

Carleton University
Department of Civil and Environmental Engineering

ENVE 4101 Waste Management
Tentative Course Outline Fall 2020

Instructor: Dr. Paul Simms, P.Eng.
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<https://zoom.us/j/8971776662>

Teaching Assistant: TBA
Email: TBA
Office: TBA
Office hours: TBA

Office hours: Tuesdays 1:30-4:30 PM

Lectures:
<https://zoom.us/j/8971776662>

Wednesday and Friday 11:35 AM– 12:55 PM

Tutorial:
Mondays 1:35-2:25 PM
Discretion of TA

Course Description:

Municipal, hazardous, and mine waste management. Waste composition and potential impacts, collection and transport, recycling and reuse, biological and thermal treatments, isolation.

The goal of this course is provide students with a broad awareness of the framework of municipal and industrial waste management, highlight the relative issues, and provide a selection of technical skills.

A group project on waste recycling or reduction is an important component of this course. In some years of the course, the group with the best project presented their work to staff in the city's waste management division or to engineers from consulting companies active in waste management.

Course will be a blend of synchronous and asynchronous learning (live activities, taped lectures. Lecture slides, some recorded segments of lectures, and old live activities will be posted online.

Course Outline (Fall 2020):

Classes	Topic		Coursework
Sept 9 th	Introduction, Overview of Waste management		
Sept 11 th Sept 16 th	Character and properties of municipal waste Estimating waste generation rates		Assignment 1: Due Sept 24 th

Sept 18 th Sept 23 rd	Waste Transportation		
Sept 25 th Sept 30 th	Recycling		
Oct 2 nd Oct. 7 th	Materials separation technology, Composting		Assignment 2 Due Oct 12 th
Oct 9 th Oct 14 th	Landfilling: Site selection, estimating landfill capacity, basic design, leachate and landfill gas management, pertinent legislation		
Oct 16 th Oct. 21 st	Incineration, pyrolysis, and gasification: Costs, pollution control technologies Integrated waste management: Discussion of project topics		
Oct 23 rd	MIDTERM		MIDTERM
October 28 th , 30 th	BREAK		Happy Halloween!
Nov 4 th Nov 6 th	Character and properties of common hazardous wastes Egress of hazardous waste in the environment, toxicity, clean up and disposal of hazardous wastes, pertinent legislation		PROJECT (3 or 4 per group)
Nov 11 th Nov 13 th	Mine wastes: Tailings and waste rock, the acid generation process, relevant mine waste characteristics		Preliminary Report due Nov. 16 th
Nov 18 th Nov 21 st	Mine waste closure / remediation alternatives Oil sands tailings		Assignment 3 Due Nov 30 th
Nov 25 th Nov 27 th	Radioactive waste generation and disposal		PROJECT Presentations

Dec 2 nd Dec 4 th	Presentations!		Review Dec 9 th !
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Resource Texts (Ebooks in library)

Chandrappa, R, Bhusan, D. 2012. Solid waste management: principles and practice – good overview

Pires et al. 2019. Sustainable Solid Waste Collection and Management – v. good for waste transport

Pichtel, J. 2014. “Waste Management Practices”. Taylor and Francis, USA – some good specific information

Van Guilder, Clifton 2018. Hazardous Waste Management.

Course Evaluation:

Project	20%
Assignments	20%
Mid-Term Test	20%
Final Exam	40%

Please note: To get course credit, students must achieve a grade of 50% in the final exam. Students must also pass the coursework, which includes the midterm. Note that if you feel ill during an exam, you must inform the proctor and sign the appropriate document before leaving the exam.

Requests for Academic Accommodations for Students with Disabilities:

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your ***Letter of Accommodation*** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). **Requests made within two weeks will be reviewed on a case-by-case basis.** After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally-scheduled exam (*if applicable*).

Requests for Academic Accommodation for Religious Obligations

Students requesting academic accommodation on the basis of religious obligation should make a formal, written request to their instructors for alternate dates and/or means of satisfying academic

requirements. Such requests should be made during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist, but no later than two weeks before the compulsory event. Accommodation is to be worked out directly and on an individual basis between the student and the instructor. Students who have questions or want to confirm accommodation eligibility of a religious event or practice may refer to the Equity Services website for a list of holy days and Carleton's Academic Accommodation policies, or may contact an Equity Services Advisor in the Equity Services Department for assistance.

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Requests for Academic Accommodation for Pregnancy:

Pregnant students requiring academic accommodations are encouraged to contact an Equity Advisor in Equity Services to complete a *letter of accommodation*. The student must then make an appointment to discuss her needs with the instructor at least two weeks prior to the first academic event in which it is anticipated the accommodation will be required.