

**Faculty of Environment, U of W**  
**ERS 317: Waste Management**  
**Winter 2018**

**Time and location:** Mondays 6:30 – 9:20 pm; EV1-350

**Lecturer:** John Jackson: 519-744-7503; [jjackson@web.ca](mailto:jjackson@web.ca)

**Teaching Assistant:** Sabine Weber: [s9weber@uwaterloo.ca](mailto:s9weber@uwaterloo.ca)

Students are encouraged to contact the lecturer at class break or through e-mail or telephone. The lecturer will usually be in the classroom by 6:05, but just to be sure if you wish to meet with the instructor prior to class, please contact me at least two days before class. There will be no designated office hours since the lecturer does not have an office on campus. If this pre-class time for a meeting does not work for you, contact me for another time.

**Course Purpose:**

This course examines current and leading edge methods and systems for waste management and for diversion of used resources from disposal with the objective of contributing to a circular economy. Related social, economic, health, political and ecological matters are considered within a policy and planning framework. The main focus is on municipal waste management, with a lesser focus on radioactive wastes and industrial hazardous wastes.

By the end of the course a student should understand waste management operations; the environmental and social implications of related waste management decisions; provincial policy and programs; and the policy framework, which exists or needs to exist to achieve a circular economy.

**Course Outline:**

|                  |   |
|------------------|---|
| WEEK 1: Jan 8:   | Direction of Resource/Waste Management              |
| WEEK 2: Jan. 15: | Generation of Solid Waste & Reduce-Reuse-Zero Waste |
| WEEK 3: Jan 22:  | Recycling & Composting                              |
| WEEK 4: Jan. 29: | Incineration and Energy From Waste                  |
| WEEK 5: Feb. 5:  | Landfill  |
| WEEK 6: Feb. 8:  | Extended Producer Responsibility                    |

|                    |  |
|--------------------|--|
| WEEK 7: Feb. 19:   | No class – Reading week                        |
| WEEK 8: Feb. 26:   | Mid-term Exam                                  |
| WEEK 9: March 5:   | Radioactive Waste                              |
| WEEK 10: March 12: | Industrial Hazardous Wastes & Waste Export     |
| WEEK 11: March 19: | Siting Waste Management Facilities             |
| WEEK 12: March 26: | Textiles – Sabine Weber<br>Class Presentations |
| WEEK 13: April 2:  | Class Presentations (cont)                     |

**Readings Sources:**

Readings are posted on Waterloo Learn.

If additional readings are added to the site after the start of classes, you will receive e-mail notice of the addition.

**Course Requirements:**

Course will be evaluated using the following elements:

Examinations:

**Midterm Exam** 25%

**Purpose:** to test students on the content of both class lectures and assigned readings.

**Final Exam (take home exam)** 25%

**Purpose:** to get students to apply their learning from lectures and assigned readings to real-life waste management scenarios and analysis.

No other or additional research is to be used to complete the exam. This is not another research paper. Students will be given two weeks to complete a take-home exam. The exam has a maximum length of 3,000 words. Students will be challenged to keep their answers clear and concise within the word limit.

Personal Waste Audit Project and Report 10%

Class Project 40% [10% class presentation, 30% paper]

Grades will be based on accuracy, organization, clarity, adherence to length requirements, depth of understanding, relevance and conciseness. Students in this course are expected to become participants in the changing world of waste management. Research is required to involve work beyond library and web research, including direct contact with persons active in the waste management field.

Late assignments will be penalized by 5% per day late. If a revised deadline for written material seems absolutely necessary, it may be negotiated with the instructor until 7 days before the deadline. Written approval of the instructor must be received.

### **Significant Dates:**

Jan. 15: Conduct personal waste audit

Jan. 29: Report on waste audit

Feb. 5: (preferably earlier):  
Submission of research project proposal for approval

Feb. 26: Midterm exam

March 26  
& April 2: Presentations on Research Project

April 1: Research Project Paper due

April 2: Take-home exam distributed

April 14: Take-home exam due

Assignments should be submitted into the appropriate course drop box on the Learn website.

