of resources consumed per annum; types and amount of waste generated; seasonal variation in waste generated and locations where the sector’s activities are concentrated in Alberta.

- **Waste management**: This include information on how the town or company is managing the wastes in terms of planning, auditing, source reduction, waste minimization, waste exchange and recycling. Others include whether they are ISO 9000 and 14000 certified and how this standards have affected their waste management. This also includes their problems and benefits of using the 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 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)
- Environmental profile of the town/company (__/3)
- Waste Management (__/7)
- Conclusion and recommendations (__/1)
- Conduct of class discussion, Questions and Answers. (__/7)

Total: __/20

This will be compressed to 10% of the course grading. The presentation will be for 20 minutes while class discussion, questions and answers will be for about 10 - 20 minutes. Every member of the group has to participate. The PowerPoint to be presented should be sent as e-mail attachment(s) to the instructor **not later than 24 hours** before the presentation date/time. The same grouping will be used for class exercises/discussions, assignments, group presentations and all other activities in/for this course (ENVS 4431).

**Reflection Journal**

Jennifer Moon (2013) defines journal as self reflective writing involving making explicit and recording the learning that occurs over a period of time. According Moon (2013), learning journal is “helpful in personalizing and deepening the quality of learning and in helping learners to integrate the material of learning - such as that from different modules or theoretical and practical learning. They may be highly structured or 'free' and they have been used to improve learning in virtually every subject area including mathematics and the sciences, and particularly in professional development.” In this course, the purposes of the online journal are: i) to record experience, (ii) to facilitate learning from experience, (iii) to develop critical thinking, (iv) to foster communication, and (iv) to enhance problem solving skills. So, reflection journal is a crucial part of this course. It is to help student reflect on what they are learning and to correlate how each component of the course help them in the course. Each student is required to submit his/her reflection journal **not later than 8pm** on the due date shown in this course outline. It should contain summary of new things you learned (or ideas you gained) in the preceding one month in the class, on the field trip, in the exercises, in the group presentations, etc. It should also highlight how what you learned could be applied to other areas of (your) study as well as how it could help you achieve your career goals. Moreover, you should highlight some challenges you are having in the course and the kind of help that you need.

The worth of each of the first two journaling exercise is 2% of the course grading while the last one is 3%.

**My Research Study on Impact of Course components on Students’ Learning**

I am currently conducting a study entitled *Impacts of various course components on students’ learning.* Key questions that I am examining are:

- Which components in ENVS 4431 are helping students to learn and which of them are not?
- How effective are those components in helping students to learn?
- Why are those ineffective components not helping students to achieve the goal? and
- How valuable are the elements of the course?
In order to help me answer these questions I would like to invite you to participate in my research study. Your participation would consist of the following:

- Completing an anonymous survey about your perceptions on the ENVS 4431 at the end of the last class. This survey will take approximately 5 minutes to complete.

- Completing the three structured reflection journals on your learning in the course. In your journal entries you will be required to highlight new things you learned (or ideas you gained) in the preceding two weeks in the class, on the field trip, in the exercises, in the group presentations, etc. You will also state how what you learned could be applied to other areas of (your) study as well as how it could help you achieve your career goals. Each entry will take approximately 10 to 15 minutes to complete outside of class time (10 x 3 = 30 minutes in total). This is part of the course requirements. The journal entries will be available to me whenever you complete them and may be copied electronically.

- Giving me permission to review your submitted group presentation powerpoint and exam answer scripts for the study.

Please note that participation in this study is completely voluntary and will have no bearing on your marks in the ENVS 4431 course. Your responses will be kept confidential and there will be no references to names or personal identifiers in the final study report. You have the freedom to withdraw from the study at any time by emailing Qasim Syed (qsyed@mtroyal.ca).

This study has been approved by the Mount Royal Human Research Ethics Board (HREB). If you have any questions about the study, please feel free to contact me.
## TENTATIVE LECTURE SCHEDULE  

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE/ACTIVITY</th>
<th>TOPICS &amp; READINGS</th>
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<tbody>
<tr>
<td>1.</td>
<td>Sept 9, 11</td>
<td>Introduction. Hazardous waste classification, transportation &amp; chemistry using AUGWM</td>
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<tr>
<td>2.</td>
<td>Sept 16, 18</td>
<td>Hazardous waste classification, transportation &amp; chemistry using AUGWM Class Exercises</td>
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<td>4.</td>
<td>Sept 30, Oct 2</td>
<td>Materials flow and waste generation</td>
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<tr>
<td>5.</td>
<td>Oct 11, 13</td>
<td>Materials flow and waste generation</td>
</tr>
<tr>
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<td><strong>Assgt #1 due on Oct 13 (Assignment #1)</strong></td>
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<tr>
<td>7.</td>
<td>Oct 21, 23</td>
<td><em>Field Trip 1 on Oct 21 (probably)</em>. Materials flow and waste generation</td>
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<td>8.</td>
<td>Oct 28, 30</td>
<td><em>Field Trip 1 report due on Oct 28 (Assignment #2)</em>. Waste management options</td>
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<td>9.</td>
<td>Nov 4, 6</td>
<td>Waste collection &amp; Transport</td>
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<tr>
<td>10.</td>
<td>Nov 13</td>
<td>Remembrance day holiday on Nov 11 &amp; No class on Nov 12 (Reading day) <em>Field Trip 2 on Nov 13 (probably)</em></td>
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<tr>
<td>11.</td>
<td>Nov 18, 20</td>
<td>Waste collection &amp; Transport/Waste minimization assessment <em>Field Trip 2 report due on Nov 18 (Assignment #3)</em></td>
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<td>12.</td>
<td>Nov 25, 27</td>
<td>Biological, chemical and thermal conversion technologies</td>
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<tr>
<td>13.</td>
<td>Dec 2, 4</td>
<td>Biological, chemical and thermal conversion technologies *Assgt #4 due on Dec 2</td>
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<td>14.</td>
<td>Dec 9</td>
<td>Code of Practice for Alberta Landfills Review</td>
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<td>Dec 9, 2013</td>
<td><strong>LAST DAY OF CLASSES</strong></td>
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<td>Dec 11 - 21</td>
<td>Examination</td>
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N.B. You are expected to regularly visit the blackboard because announcements and assignments may be put on it from time to time.
Course Expectations by Students at the Beginning of the Semester

The purpose of this questionnaire is to know you better, to understand how much you know about the subject so that I can adapt the course to your needs and to enable me give examples that you are familiar with.

Semester: ______________ Date: ______________

Name: _________________________________________________________________________________________

Course Code/Title: ________________________________________________________________________________

1. Briefly itemize or describe what you have learned/know about waste management? ______________________

2. What are you doing/have done as a job(s) that relate to waste management? ________________________________

3. What are your reasons for taking this course? _______________________________________________

4. What are your expectations on what you will learn in this course? _____________________________________

5. What are your career goals and how will you like this course to help you achieve them? ____________________

6. What are the methods of lecture presentations that “best” help you to learn? ____________________________

7. From this outline and my explanation, is it clear to you what your responsibilities in this course are? Yes/No

8. From this outline and my explanation, is it clear to you how your work will be evaluated? Yes/No

9. From this outline and my explanation, do you think this will be a fair assessment method of your learning in this course? Yes/No

________________________
Signature