



North South University
Department of Civil and Environmental Engineering (CEE)
CEE 470: Solid & Hazardous Waste Management
Summer 2018

Course Outline

COURSE CODE: CEE 470

COURSE TITLE: Solid & Hazardous Waste Management

COURSE INSTRUCTOR: Ms. Sifat Kalam

Lecturer, CEE

Room#SAC 738, Dept. of CEE

Email: kalam.sifat@northsouth.edu

CLASS HOURS:

SECTION: Sec 1	DAYS: ST	TIME: 09:40 AM - 11:10 AM	ROOM NO: SAC 207
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OFFICE HOURS:

ST 11:20 AM-12:50 PM

MW 11:20 AM-12:50 PM and 01:00 PM-02:00 PM

Prerequisites: ENV 209

Contact Hours: Lecture – 3 Hours/week

COURSE DESCRIPTION: 3 Cr.

Solid Waste Management: Sources and Types of Solid Wastes; Physical and Chemical Properties of Solid Wastes; Solid Wastes Generation; On Site Handling, Storage and Processing; Collection of Solid Wastes, Transfer Stations and Transport; Ultimate Disposal Methods; Resources and Energy Recovery, Soil Pollution. Industrial Solid Waste Collection and Disposal; Hazardous Waste Management.

Course Objective:

1. To elucidate solid and hazardous waste management issues and practices
2. To develop skills to design a sanitary landfill
3. To train the students to communicate effectively through a group project focusing on solid and hazardous waste management issues/practices

Course Outcomes (COs):

CO1: Identify the solid & hazardous waste management problems, formulate, and solve, i.e. waste generation, landfill leachate and gas formation etc.

CO2: Design a sanitary landfill for ultimate disposal of solid waste

CO3: Communicate effectively through oral presentation and paper submission for the course project focusing issues on solid & hazardous waste management.

TEXT BOOK:

Integrated Solid Waste Management by George Tchobanoglous

AVAIALABILITY OF COURSE MATERIALS:

All the lecture notes are available at the university common folder “Resource”. You can print them from there. Other than lecture notes, relevant materials like class schedule, course outline, reading materials, etc are available at different sub-folders of the same as well. Students are advised to check the folders at regular intervals.

ASSIGNMENTS AND CLASS ASSESSMENTS:

Assignments will be discussed during the class hours. Late submissions will be assigned a mark of zero. Also there may be pop quizzes (without prior notice) in the class to evaluate class performance. It is the student's responsibility to be present at the class regularly to attend these quizzes.

EVALUATION: (Tentative Marks)

Class participation and attendance	10%
Assignments	5%
Projects (Presentation & Paper)	20%
Class tests	10%
Midterm Exam	25%
Final Exam	30%

Note:

- Class attendance must be more than **75%** to participate in **Final Examination**.
- A student must pass the final examination and complete the project work to pass the course.
- No special permissions will be granted enabling a student to retain assignment or quiz marks from previous years.

EXAM POLICY:

For quizzes, not all of them will be considered for class test grading. No Make-up quiz or Mid-term/Final exam will be arranged. If needed, Class test or mid-term exam might be rescheduled due to unavoidable circumstances and prior notice will be given.

EXAM NOTICE:

Prior announcements for the exam will be made in the class, except for a sudden quiz. No excuse will be granted simply because someone was absent at previous class and did not know about the exam schedule.

GRADING POLICY:

NSU grading policy will be followed

CODE OF CONDUCT:

- Students are expected to arrive at class on time. RFID Attendance will be given if a student enters the classroom **within 10 minutes of class start because after that class room will be locked.** Therefore no attendance will be given.
- It is highly requested to maintain **discipline** in the class and to conduct in a professional and respectful manner.
- Please **turn off your cell phone** before coming to a class, tutorial, quiz or exam. Electronic devices (Cell phone, Laptops, Tabs etc. are not allowed in the class or exam hall.)
- **Cheating and Plagiarism** will be considered as a serious **crime**.

On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.northsouth.edu/student-code-of-conduct.html>

Lecture Schedule:

* One Day = 1.5 lecture hours, Total 26 days lecture = 39 lecture hours

Day*	Topics To be Covered	Activity
Day-1	Introduction to Solid Waste Management	Discussion
Day-2	Evaluation of solid waste management	Lecture
Day-3	Sources and Types of Solid Wastes	Lecture & Practice Problem
Day-4	Physical & Chemical Properties of Solid Wastes	Lecture & Practice Problem
Day-5	Biological Properties of MSW	Lecture & Practice Problem
Day-6	Sources and Types of Hazardous Waste	Quiz -1+Lecture
Day-7	Properties & management of Hazardous Waste	Lecture & Practice Problem
Day-8	Solid Wastes Generation and collection rates	Lecture & Practice Problem
Day-9	Factors affecting waste generation rate	
Day-10	Waste Handling, Storage and Processing	Lecture & Practice Problem
Day-11	Collection of Solid Wastes	Lecture & Practice Problem
Day-12	Midterm Exam	
Day-13	Industrial Solid Waste Collection and Disposal	Lecture& Practice Problem
Day-14	Waste separation and MRF	Lecture & Practice Problem
Day-15	Waste Transformation through combustion	Lecture & Practice Problem
Day-16	Waste Transformation through composting	Lecture & Practice Problem
Day-17	Source reduction & recycling	Lecture & Practice Problem
Day-18	Resources and Energy Recovery	Quiz -2+ Lecture
Day-19	Transfer Stations and Transport	Lecture & Practice Problem
Day-20	Transfer Stations and Transport	Lecture & Practice Problem
Day-21	Soil Pollution	Lecture & Practice Problem
Day-22	Ultimate Disposal Methods	Lecture & Practice Problem
Day-23	Landfill Method	Lecture & Practice Problem
Day-24	Design of Sanitary Landfill	Lecture & Practice Problem
Day-25	Design of Sanitary Landfill	Discussion
Day-26	Final Exam	