### **Personal Waste Audit:**

Purpose: to become more aware of the garbage we throw away and to change our habits to minimize garbage creation.

Step 1: Jan. 15, fill in Waste Watcher's Diary for seven consecutive days at some point before submitting report.

Step 2: By Jan. 29, submit report (2-3 single-spaced pages) stating:

- 1) major types of waste you disposed of & where you disposed of it;

- 2) what can be done to eliminate, reduce, recycle or compost these wastes.

**Research Project:**

**Purpose:** to gain better in-depth understanding of a resource/waste management topic; to gain real world experience on a waste issue; to contribute to improved waste management.

**Types of Projects:** The project must be more than library and web research. Look for original documents from government agencies, etc. Depending on topic, contact citizens' groups, environmental groups, waste generators and waste handling companies. See if the project can be of practical benefit to someone, e.g., do some research for an environmental or citizens' group or help them organize; critique a proposal for a waste policy currently under review or out for public comment; help develop a waste management program in your residence or at work; propose ways to address a waste management issue that seems intractable.

Projects may be carried out individually or co-operatively with other class members. If you do a co-operative project, the report size requirements may need to be adjusted. This should be worked out with the instructor as your project proposal is being developed.

**Important Do's:**

- 1) Start early to ensure that the project is viable and contacts are available to help you.
- 2) Make sure your proposal is approved by the course instructor before you proceed.
- 3) Set a specific action plan with timelines to help keep you on track.
- 4) Plan in advance to have the final project delivered on the due date (5% loss on your mark each day the project is late)
- 5) Don't hesitate to contact course lecturer if problems arise
- 6) Make sure your work has been proofed for grammar and typos.

**Important Don'ts**

- 1) Do not carry out a project without prior written approval from the course lecturer.
- 2) Do not start your project late.
- 3) Don't attempt to do too much

**Step 1:** By Feb 5 at the latest, submit a written proposal for approval. The proposal should include a description of the topic, what will be gained by doing the project, and a description of how you will do the project as a set of logical steps with timelines. Do not be too vague or you will be asked to re-submit the

proposal. You will not be graded on the proposal, but do not proceed on your project unless your proposal has been approved.

**Step 2: Class Presentation:** On March 26 or April 2 do class presentation on your project. This presentation should focus on the main findings of your project.

Each individual or group will be required to make a brief presentation on their work. Details on the presentations, including the amount of time for the presentation, will be provided once the project proposals are submitted. A schedule of presentations and length of presentations will be made available on February 26.

**Step 3: Research Paper:** Submit research paper by April 1. The paper should describe your project methodology, your activities, and findings and recommendations. The paper should also include a section on the lessons you learnt in conducting the project that another person trying to carry out the project would find valuable.

The paper should be no less than 3,500 words and no longer than 4,000 words, excluding appendices. At the top of the submitted paper give the word count, excluding the appendices. If it is a group project, determine the appropriate length for the paper in discussion with the course lecturer.

Examples of an appendix include (but is not limited to): photos; surveys; detailed survey results (i.e., the granular information; brochures; interviews; detailed waste audit results; posters; detailed lists etc.).

## *Faculty of Environment Policies*

### ◆ **Intellectual Property:**

Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course (e.g., PowerPoint slides);
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams); and
- Work protected by copyright (e.g., any work authored by the instructor or TA or used by the instructor or TA with permission of the copyright owner).

Course materials and the intellectual property contained therein, are used to enhance a student's educational experience. However, sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights. For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online (e.g., to an online repository).

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

See Guidelines for Faculty, Staff and Students Entering Relationships with External Organizations Offering Access to Course Materials,  
<https://uwaterloo.ca/secretariat/faculty-staff-and-students-entering-relationships-external>)

### ◆ **Academic Integrity:**

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. The University's guiding principles on academic integrity can be found here:

<http://uwaterloo.ca/academicintegrity>. ENV students are strongly encouraged to review the material provided by the university's Academic Integrity office specifically for students:  
<http://uwaterloo.ca/academicintegrity/Students/index.html>

Students are also expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. Students may also complete the following tutorial:

<https://uwaterloo.ca/library/get-assignment-and-research-help/academic-integrity/academic-integrity-tutorial>

When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 – Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-71>. Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Grievance:

<https://uwaterloo.ca/secretariat-general-counsel/policies-procedures-guidelines/policy-70>

◆ **Note for students with disabilities:** *AccessAbility Services*, located in Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with *AccessAbility Services* at the beginning of each academic term.

◆ **Mental Health:** The University of Waterloo, the Faculty of Environment and our Departments/Schools consider students' well-being to be extremely important. We recognize that throughout the term students may face health challenges - physical and / or emotional. **Please note that help is available.** Mental health is a serious issue for everyone and can affect your ability to do your best work. Counselling Services <http://www.uwaterloo.ca/counselling-services> is an inclusive, non-judgmental, and confidential space for anyone to seek support. They offer confidential counselling for a variety of areas including anxiety, stress management, depression, grief, substance use, sexuality, relationship issues, and much more.

◆ **Religious Observances:** Students need to inform the instructor at the beginning of term if special accommodation needs to be made for religious observances that are not otherwise accounted for in the scheduling of classes and assignments.

◆ **Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 - Student Petitions and Grievances, Section 4, [www.adm.uwaterloo.ca/infosec/Policies/policy70.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm). When in doubt please contact your Undergraduate Advisor for details.

◆ **Appeals:** A decision made or penalty imposed under Policy 70 - Student Petitions and Grievances (other than a petition) or Policy 71 – (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) [www.adm.uwaterloo.ca/infosec/Policies/policy72.htm](http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm)

◆ **Unclaimed assignments:**

Unclaimed assignments will be retained for ... [period of time\*; or: “until one month after term grades become official in quest”]. After that time, they will be destroyed in compliance with UW’s [confidential shredding procedures](#).

◆ **Communications with Instructor and Teaching Assistants:**

All communication with students must be through either the student’s University of Waterloo email account or via Learn. If a student emails the instructor or TA from a

personal account they will be requested to resend the email using their personal University of Waterloo email account.

◆ **Research Ethics:**

The University of Waterloo requires all research conducted by its students, staff, and faculty which involves humans as participants to undergo prior ethics review and clearance through the Director, Office of Human Research and Animal Care (Office). The ethics review and clearance processes are intended to ensure that projects comply with the Office's Guidelines for Research with Human Participants (Guidelines) as well as those of provincial and federal agencies, and that the safety, rights and welfare of participants are adequately protected. The Guidelines inform researchers about ethical issues and procedures which are of concern when conducting research with humans (e.g. confidentiality, risks and benefits, informed consent process, etc.). If the development of your research proposal consists of research that involves humans as participants, the please contact the course instructor for guidance and see <https://uwaterloo.ca/research/office-research-ethics>. If you have questions on obtaining approvals, contact Julia Joza, [jajoza@uwaterloo.ca](mailto:jajoza@uwaterloo.ca), ext 38535 in the Office of Research.

• **Categories other than plagiarism (defined as varieties of cheating):**

- Submission of work not written and prepared by you'
- Copying or stealing the work of another student;
- Paying for the creation of work by a commercial service or by an acquaintance to be submitted by you;
- Using an essay for submission by you, which was found, on one of the free internet essay sites;
- Writing a paper for course submission by another student;
- "Recycling" or submitting an essay, report, or assignment when a major portion has been previously submitted for another course without the expressed permission of all instructors involved.

◆ **Recording lectures:**

- Use of recording devices during lectures is only allowed with explicit permission of the instructor of the course.
- If allowed, video recordings may only include images of the instructor and not fellow classmates.
- Posting of videos or links to the video to any website, including but not limited to social media sites such as: facebook, twitter, etc., is strictly prohibited.